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Course & Section: BSCpE III – GF

Score: _____

Dynamic Routing Protocol (OSPF)

Introduction

Routing protocols is a set of processes, algorithms, and messages that are used to exchange routing information and populate the routing table with the routing protocol's choice of best paths. All routing protocols have the same purpose (1) to learn about remote networks and to quickly adapt whenever there is a change in the topology.

Advantage of dynamic routing protocols

- Administrator has less work in maintaining the configuration when adding and deleting of networks
- Protocols automatically react to the topology changes.
- Configuration is less error-prone
- More scalable; growing the network usually does not present a problem

Disadvantage of dynamic routing protocols

- Router resources are used (CPU cycles, memory, and link bandwidth).
- More administrator knowledge is required for configuration, verification and troubleshooting.

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 OSPF routing on all routers
- Test Connectivity between the PC's

Equipment

PC
Packet Tracer

Configuring OSPF

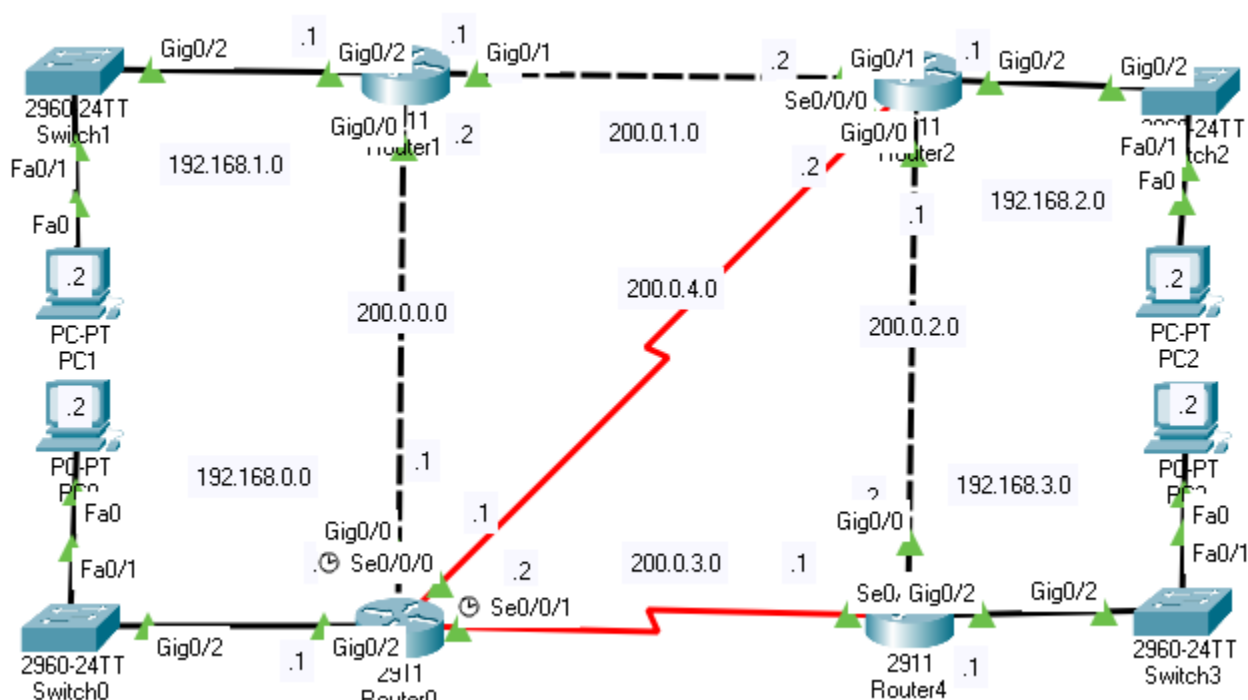

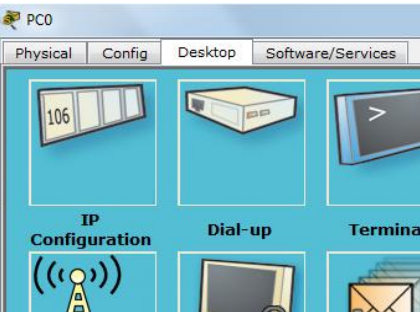
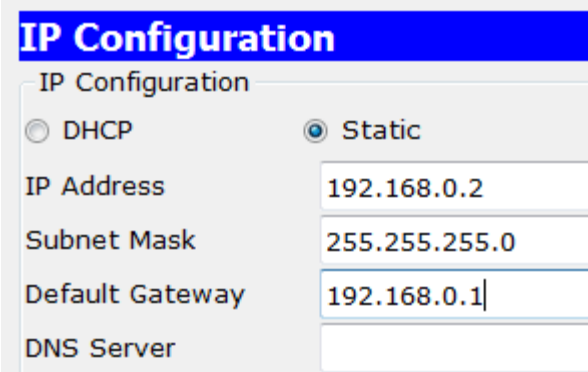


Figure 1. Topology for Activity #5

Table 1. Addressing table for the topology

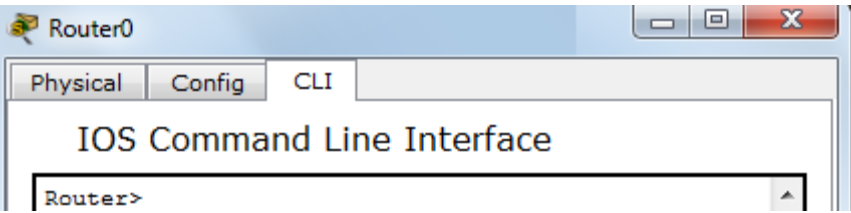
DEVICE	CONNECTED FROM	CONNECTED TO	IP ADDRESS	SUBNET MASK
PC0	Fa0	Switch0 Fa0/1	192.168.0.2	255.255.255.0
PC1	Fa0	Switch1 Fa0/1	192.168.1.2	255.255.255.0
PC2	Fa0	Switch2 Fa0/1	192.168.2.2	255.255.255.0
PC3	Fa0	Switch3 Fa0/1	192.168.3.2	255.255.255.0
R0	Gi0/2	Switch0 Gi0/2	192.168.0.1	255.255.255.0
R1	Gi0/2	Switch1 Gi0/2	192.168.1.1	255.255.255.0
R2	Gi0/2	Switch2 Gi0/2	192.168.2.1	255.255.255.0
R3	Gi0/2	Switch3 Gi0/2	192.168.3.1	255.255.255.0
R0	Gi0/0	Router1 Gi0/0	200.0.0.1	255.255.255.0
R0	Se0/0/0	Router2 Se0/0/0	200.0.4.1	255.255.255.0
R0	Se0/0/1	Router3 Se0/0/1	200.0.3.2	255.255.255.0
R1	Gi0/0	Router0 Gi0/0	200.0.0.2	255.255.255.0
R1	Gi0/1	Router2 Gi0/1	200.0.1.1	255.255.255.0
R2	Gi0/1	Router1 Gi0/1	200.0.1.2	255.255.255.0
R2	Se0/0/0	Router0 Se0/0/0	200.0.4.2	255.255.255.0
R2	Gi0/0	Router3 Gi0/0	200.0.2.1	255.255.255.0
R3	Gi0/0	Router2 Gi0/0	200.0.2.2	255.255.255.0
R3	Se0/0/1	Router0 Se0/0/1	200.0.3.1	255.255.255.0

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>PC1 IP add: 192.168.1.2 SM: 255.255.255.0 DG:192.168.1.1</p> <p>PC2 IP add: 192.168.2.2 SM: 255.255.255.0 DG:192.168.2.1</p> <p>PC3 IP add: 192.168.3.2 SM: 255.255.255.0 DG:192.168.3.1</p>
Step 4		Repeat Steps 1-3 for PC1,PC2 and PC3

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 0/2 Router(config-if)#ip address 192.168.0.1 255.255.255.0 Router(config-if)#no shutdown Router(config-if)#exit	Type the following Commands to Assign IP address. interface GigabitEthernet0/0 command is used to enter in interface mode. ip address 192.168.0.1 255.255.255.0 command will assign IP address to interface. no shutdown command will bring the interface up. exit command is used to return in global configuration mode.
Step 5	Router(config)#interface int GigabitEthernet 0/0 Router(config-if)#ip address 200.0.0.1 255.255.255.0 Router(config-if)#no shutdown Router(config-if)#exit	
Step 6	Router(config)#interface serial 0/0/0 Router(config-if)#ip address 200.0.4.1 255.255.255.0 Router(config-if)#clock rate 2000000 Router(config-if)#no shutdown Router(config-if)#exit Note: Only on DCE Serial Interface we assign a clock rate. We don't assign clock rate on DTE.	Router(config)#interface serial 0/0/0 Command is used to enter in interface mode. Router(config-if)#ip address 200.0.4.1 255.255.255.0 Command assigns IP address to interface.

		Router(config-if)#clock rate 1000000 In real life environment these parameters control the data flow between serial links and need to be set at service providers end. Router(config-if)#no shutdown Command brings interface up. Router(config-if)#exit Command is used to return in global configuration mode.
Step 7	<pre>Router(config)#interface interface serial 0/0/1 Router(config-if)#ip address 200.0.3.2 255.255.255.0 Router(config-if)#clock rate 4000000 Router(config-if)#no shutdown Router(config-if)#exit</pre>	

Router 1

	Image	Direction/Description
Step 1	<pre>Router(config)#interface GigabitEthernet 0/2 Router(config-if)#ip address 192.168.1.1 255.255.255.0 Router(config-if)#no shutdown Router(config-if)#exit</pre>	Follow the steps 1-3 on Assigning IP address in Router 1, and perform the following commands on the left.
Step 2	<pre>Router(config)#interface int GigabitEthernet 0/0 Router(config-if)#ip address 200.0.0.2 255.255.255.0 Router(config-if)#no shutdown Router(config-if)#exit</pre>	
Step 3	<pre>Router(config)#interface int GigabitEthernet 0/1 Router(config-if)#ip address 200.0.1.1 255.255.255.0 Router(config-if)#no shutdown Router(config-if)#exit</pre>	

Router 2

	Image	Direction/Description
Step 1	Router(config)#interface GigabitEthernet 0/2 Router(config-if)#ip address 192.168.2.1 255.255.255.0 Router(config-if)#no shutdown Router(config-if)#exit	Follow the steps 1 -3 on Assigning IP address in Router 2, and perform the following commands on the left.
Step 2	Router(config)#interface int GigabitEthernet 0/1 Router(config-if)#ip address 200.0.1.2 255.255.255.0 Router(config-if)#no shutdown Router(config-if)#exit	
Step 3	Router(config)#interface serial 0/0/0 Router(config-if)#ip address 200.0.4.2 255.255.255.0 Router(config-if)#no shutdown Router(config-if)#exit	
Step 4	Router(config)#interface int GigabitEthernet 0/0 Router(config-if)#ip address 200.0.2.1 255.255.255.0 Router(config-if)#no shutdown Router(config-if)#exit	

Router 3

	Image	Direction/Description
Step 1	Router(config)#interface GigabitEthernet 0/2 Router(config-if)#ip address 192.168.3.1 255.255.255.0 Router(config-if)#no shutdown Router(config-if)#exit	Follow the steps 1 -3 on Assigning IP address in Router 2, and perform the following commands on the left.
Step 2	Router(config)#interface int GigabitEthernet 0/0 Router(config-if)#ip address 200.0.2.2 255.255.255.0	

	Router(config-if)#no shutdown Router(config-if)#exit	
Step 3	Router(config)#interface interface serial 0/0/1 Router(config-if)#ip address 200.0.3.1 255.255.255.0 Router(config-if)#no shutdown Router(config-if)#exit	

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 GigabitEthernet0/0-2, and Serial 0/0/0-2 are “up” this means the interface are working properly.

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

```
Router0#show ip int brief
Interface                IP-Address      OK? Method Status      Protocol
GigabitEthernet0/0       200.0.0.1       YES manual up          up
GigabitEthernet0/1       unassigned      YES unset  administratively down down
GigabitEthernet0/2       192.168.0.1     YES manual up          up
Serial0/0/0              200.0.4.1       YES manual up          up
Serial0/0/1              200.0.3.2       YES manual up          up

Router1#show ip int brief
Interface                IP-Address      OK? Method Status      Protocol
GigabitEthernet0/0       200.0.0.2       YES manual up          up
GigabitEthernet0/1       200.0.1.1       YES manual up          up
GigabitEthernet0/2       192.168.1.1     YES manual up          up

Router#show ip int brief
Interface                IP-Address      OK? Method Status      Protocol
GigabitEthernet0/0       200.0.2.1       YES manual up          up
GigabitEthernet0/1       200.0.1.2       YES manual up          up
GigabitEthernet0/2       192.168.2.1     YES manual up          up
Serial0/0/0              200.0.4.2       YES manual up          up

Router3#show ip int brief
Interface                IP-Address      OK? Method Status      Protocol
GigabitEthernet0/0       200.0.2.2       YES manual up          up
GigabitEthernet0/1       unassigned      YES unset  up          down
GigabitEthernet0/2       192.168.3.1     YES manual up          up
Serial0/0/0              unassigned      YES unset  administratively down down
Serial0/0/1              200.0.3.1       YES manual up          up
```

Figure 2. Router0-3's Interfaces Status

Identifying Directly Connected Networks

Directly Connected Networks is a network that is directly attached to one router interfaces. When a router's interface is configured with an IP address and subnet mask, the interface become a host on that attached network. The network address and subnet mask of the interface, along with the interface type and number, are entered into the routing table as a directly connected network. We can identify them using the command **show ip route connected**.

```
Router0#show ip route connected
C    192.168.0.0/24 is directly connected, GigabitEthernet0/2
C    200.0.0.0/24  is directly connected, GigabitEthernet0/0
C    200.0.3.0/24  is directly connected, Serial0/0/1
C    200.0.4.0/24  is directly connected, Serial0/0/0
```

Figure 3. Directly Connected Network

Configuring OSPF

To be able the router learns routes from the other neighbor router we must configure a routing protocol this time we well be using OSPF

Step 1: Use the router ospf command in global configuration mode to enable OSPF on the R1 router. Enter a process ID of 1 for the *process-ID* parameter.

```
R0 (config)#router ospf 1
R0 (config-router)#
```

Step 2: Configure the network statement for the LAN network. Once you are in the Router OSPF configuration sub-mode, configure all directly connected networks (show in figure 3) to be included in the OSPF updates that are sent out of R0. The OSPF **network** command uses a combination of *network-address* and *wildcard-mask* similar to that which can be used by EIGRP. Unlike EIGRP, the wildcard mask in OSPF is required. Use an area ID of 0 for the OSPF *area-id* parameter. 0 will be used for the OSPF area ID in all of the **network** statements in this topology.

```
R0 (config-router)#network 192.168.0.0 0.0.0.255 area 0
R0 (config-router)#network 200.0.0.0 0.0.0.255 area 0
R0 (config-router)#network 200.0.3.0 0.0.0.255 area 0
R0 (config-router)#network 200.0.4.0 0.0.0.255 area 0
```

Step 3: Verifying networks being advertised.


```

Router0#show ip protocols


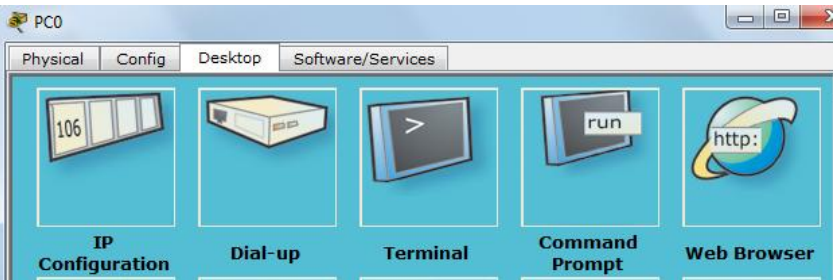
Routing Protocol is "ospf 1"
  Outgoing update filter list for all interfaces is not set
  Incoming update filter list for all interfaces is not set
  Router ID 200.0.4.1
  Number of areas in this router is 1. 1 normal 0 stub 0 nssa
  Maximum path: 4
  Routing for Networks:
    192.168.0.0 0.0.0.255 area 0
    200.0.0.0 0.0.0.255 area 0
    200.0.3.0 0.0.0.255 area 0
    200.0.4.0 0.0.0.255 area 0
  Routing Information Sources:
    Gateway         Distance      Last Update
    200.0.4.1             110          00:00:20
  Distance: (default is 110)

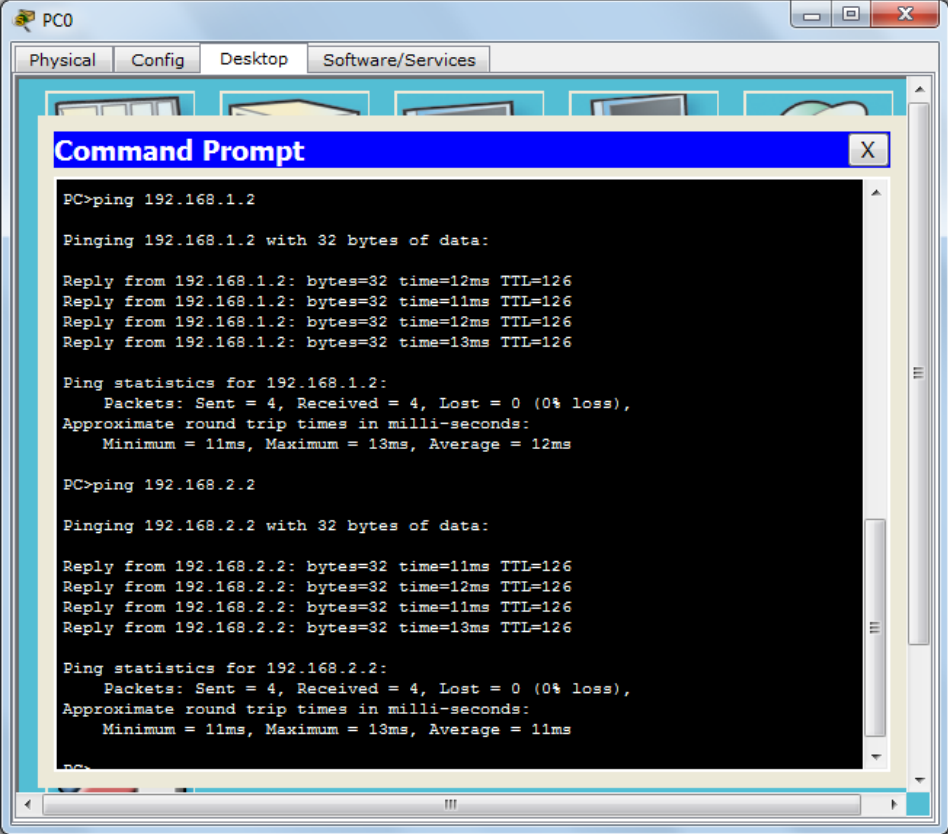
```

Step 4: Repeat steps 1 to 3 for router1, router 2 and router3.

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 ping 192.168.2.2 ping 192.168.3.2

		
Step 4		Repeat Steps 1-3 for other PC

Conclusion:

Laboratory Activity #5

Additional Activity

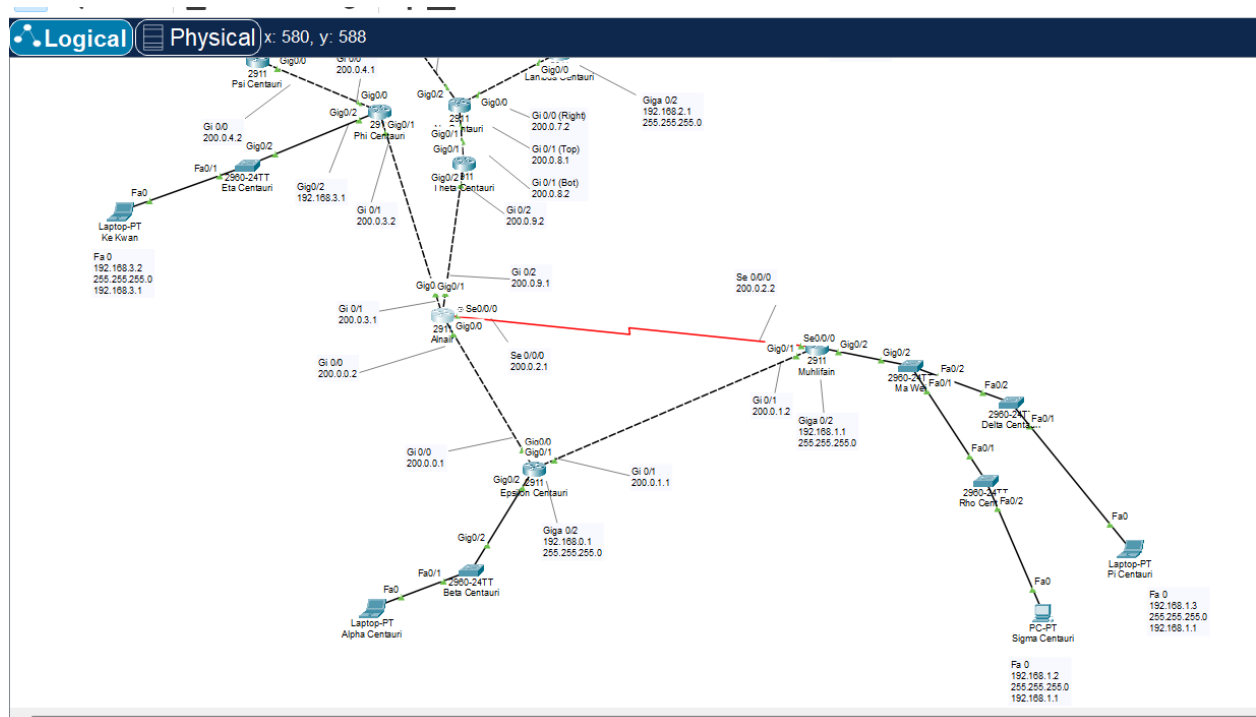
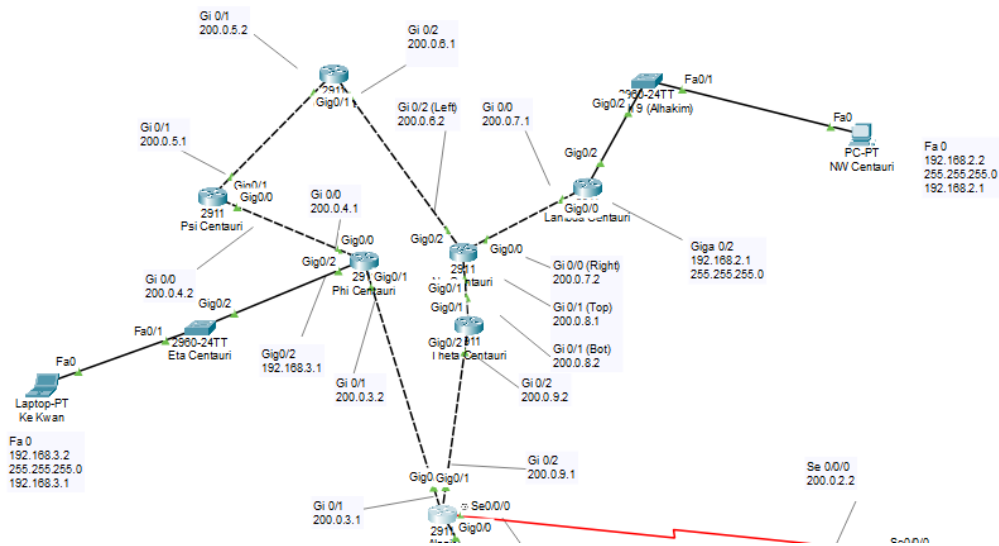
Dynamic Routing Protocol (OSPF)

1. Create a new network.
2. Configure OSPF

Screenshot

Insert Screenshot of the following your created network

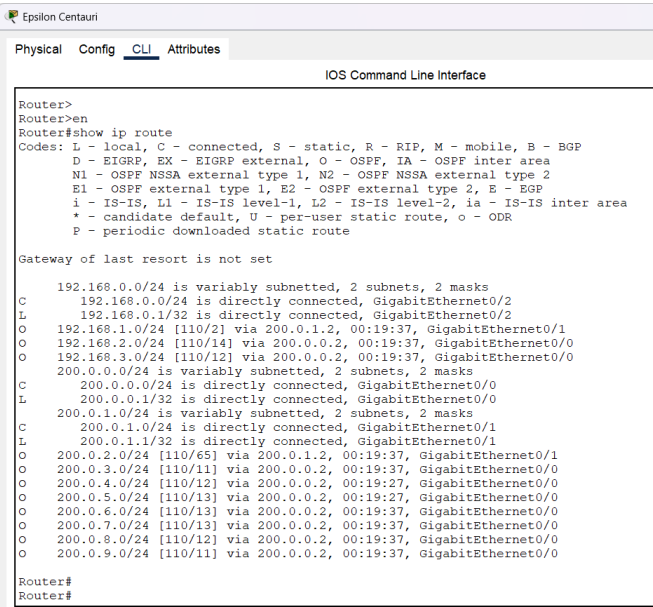
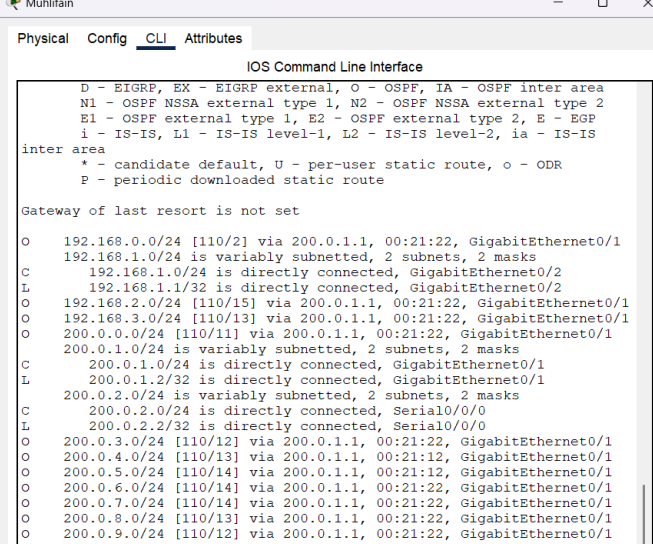
a. Network Setup

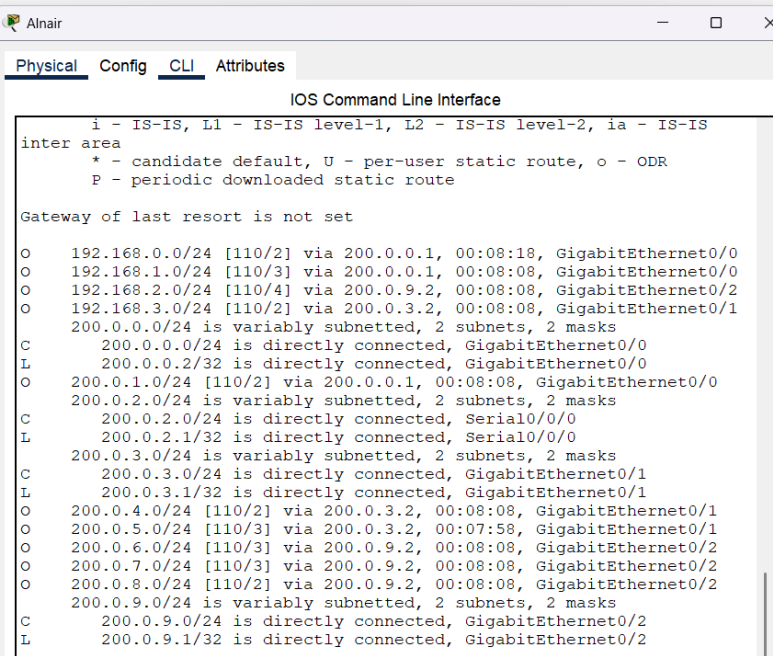
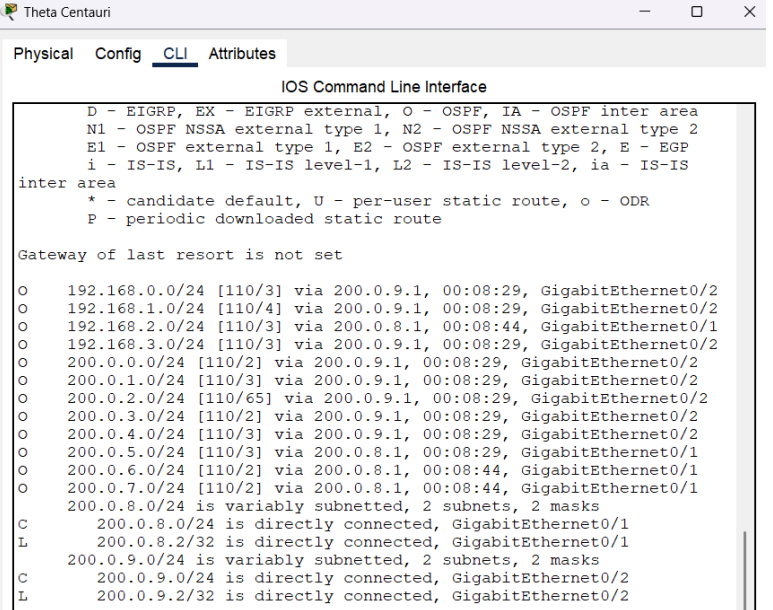


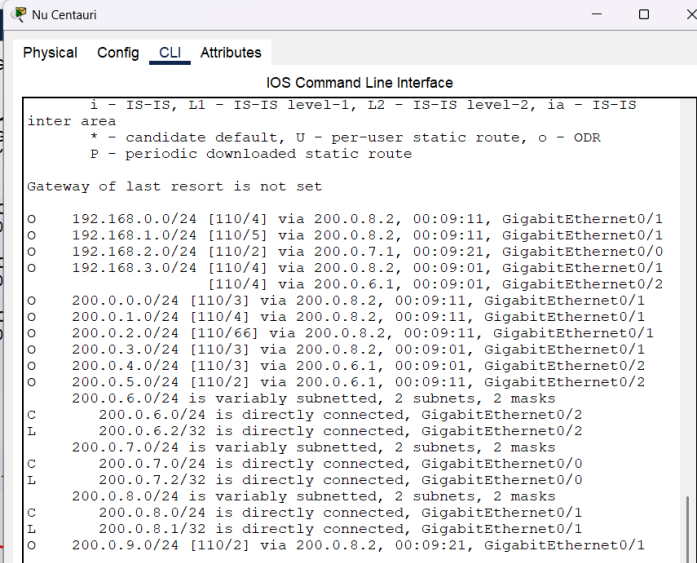
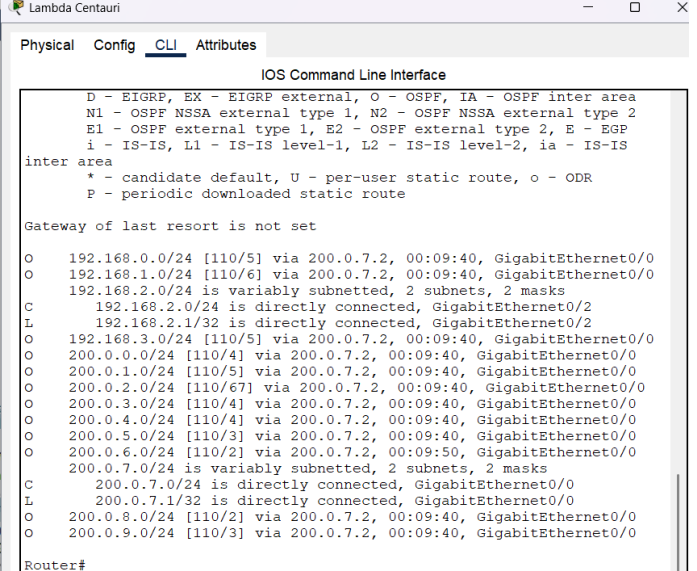
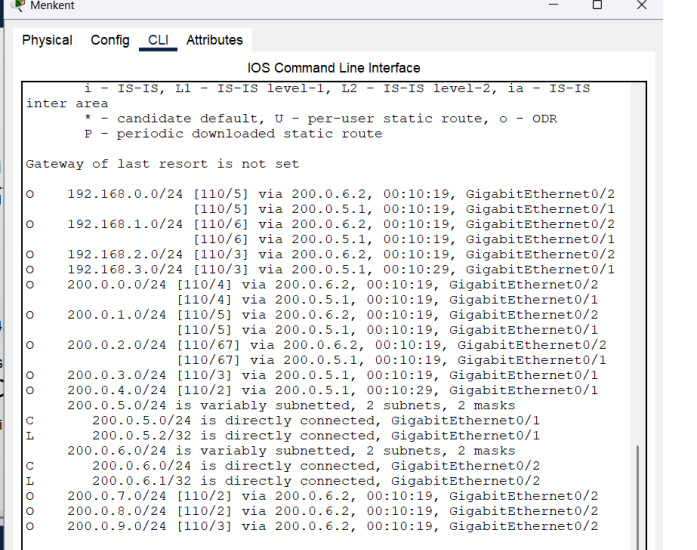
b. IP address configuration of each in interface (use show ip int brief) on each router

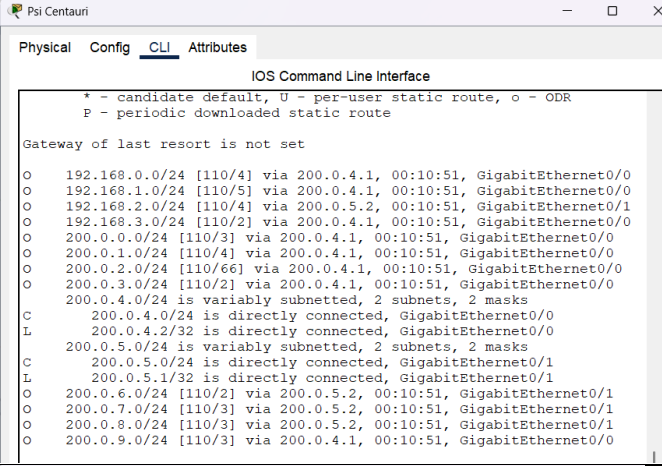
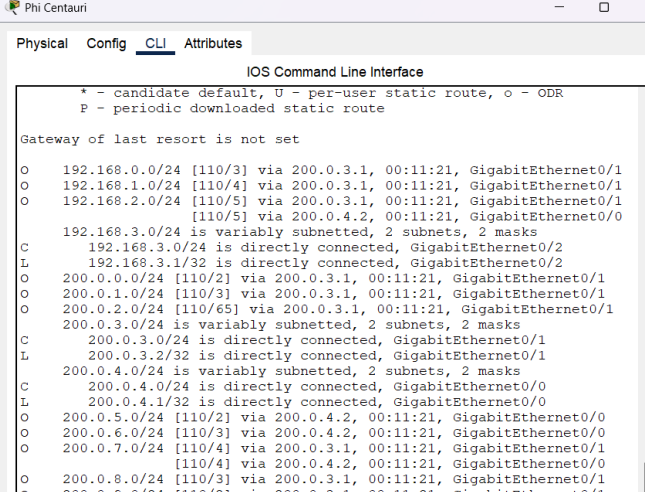
Epsilon Centauri	<pre>Router#show ip int brief Interface IP-Address OK? Method Status Protocol GigabitEthernet0/0 200.0.0.1 YES manual up up GigabitEthernet0/1 200.0.1.1 YES manual up up GigabitEthernet0/2 192.168.0.1 YES manual up up Vlan1 unassigned YES unset administratively down down Router#</pre>
Muhlifain	<pre>Router>en Router#show ip int brief Interface IP-Address OK? Method Status Protocol GigabitEthernet0/0 unassigned YES manual administratively down down GigabitEthernet0/1 200.0.1.2 YES manual up up GigabitEthernet0/2 192.168.1.1 YES manual up up Serial0/0/0 200.0.2.2 YES manual up up Serial0/0/1 unassigned YES unset administratively down down Vlan1 unassigned YES unset administratively down down Router#</pre>
Alnair	<pre>Router#show ip int brief Interface IP-Address OK? Method Status Protocol GigabitEthernet0/0 200.0.0.2 YES manual up up GigabitEthernet0/1 200.0.3.1 YES manual up up GigabitEthernet0/2 200.0.9.1 YES manual up up Serial0/0/0 200.0.2.1 YES manual up up Serial0/0/1 unassigned YES unset administratively down down Vlan1 unassigned YES unset administratively down down Router#</pre>
Theta Centauri	<pre>Router#show ip int brief Interface IP-Address OK? Method Status Protocol GigabitEthernet0/0 unassigned YES unset administratively down down GigabitEthernet0/1 200.0.8.2 YES manual up up GigabitEthernet0/2 200.0.9.2 YES manual up up Vlan1 unassigned YES unset administratively down down Router#</pre>
Nu Centauri	<pre>Router#show ip int brief Interface IP-Address OK? Method Status Protocol GigabitEthernet0/0 200.0.7.2 YES manual up up GigabitEthernet0/1 200.0.8.1 YES manual up up GigabitEthernet0/2 200.0.6.2 YES manual up up Vlan1 unassigned YES unset administratively down down Router#</pre>
Lambda Centauri	<pre>Router>en Router#show ip int brief Interface IP-Address OK? Method Status Protocol GigabitEthernet0/0 200.0.7.1 YES manual up up GigabitEthernet0/1 unassigned YES unset administratively down down GigabitEthernet0/2 192.168.2.1 YES manual up up Vlan1 unassigned YES unset administratively down down Router#</pre>
Menkent Centauri	<pre>Router>en Router#show ip int brief Interface IP-Address OK? Method Status Protocol GigabitEthernet0/0 unassigned YES unset administratively down down GigabitEthernet0/1 200.0.5.2 YES manual up up GigabitEthernet0/2 200.0.6.1 YES manual up up Vlan1 unassigned YES unset administratively down down Router#</pre>
Psi Centauri	<pre>Router>en Router#show ip int brief Interface IP-Address OK? Method Status Protocol GigabitEthernet0/0 200.0.4.2 YES manual up up GigabitEthernet0/1 200.0.5.1 YES manual up up GigabitEthernet0/2 unassigned YES unset administratively down down Vlan1 unassigned YES unset administratively down down Router#</pre>
Phi Centauri	<pre>Router#show ip int brief Interface IP-Address OK? Method Status Protocol GigabitEthernet0/0 200.0.4.1 YES manual up up GigabitEthernet0/1 200.0.3.2 YES manual up up GigabitEthernet0/2 192.168.3.1 YES manual up up Vlan1 unassigned YES unset administratively down down Router#</pre>

- c. Show all learned ospf routes (use show ip route) on each router

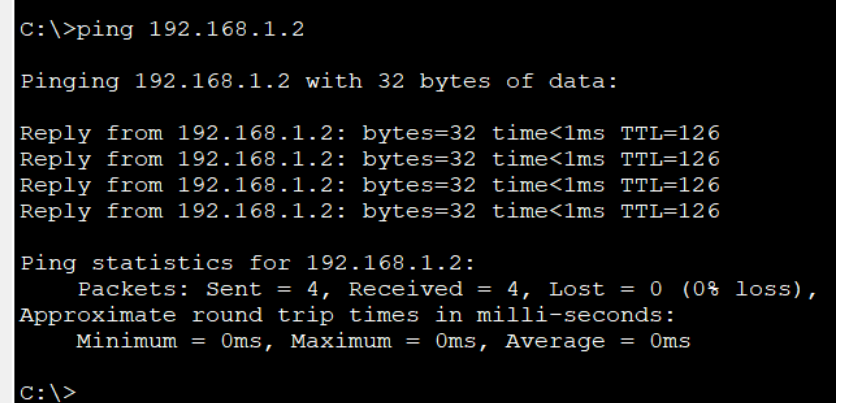
<p>Epsilon Centauri</p>	 <pre> Epsilon Centauri Physical Config CLI Attributes IOS Command Line Interface Router> Router>en Router#show ip route Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area N1 - OSPF NSSA external 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, GigabitEthernet0/2 L 192.168.0.1/32 is directly connected, GigabitEthernet0/2 O 192.168.1.0/24 [110/2] via 200.0.1.2, 00:19:37, GigabitEthernet0/1 O 192.168.2.0/24 [110/14] via 200.0.0.2, 00:19:37, GigabitEthernet0/0 O 192.168.3.0/24 [110/12] via 200.0.0.2, 00:19:37, GigabitEthernet0/0 200.0.0.0/24 is variably subnetted, 2 subnets, 2 masks C 200.0.0.0/24 is directly connected, GigabitEthernet0/0 L 200.0.0.1/32 is directly connected, GigabitEthernet0/0 C 200.0.1.0/24 is variably subnetted, 2 subnets, 2 masks C 200.0.1.0/24 is directly connected, GigabitEthernet0/1 L 200.0.1.1/32 is directly connected, GigabitEthernet0/1 O 200.0.2.0/24 [110/65] via 200.0.1.2, 00:19:37, GigabitEthernet0/1 O 200.0.3.0/24 [110/11] via 200.0.0.2, 00:19:37, GigabitEthernet0/0 O 200.0.4.0/24 [110/12] via 200.0.0.2, 00:19:27, GigabitEthernet0/0 O 200.0.5.0/24 [110/13] via 200.0.0.2, 00:19:27, GigabitEthernet0/0 O 200.0.6.0/24 [110/13] via 200.0.0.2, 00:19:37, GigabitEthernet0/0 O 200.0.7.0/24 [110/13] via 200.0.0.2, 00:19:37, GigabitEthernet0/0 O 200.0.8.0/24 [110/12] via 200.0.0.2, 00:19:37, GigabitEthernet0/0 O 200.0.9.0/24 [110/11] via 200.0.0.2, 00:19:37, GigabitEthernet0/0 Router# Router# </pre>
<p>Muhlifain</p>	 <pre> Muhlifain Physical Config CLI Attributes IOS Command Line Interface 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 O 192.168.0.0/24 [110/2] via 200.0.1.1, 00:21:22, GigabitEthernet0/1 C 192.168.1.0/24 is variably subnetted, 2 subnets, 2 masks C 192.168.1.0/24 is directly connected, GigabitEthernet0/2 L 192.168.1.1/32 is directly connected, GigabitEthernet0/2 O 192.168.2.0/24 [110/15] via 200.0.1.1, 00:21:22, GigabitEthernet0/1 O 192.168.3.0/24 [110/13] via 200.0.1.1, 00:21:22, GigabitEthernet0/1 O 200.0.0.0/24 [110/11] via 200.0.1.1, 00:21:22, GigabitEthernet0/1 200.0.1.0/24 is variably subnetted, 2 subnets, 2 masks C 200.0.1.0/24 is directly connected, GigabitEthernet0/1 L 200.0.1.2/32 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 O 200.0.3.0/24 [110/12] via 200.0.1.1, 00:21:22, GigabitEthernet0/1 O 200.0.4.0/24 [110/13] via 200.0.1.1, 00:21:12, GigabitEthernet0/1 O 200.0.5.0/24 [110/14] via 200.0.1.1, 00:21:12, GigabitEthernet0/1 O 200.0.6.0/24 [110/14] via 200.0.1.1, 00:21:22, GigabitEthernet0/1 O 200.0.7.0/24 [110/14] via 200.0.1.1, 00:21:22, GigabitEthernet0/1 O 200.0.8.0/24 [110/13] via 200.0.1.1, 00:21:22, GigabitEthernet0/1 O 200.0.9.0/24 [110/12] via 200.0.1.1, 00:21:22, GigabitEthernet0/1 </pre>

Alnair	 <p>Alnair</p> <p>Physical Config CLI Attributes</p> <p>IOS Command Line Interface</p> <pre> 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 O 192.168.0.0/24 [110/2] via 200.0.0.1, 00:08:18, GigabitEthernet0/0 O 192.168.1.0/24 [110/3] via 200.0.0.1, 00:08:08, GigabitEthernet0/0 O 192.168.2.0/24 [110/4] via 200.0.9.2, 00:08:08, GigabitEthernet0/2 O 192.168.3.0/24 [110/2] via 200.0.3.2, 00:08:08, GigabitEthernet0/1 200.0.0.0/24 is variably subnetted, 2 subnets, 2 masks C 200.0.0.0/24 is directly connected, GigabitEthernet0/0 L 200.0.0.2/32 is directly connected, GigabitEthernet0/0 O 200.0.1.0/24 [110/2] via 200.0.0.1, 00:08:08, GigabitEthernet0/0 200.0.2.0/24 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 C 200.0.3.0/24 is variably subnetted, 2 subnets, 2 masks C 200.0.3.0/24 is directly connected, GigabitEthernet0/1 L 200.0.3.1/32 is directly connected, GigabitEthernet0/1 O 200.0.4.0/24 [110/2] via 200.0.3.2, 00:08:08, GigabitEthernet0/1 O 200.0.5.0/24 [110/3] via 200.0.3.2, 00:07:58, GigabitEthernet0/1 O 200.0.6.0/24 [110/3] via 200.0.9.2, 00:08:08, GigabitEthernet0/2 O 200.0.7.0/24 [110/3] via 200.0.9.2, 00:08:08, GigabitEthernet0/2 O 200.0.8.0/24 [110/2] via 200.0.9.2, 00:08:08, GigabitEthernet0/2 200.0.9.0/24 is variably subnetted, 2 subnets, 2 masks C 200.0.9.0/24 is directly connected, GigabitEthernet0/2 L 200.0.9.1/32 is directly connected, GigabitEthernet0/2 </pre>
Theta Centauri	 <p>Theta Centauri</p> <p>Physical Config CLI Attributes</p> <p>IOS Command Line Interface</p> <pre> 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 O 192.168.0.0/24 [110/3] via 200.0.9.1, 00:08:29, GigabitEthernet0/2 O 192.168.1.0/24 [110/4] via 200.0.9.1, 00:08:29, GigabitEthernet0/2 O 192.168.2.0/24 [110/3] via 200.0.8.1, 00:08:44, GigabitEthernet0/1 O 192.168.3.0/24 [110/3] via 200.0.9.1, 00:08:29, GigabitEthernet0/2 O 200.0.0.0/24 [110/2] via 200.0.9.1, 00:08:29, GigabitEthernet0/2 O 200.0.1.0/24 [110/3] via 200.0.9.1, 00:08:29, GigabitEthernet0/2 O 200.0.2.0/24 [110/65] via 200.0.9.1, 00:08:29, GigabitEthernet0/2 O 200.0.3.0/24 [110/2] via 200.0.9.1, 00:08:29, GigabitEthernet0/2 O 200.0.4.0/24 [110/3] via 200.0.9.1, 00:08:29, GigabitEthernet0/2 O 200.0.5.0/24 [110/3] via 200.0.8.1, 00:08:29, GigabitEthernet0/1 O 200.0.6.0/24 [110/2] via 200.0.8.1, 00:08:44, GigabitEthernet0/1 O 200.0.7.0/24 [110/2] via 200.0.8.1, 00:08:44, GigabitEthernet0/1 200.0.8.0/24 is variably subnetted, 2 subnets, 2 masks C 200.0.8.0/24 is directly connected, GigabitEthernet0/1 L 200.0.8.2/32 is directly connected, GigabitEthernet0/1 200.0.9.0/24 is variably subnetted, 2 subnets, 2 masks C 200.0.9.0/24 is directly connected, GigabitEthernet0/2 L 200.0.9.2/32 is directly connected, GigabitEthernet0/2 </pre>

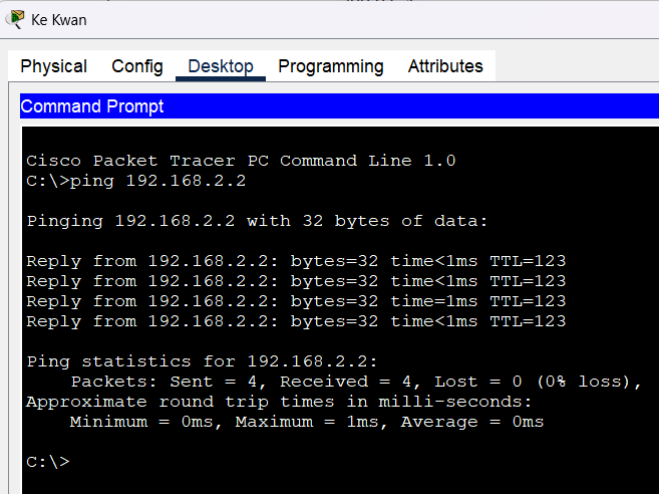
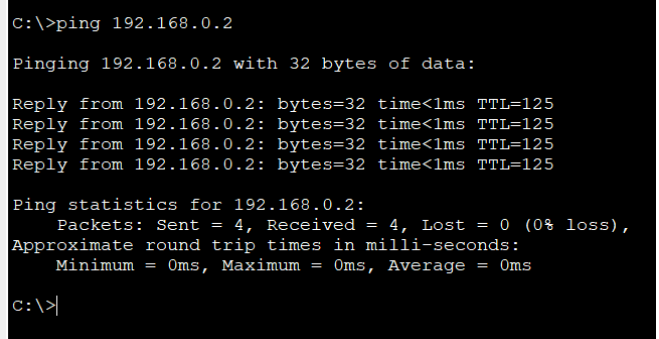
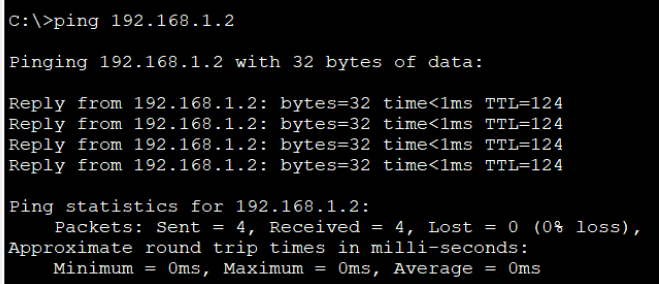
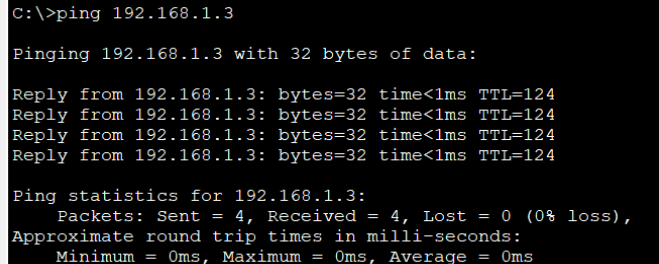
Nu Centauri	 <p>Nu Centauri</p> <p>Physical Config <u>CLI</u> Attributes</p> <p>IOS Command Line Interface</p> <pre> i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area * - candidate default, U - per-user static route, o - ODR P - periodic downloaded static route Gateway of last resort is not set O 192.168.0.0/24 [110/4] via 200.0.8.2, 00:09:11, GigabitEthernet0/1 O 192.168.1.0/24 [110/5] via 200.0.8.2, 00:09:11, GigabitEthernet0/1 O 192.168.2.0/24 [110/2] via 200.0.7.1, 00:09:21, GigabitEthernet0/0 O 192.168.3.0/24 [110/4] via 200.0.8.2, 00:09:01, GigabitEthernet0/1 [110/4] via 200.0.6.1, 00:09:01, GigabitEthernet0/2 O 200.0.0.0/24 [110/3] via 200.0.8.2, 00:09:11, GigabitEthernet0/1 O 200.0.1.0/24 [110/4] via 200.0.8.2, 00:09:11, GigabitEthernet0/1 O 200.0.2.0/24 [110/66] via 200.0.8.2, 00:09:11, GigabitEthernet0/1 O 200.0.3.0/24 [110/3] via 200.0.8.2, 00:09:01, GigabitEthernet0/1 O 200.0.4.0/24 [110/3] via 200.0.6.1, 00:09:01, GigabitEthernet0/2 O 200.0.5.0/24 [110/2] via 200.0.6.1, 00:09:11, GigabitEthernet0/2 200.0.6.0/24 is variably subnetted, 2 subnets, 2 masks C 200.0.6.0/24 is directly connected, GigabitEthernet0/2 L 200.0.6.2/32 is directly connected, GigabitEthernet0/2 200.0.7.0/24 is variably subnetted, 2 subnets, 2 masks C 200.0.7.0/24 is directly connected, GigabitEthernet0/0 L 200.0.7.2/32 is directly connected, GigabitEthernet0/0 200.0.8.0/24 is variably subnetted, 2 subnets, 2 masks C 200.0.8.0/24 is directly connected, GigabitEthernet0/1 L 200.0.8.1/32 is directly connected, GigabitEthernet0/1 O 200.0.9.0/24 [110/2] via 200.0.8.2, 00:09:21, GigabitEthernet0/1 </pre>
Lambda Centauri	 <p>Lambda Centauri</p> <p>Physical Config <u>CLI</u> Attributes</p> <p>IOS Command Line Interface</p> <pre> 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 O 192.168.0.0/24 [110/5] via 200.0.7.2, 00:09:40, GigabitEthernet0/0 O 192.168.1.0/24 [110/6] via 200.0.7.2, 00:09:40, GigabitEthernet0/0 O 192.168.2.0/24 is variably subnetted, 2 subnets, 2 masks C 192.168.2.0/24 is directly connected, GigabitEthernet0/2 L 192.168.2.1/32 is directly connected, GigabitEthernet0/2 O 192.168.3.0/24 [110/5] via 200.0.7.2, 00:09:40, GigabitEthernet0/0 O 200.0.0.0/24 [110/4] via 200.0.7.2, 00:09:40, GigabitEthernet0/0 O 200.0.1.0/24 [110/5] via 200.0.7.2, 00:09:40, GigabitEthernet0/0 O 200.0.2.0/24 [110/67] via 200.0.7.2, 00:09:40, GigabitEthernet0/0 O 200.0.3.0/24 [110/4] via 200.0.7.2, 00:09:40, GigabitEthernet0/0 O 200.0.4.0/24 [110/4] via 200.0.7.2, 00:09:40, GigabitEthernet0/0 O 200.0.5.0/24 [110/3] via 200.0.7.2, 00:09:40, GigabitEthernet0/0 O 200.0.6.0/24 [110/2] via 200.0.7.2, 00:09:50, GigabitEthernet0/0 200.0.7.0/24 is variably subnetted, 2 subnets, 2 masks C 200.0.7.0/24 is directly connected, GigabitEthernet0/0 L 200.0.7.1/32 is directly connected, GigabitEthernet0/0 O 200.0.8.0/24 [110/2] via 200.0.7.2, 00:09:40, GigabitEthernet0/0 O 200.0.9.0/24 [110/3] via 200.0.7.2, 00:09:40, GigabitEthernet0/0 </pre> <p>Router#</p>
Menkent	 <p>Menkent</p> <p>Physical Config <u>CLI</u> Attributes</p> <p>IOS Command Line Interface</p> <pre> 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 O 192.168.0.0/24 [110/5] via 200.0.6.2, 00:10:19, GigabitEthernet0/2 [110/5] via 200.0.5.1, 00:10:19, GigabitEthernet0/1 O 192.168.1.0/24 [110/6] via 200.0.6.2, 00:10:19, GigabitEthernet0/2 [110/6] via 200.0.5.1, 00:10:19, GigabitEthernet0/1 O 192.168.2.0/24 [110/3] via 200.0.6.2, 00:10:19, GigabitEthernet0/2 O 192.168.3.0/24 [110/3] via 200.0.5.1, 00:10:29, GigabitEthernet0/1 O 200.0.0.0/24 [110/4] via 200.0.6.2, 00:10:19, GigabitEthernet0/2 [110/4] via 200.0.5.1, 00:10:19, GigabitEthernet0/1 O 200.0.1.0/24 [110/5] via 200.0.6.2, 00:10:19, GigabitEthernet0/2 [110/5] via 200.0.5.1, 00:10:19, GigabitEthernet0/1 O 200.0.2.0/24 [110/67] via 200.0.6.2, 00:10:19, GigabitEthernet0/2 [110/67] via 200.0.5.1, 00:10:19, GigabitEthernet0/1 O 200.0.3.0/24 [110/3] via 200.0.5.1, 00:10:19, GigabitEthernet0/1 O 200.0.4.0/24 [110/2] via 200.0.5.1, 00:10:29, GigabitEthernet0/1 200.0.5.0/24 is variably subnetted, 2 subnets, 2 masks C 200.0.5.0/24 is directly connected, GigabitEthernet0/1 L 200.0.5.2/32 is directly connected, GigabitEthernet0/1 200.0.6.0/24 is variably subnetted, 2 subnets, 2 masks C 200.0.6.0/24 is directly connected, GigabitEthernet0/2 L 200.0.6.1/32 is directly connected, GigabitEthernet0/2 O 200.0.7.0/24 [110/2] via 200.0.6.2, 00:10:19, GigabitEthernet0/2 O 200.0.8.0/24 [110/2] via 200.0.6.2, 00:10:19, GigabitEthernet0/2 O 200.0.9.0/24 [110/3] via 200.0.6.2, 00:10:19, GigabitEthernet0/2 </pre> <p>Router#</p>

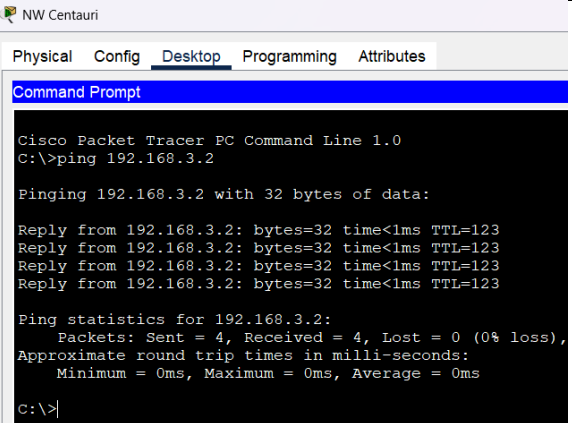
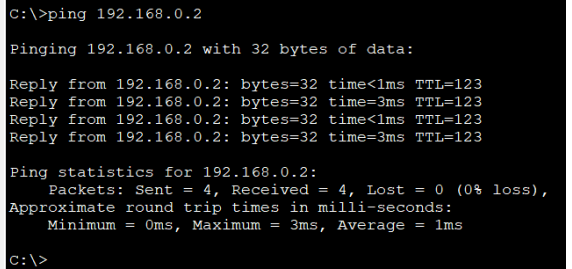
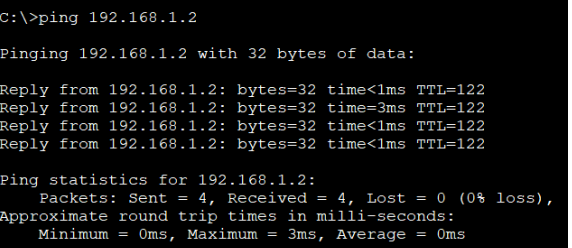
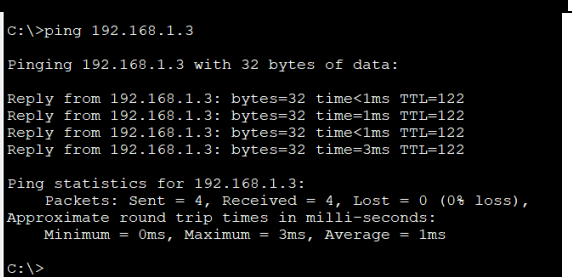
Psi Centauri	 <pre> IOS Command Line Interface * - candidate default, U - per-user static route, o - ODR P - periodic downloaded static route Gateway of last resort is not set O 192.168.0.0/24 [110/4] via 200.0.4.1, 00:10:51, GigabitEthernet0/0 O 192.168.1.0/24 [110/5] via 200.0.4.1, 00:10:51, GigabitEthernet0/0 O 192.168.2.0/24 [110/4] via 200.0.5.2, 00:10:51, GigabitEthernet0/1 O 192.168.3.0/24 [110/2] via 200.0.4.1, 00:10:51, GigabitEthernet0/0 O 200.0.0.0/24 [110/3] via 200.0.4.1, 00:10:51, GigabitEthernet0/0 O 200.0.1.0/24 [110/4] via 200.0.4.1, 00:10:51, GigabitEthernet0/0 O 200.0.2.0/24 [110/66] via 200.0.4.1, 00:10:51, GigabitEthernet0/0 O 200.0.3.0/24 [110/2] via 200.0.4.1, 00:10:51, GigabitEthernet0/0 200.0.4.0/24 is variably subnetted, 2 subnets, 2 masks C 200.0.4.0/24 is directly connected, GigabitEthernet0/0 L 200.0.4.2/32 is directly connected, GigabitEthernet0/0 200.0.5.0/24 is variably subnetted, 2 subnets, 2 masks C 200.0.5.0/24 is directly connected, GigabitEthernet0/1 L 200.0.5.1/32 is directly connected, GigabitEthernet0/1 O 200.0.6.0/24 [110/2] via 200.0.5.2, 00:10:51, GigabitEthernet0/1 O 200.0.7.0/24 [110/3] via 200.0.5.2, 00:10:51, GigabitEthernet0/1 O 200.0.8.0/24 [110/3] via 200.0.5.2, 00:10:51, GigabitEthernet0/1 O 200.0.9.0/24 [110/3] via 200.0.4.1, 00:10:51, GigabitEthernet0/0 </pre>
Phi Centauri	 <pre> IOS Command Line Interface * - candidate default, U - per-user static route, o - ODR P - periodic downloaded static route Gateway of last resort is not set O 192.168.0.0/24 [110/3] via 200.0.3.1, 00:11:21, GigabitEthernet0/1 O 192.168.1.0/24 [110/4] via 200.0.3.1, 00:11:21, GigabitEthernet0/1 O 192.168.2.0/24 [110/5] via 200.0.3.1, 00:11:21, GigabitEthernet0/1 [110/5] via 200.0.4.2, 00:11:21, GigabitEthernet0/0 192.168.3.0/24 is variably subnetted, 2 subnets, 2 masks C 192.168.3.0/24 is directly connected, GigabitEthernet0/2 L 192.168.3.1/32 is directly connected, GigabitEthernet0/2 O 200.0.0.0/24 [110/2] via 200.0.3.1, 00:11:21, GigabitEthernet0/1 O 200.0.1.0/24 [110/3] via 200.0.3.1, 00:11:21, GigabitEthernet0/1 O 200.0.2.0/24 [110/65] via 200.0.3.1, 00:11:21, GigabitEthernet0/1 200.0.3.0/24 is variably subnetted, 2 subnets, 2 masks C 200.0.3.0/24 is directly connected, GigabitEthernet0/1 L 200.0.3.2/32 is directly connected, GigabitEthernet0/1 200.0.4.0/24 is variably subnetted, 2 subnets, 2 masks C 200.0.4.0/24 is directly connected, GigabitEthernet0/0 L 200.0.4.1/32 is directly connected, GigabitEthernet0/0 O 200.0.5.0/24 [110/2] via 200.0.4.2, 00:11:21, GigabitEthernet0/0 O 200.0.6.0/24 [110/3] via 200.0.4.2, 00:11:21, GigabitEthernet0/0 O 200.0.7.0/24 [110/4] via 200.0.3.1, 00:11:21, GigabitEthernet0/1 [110/4] via 200.0.4.2, 00:11:21, GigabitEthernet0/0 O 200.0.8.0/24 [110/3] via 200.0.3.1, 00:11:21, GigabitEthernet0/1 O 200.0.9.0/24 [110/2] via 200.0.3.1, 00:11:21, GigabitEthernet0/1 </pre>

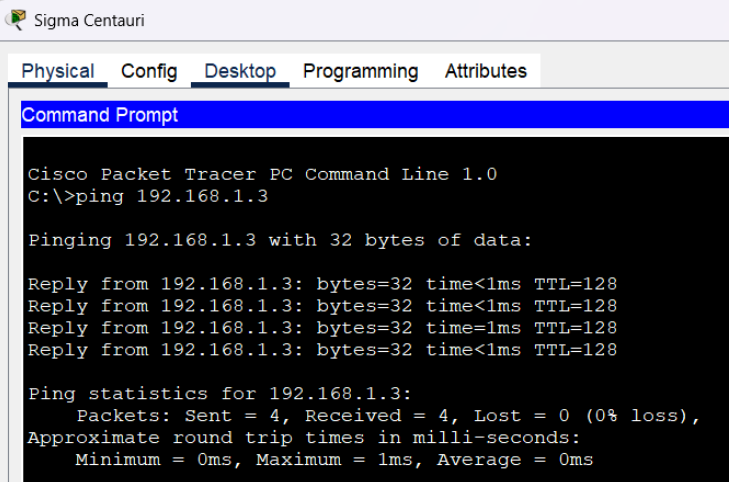
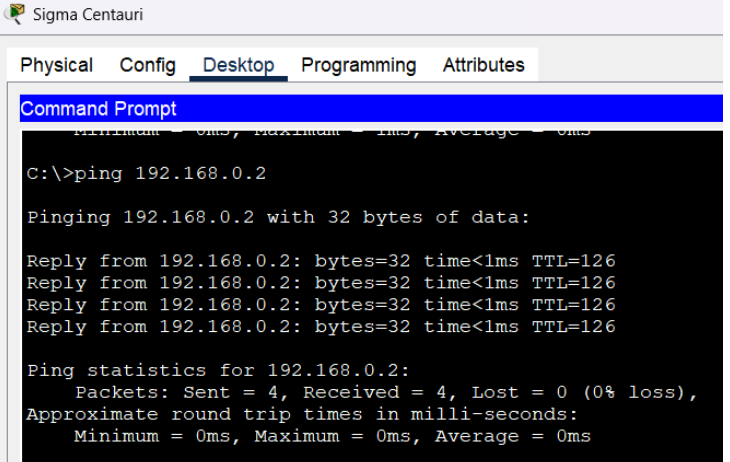
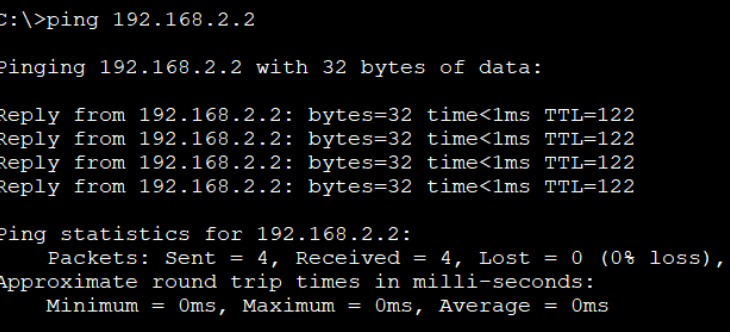
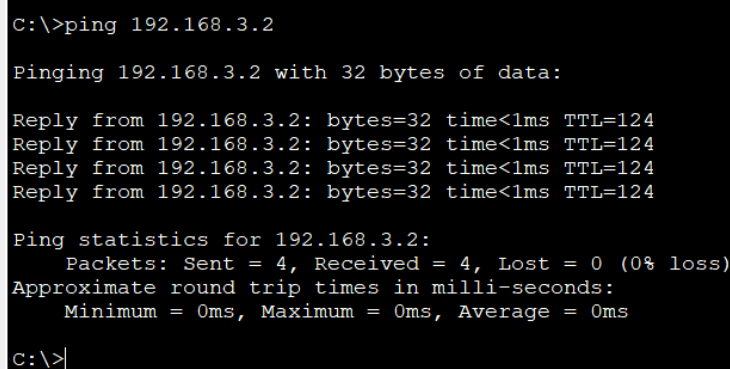
- d. Show the ping / “success” connection between PC’s
Alpha Centauri

Alpha Centauri – Sigma Centauri	 <pre> 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<1ms TTL=126 Reply from 192.168.1.2: bytes=32 time<1ms TTL=126 Reply from 192.168.1.2: bytes=32 time<1ms TTL=126 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 = 0ms, Maximum = 0ms, Average = 0ms C:\> </pre>
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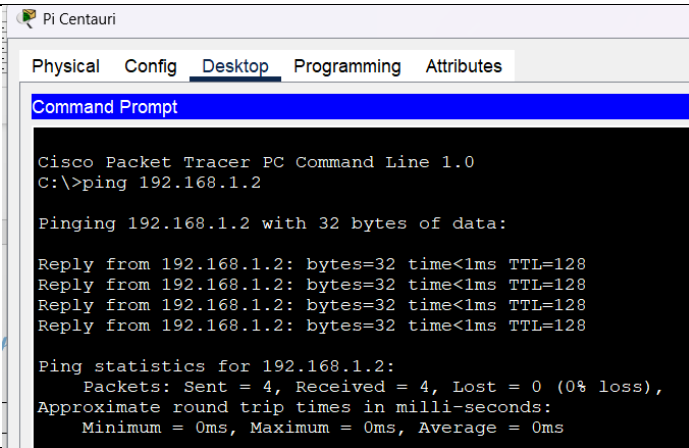
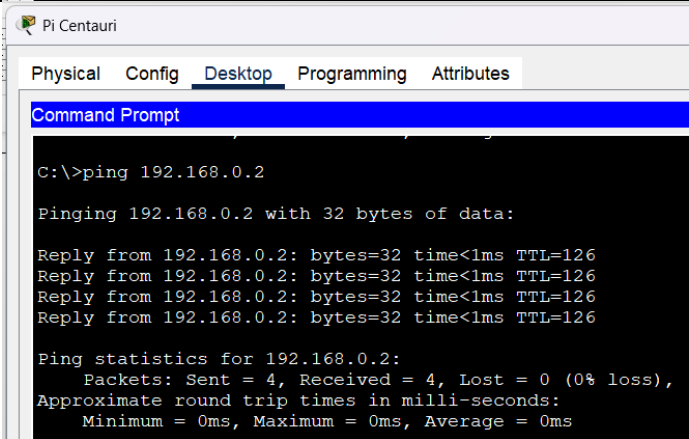
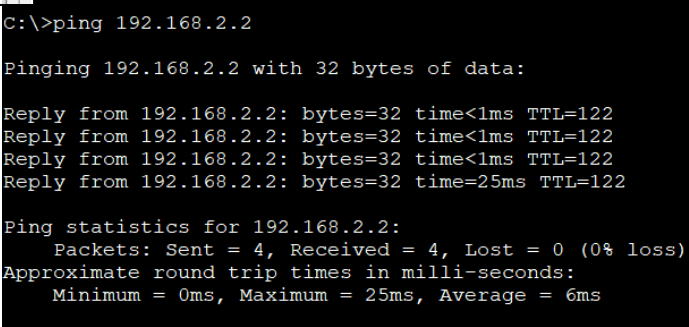
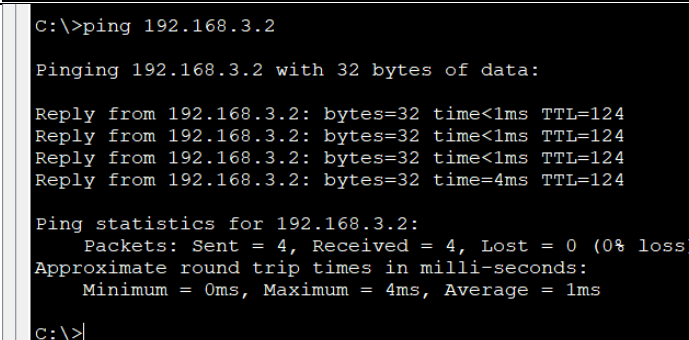
Alpha Centauri – Pi Centauri	<pre> C:\>ping 192.168.1.3 Pinging 192.168.1.3 with 32 bytes of data: Reply from 192.168.1.3: bytes=32 time<1ms TTL=126 Reply from 192.168.1.3: bytes=32 time<1ms TTL=126 Reply from 192.168.1.3: bytes=32 time<1ms TTL=126 Reply from 192.168.1.3: bytes=32 time<1ms TTL=126 Ping statistics for 192.168.1.3: Packets: Sent = 4, Received = 4, Lost = 0 (0% loss), Approximate round trip times in milli-seconds: Minimum = 0ms, Maximum = 0ms, Average = 0ms C:\> </pre>
Alpha Centauri – NW Centauri	<pre> C:\>ping 192.168.2.2 Pinging 192.168.2.2 with 32 bytes of data: Reply from 192.168.2.2: bytes=32 time<1ms TTL=123 Reply from 192.168.2.2: bytes=32 time<1ms TTL=123 Reply from 192.168.2.2: bytes=32 time<1ms TTL=123 Reply from 192.168.2.2: bytes=32 time<1ms TTL=123 Ping statistics for 192.168.2.2: Packets: Sent = 4, Received = 4, Lost = 0 (0% loss), Approximate round trip times in milli-seconds: Minimum = 0ms, Maximum = 0ms, Average = 0ms C:\> </pre>
Alpha Centauri – Ke Kwan	<pre> 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<1ms TTL=125 Reply from 192.168.3.2: bytes=32 time<1ms TTL=125 Reply from 192.168.3.2: bytes=32 time<1ms TTL=125 Reply from 192.168.3.2: bytes=32 time<1ms TTL=125 Ping statistics for 192.168.3.2: Packets: Sent = 4, Received = 4, Lost = 0 (0% loss), Approximate round trip times in milli-seconds: Minimum = 0ms, Maximum = 0ms, Average = 0ms C:\> </pre>

Ke Kwan – Nu Centauri	 <pre> Cisco Packet Tracer PC Command Line 1.0 C:\>ping 192.168.2.2 Pinging 192.168.2.2 with 32 bytes of data: Reply from 192.168.2.2: bytes=32 time<1ms TTL=123 Reply from 192.168.2.2: bytes=32 time<1ms TTL=123 Reply from 192.168.2.2: bytes=32 time<1ms TTL=123 Reply from 192.168.2.2: bytes=32 time<1ms TTL=123 Ping statistics for 192.168.2.2: Packets: Sent = 4, Received = 4, Lost = 0 (0% loss), Approximate round trip times in milli-seconds: Minimum = 0ms, Maximum = 1ms, Average = 0ms C:\> </pre>	
Ke Kwan – Alpha Centauri	 <pre> 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<1ms TTL=125 Reply from 192.168.0.2: bytes=32 time<1ms TTL=125 Reply from 192.168.0.2: bytes=32 time<1ms TTL=125 Reply from 192.168.0.2: bytes=32 time<1ms TTL=125 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 = 0ms, Average = 0ms C:\> </pre>	
Ke Kwan – Sigma Centauri	 <pre> 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<1ms TTL=124 Reply from 192.168.1.2: bytes=32 time<1ms TTL=124 Reply from 192.168.1.2: bytes=32 time<1ms TTL=124 Reply from 192.168.1.2: bytes=32 time<1ms 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 = 0ms, Maximum = 0ms, Average = 0ms </pre>	
Ke Kwan – Pi Centauri	 <pre> C:\>ping 192.168.1.3 Pinging 192.168.1.3 with 32 bytes of data: Reply from 192.168.1.3: bytes=32 time<1ms TTL=124 Reply from 192.168.1.3: bytes=32 time<1ms TTL=124 Reply from 192.168.1.3: bytes=32 time<1ms TTL=124 Reply from 192.168.1.3: bytes=32 time<1ms TTL=124 Ping statistics for 192.168.1.3: Packets: Sent = 4, Received = 4, Lost = 0 (0% loss), Approximate round trip times in milli-seconds: Minimum = 0ms, Maximum = 0ms, Average = 0ms </pre>	

NW Centauri – Ke Kwan	 <pre> 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<1ms TTL=123 Reply from 192.168.3.2: bytes=32 time<1ms TTL=123 Reply from 192.168.3.2: bytes=32 time<1ms TTL=123 Reply from 192.168.3.2: bytes=32 time<1ms TTL=123 Ping statistics for 192.168.3.2: Packets: Sent = 4, Received = 4, Lost = 0 (0% loss), Approximate round trip times in milli-seconds: Minimum = 0ms, Maximum = 0ms, Average = 0ms C:\> </pre>	
NW - Alpha	 <pre> 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<1ms TTL=123 Reply from 192.168.0.2: bytes=32 time=3ms TTL=123 Reply from 192.168.0.2: bytes=32 time<1ms TTL=123 Reply from 192.168.0.2: bytes=32 time=3ms TTL=123 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 = 3ms, Average = 1ms C:\> </pre>	
NW – Sigma	 <pre> 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<1ms TTL=122 Reply from 192.168.1.2: bytes=32 time=3ms TTL=122 Reply from 192.168.1.2: bytes=32 time<1ms TTL=122 Reply from 192.168.1.2: bytes=32 time<1ms TTL=122 Ping statistics for 192.168.1.2: Packets: Sent = 4, Received = 4, Lost = 0 (0% loss), Approximate round trip times in milli-seconds: Minimum = 0ms, Maximum = 3ms, Average = 0ms C:\> </pre>	
NW - Pi	 <pre> C:\>ping 192.168.1.3 Pinging 192.168.1.3 with 32 bytes of data: Reply from 192.168.1.3: bytes=32 time<1ms TTL=122 Reply from 192.168.1.3: bytes=32 time=1ms TTL=122 Reply from 192.168.1.3: bytes=32 time<1ms TTL=122 Reply from 192.168.1.3: bytes=32 time=3ms TTL=122 Ping statistics for 192.168.1.3: Packets: Sent = 4, Received = 4, Lost = 0 (0% loss), Approximate round trip times in milli-seconds: Minimum = 0ms, Maximum = 3ms, Average = 1ms C:\> </pre>	

Sigma – Pi	 <p>The screenshot shows the Sigma Centauri Desktop environment with the 'Desktop' tab selected. A Command Prompt window is open, displaying the output of a ping command to 192.168.1.3. The output shows four successful replies with 32 bytes of data, a time of less than 1ms, and a TTL of 128. The ping statistics indicate that 4 packets were sent and received, with 0% loss, and the round trip times are all 0ms.</p>
Sigma – Alpha	 <p>The screenshot shows the Sigma Centauri Desktop environment with the 'Desktop' tab selected. A Command Prompt window is open, displaying the output of a ping command to 192.168.0.2. The output shows four successful replies with 32 bytes of data, a time of less than 1ms, and a TTL of 126. The ping statistics indicate that 4 packets were sent and received, with 0% loss, and the round trip times are all 0ms.</p>
Sigma – NW	 <p>The screenshot shows the Sigma Centauri Desktop environment with the 'Desktop' tab selected. A Command Prompt window is open, displaying the output of a ping command to 192.168.2.2. The output shows four successful replies with 32 bytes of data, a time of less than 1ms, and a TTL of 122. The ping statistics indicate that 4 packets were sent and received, with 0% loss, and the round trip times are all 0ms.</p>
Sigma – Ke Kwan	 <p>The screenshot shows the Sigma Centauri Desktop environment with the 'Desktop' tab selected. A Command Prompt window is open, displaying the output of a ping command to 192.168.3.2. The output shows four successful replies with 32 bytes of data, a time of less than 1ms, and a TTL of 124. The ping statistics indicate that 4 packets were sent and received, with 0% loss, and the round trip times are all 0ms.</p>

Pi Centauri

Pi – Sigma	 <pre> Cisco Packet Tracer PC Command Line 1.0 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<1ms TTL=128 Reply from 192.168.1.2: bytes=32 time<1ms TTL=128 Reply from 192.168.1.2: bytes=32 time<1ms TTL=128 Reply from 192.168.1.2: bytes=32 time<1ms TTL=128 Ping statistics for 192.168.1.2: Packets: Sent = 4, Received = 4, Lost = 0 (0% loss), Approximate round trip times in milli-seconds: Minimum = 0ms, Maximum = 0ms, Average = 0ms </pre>	
Pi - Alpha	 <pre> 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<1ms TTL=126 Reply from 192.168.0.2: bytes=32 time<1ms TTL=126 Reply from 192.168.0.2: bytes=32 time<1ms TTL=126 Reply from 192.168.0.2: bytes=32 time<1ms TTL=126 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 = 0ms, Average = 0ms </pre>	
Pi – NW	 <pre> C:\>ping 192.168.2.2 Pinging 192.168.2.2 with 32 bytes of data: Reply from 192.168.2.2: bytes=32 time<1ms TTL=122 Reply from 192.168.2.2: bytes=32 time<1ms TTL=122 Reply from 192.168.2.2: bytes=32 time<1ms TTL=122 Reply from 192.168.2.2: bytes=32 time=25ms TTL=122 Ping statistics for 192.168.2.2: Packets: Sent = 4, Received = 4, Lost = 0 (0% loss), Approximate round trip times in milli-seconds: Minimum = 0ms, Maximum = 25ms, Average = 6ms </pre>	
Pi – Ke Kwan	 <pre> 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<1ms TTL=124 Reply from 192.168.3.2: bytes=32 time<1ms TTL=124 Reply from 192.168.3.2: bytes=32 time<1ms TTL=124 Reply from 192.168.3.2: bytes=32 time=4ms TTL=124 Ping statistics for 192.168.3.2: Packets: Sent = 4, Received = 4, Lost = 0 (0% loss), Approximate round trip times in milli-seconds: Minimum = 0ms, Maximum = 4ms, Average = 1ms C:\> </pre>	