Lab 3 - Routing Protocol

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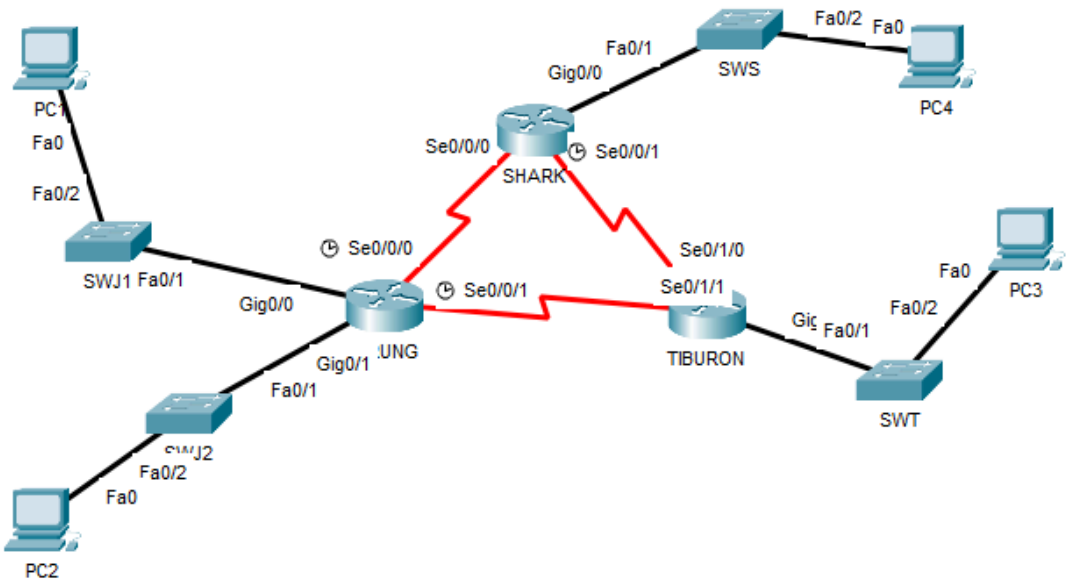
SECTION: 06

INTRODUCTION

This lab looks into the network layer, focusing on subnetting and routing.

TOPOLOGY



LAB INFORMATION

Here is some basic information for the lab. The network address given is 172.18.110.0/23.

Table 1

Device	Subnetwork	Usable Hosts
JERUNG	LAN1	20
	LAN2	30
SHARK	LAN	60
TIBURON	LAN	50
Connections	JERUNG-SHARK	2
	JERUNG-TIBURON	2
	SHARK-TIBURON	2

Table 2

#	Device Name	Interface	IP Address	Subnet Mask	Gateway
1	JERUNG	Se0/0/0	172.18.110.193	255.255.255.252	
2		Se0/0/1	172.18.110.197	255.255.255.252	
3		G0/0	172.18.110.1	255.255.255.224	
4		G0/1	172.18.110.33	255.255.255.224	
5	TIBURON	Se0/1/1	172.18.110.201	255.255.255.252	
6		Se0/1/0	172.18.110.198	255.255.255.252	
7		G0/0	172.18.110.65	255.255.255.192	
8	SHARK	Se0/0/0	172.18.110.194	255.255.255.252	
9		Se0/0/1	172.18.110.201	255.255.255.252	
10		G0/0	172.18.110.129	255.255.255.192	
11	PC1	-	172.18.110.30	255.255.255.224	172.18.110.1
12	PC2	-	172.18.110.62	255.255.255.224	172.18.110.33
13	PC3	-	172.18.110.126	255.255.255.192	172.18.110.65
14	PC4	-	172.18.110.190	255.255.255.192	172.18.110.129

LAB TASKS

Task 1 – IP Addressing

1. Given the network address of the organisation and the basic information provided in both Tables 1 and 2. Show your workings here and complete Table 2 with the correct information. PCs will be given the last usable address of the subnetwork.

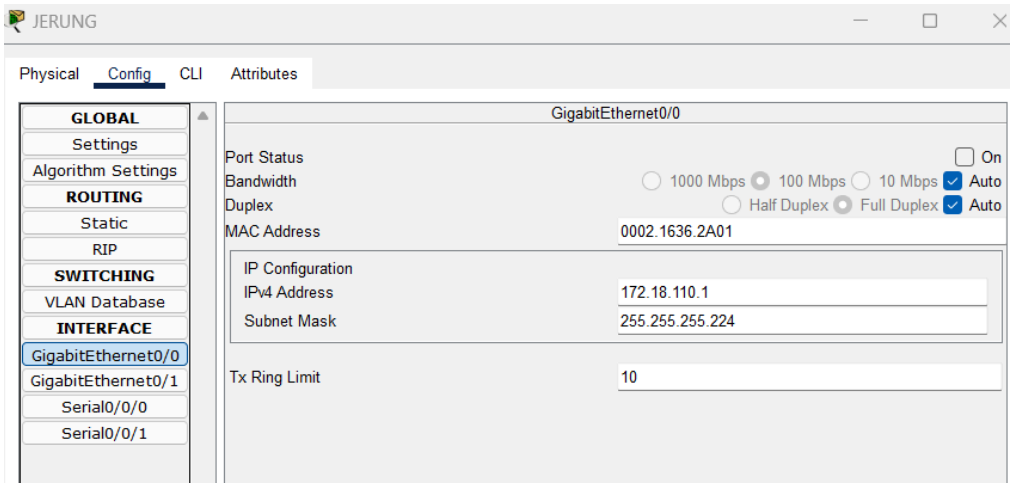
router	network ip	usable ip	broadcast ip	subnet mask	devices
JERUNG	172.18.110.0/27	172.18.110.0- 172.18.110.30	172.18.110.31	255.255.255.224	pc1 172.18.110.30
	172.18.110.32/27	172.18.110.33- 172.18.110.62	172.18.110.63	255.255.255.224	pc2 172.18.110.62
TIBURON	172.18.110.64/26	172.18.110.65- 172.18.110.126	172.18.110.127	255.255.255.192	pc3 172.18.110.126
SHARK	172.18.110.128/26	172.18.110.129 - 172.18.110.190	172.18.110.191	255.255.255.192	172.18.110.190

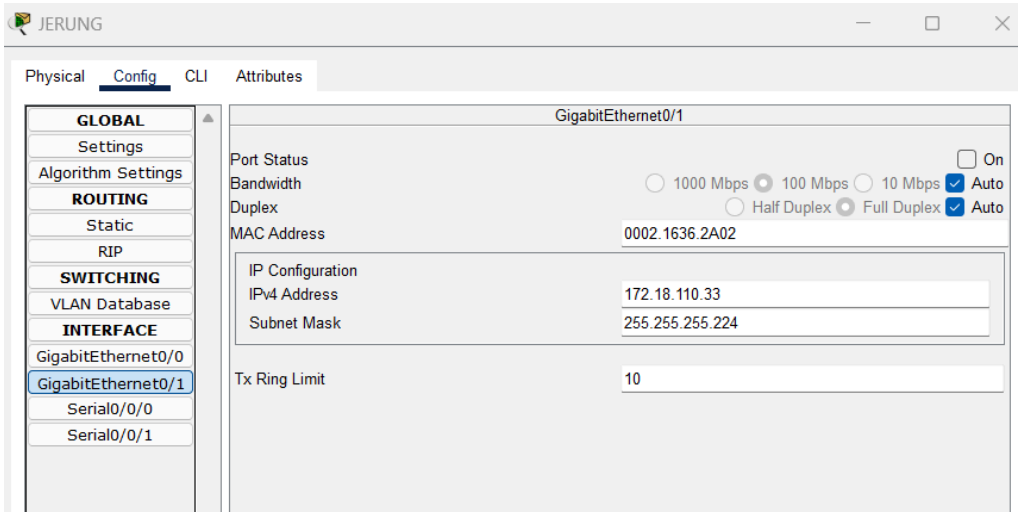
2. Using the IP addresses calculated, configure the devices with the appropriate information.

Using the IP addresses calculated, configure the devices with the appropriate information.

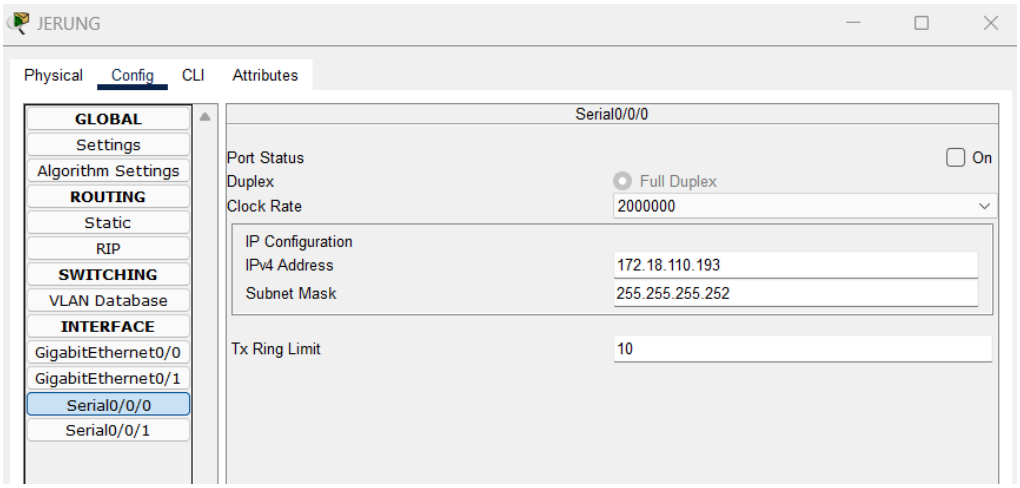
JERUNG:

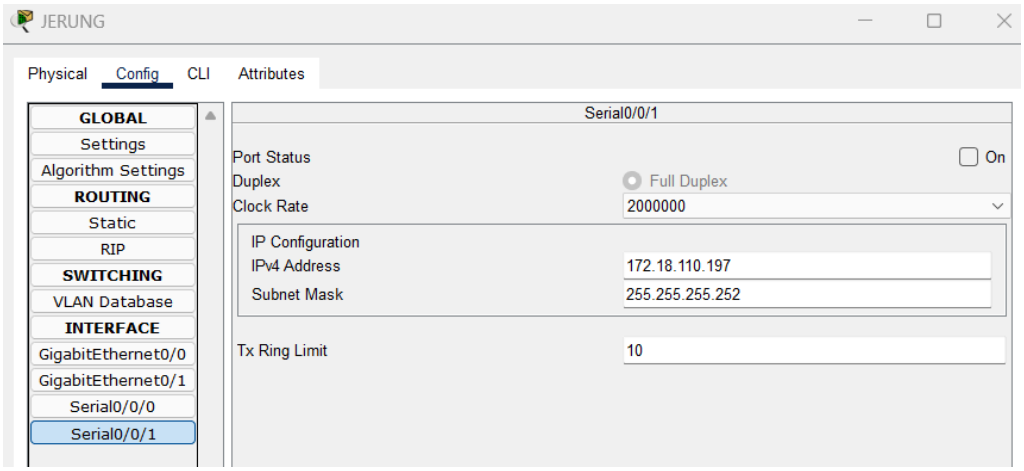
ethernet





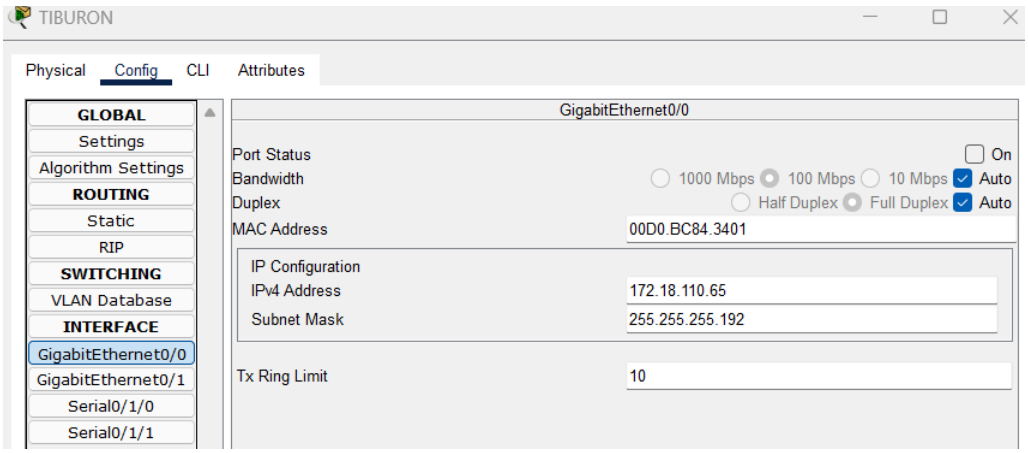
Serial



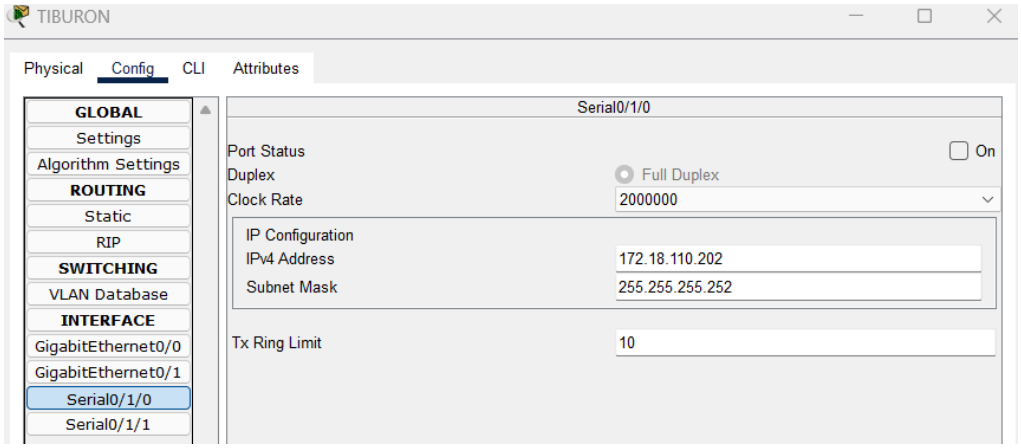


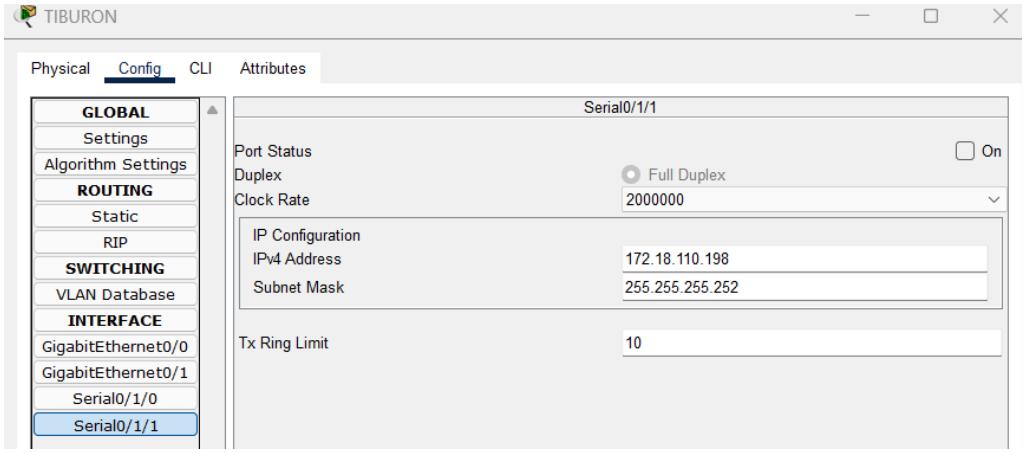
TIBURON:

ethernet



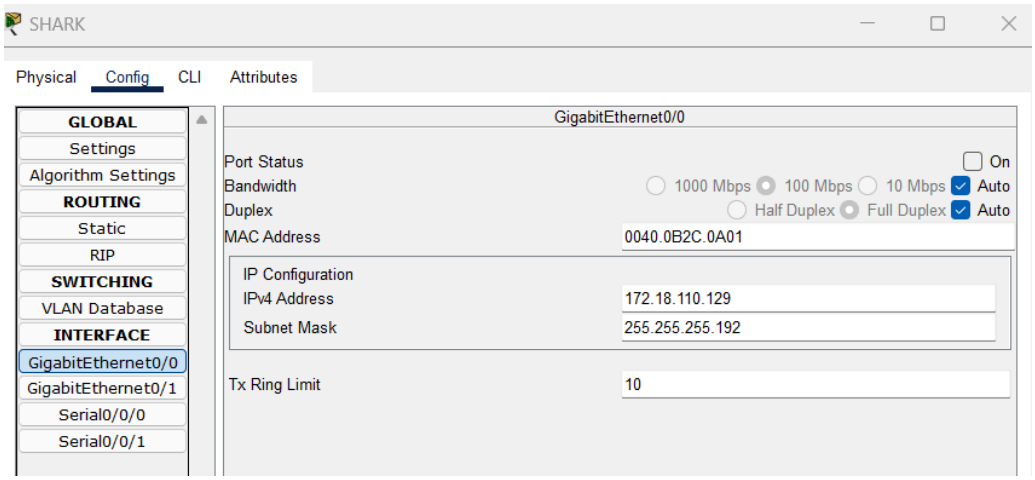
serial



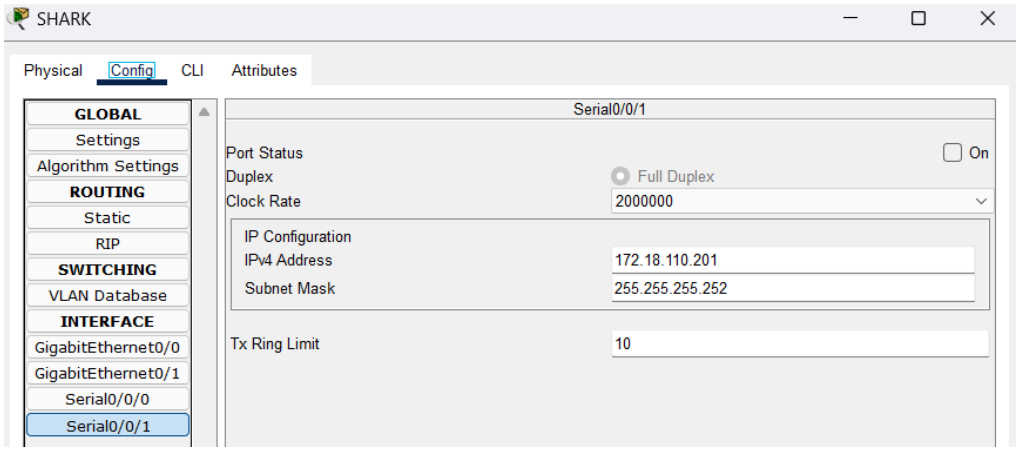


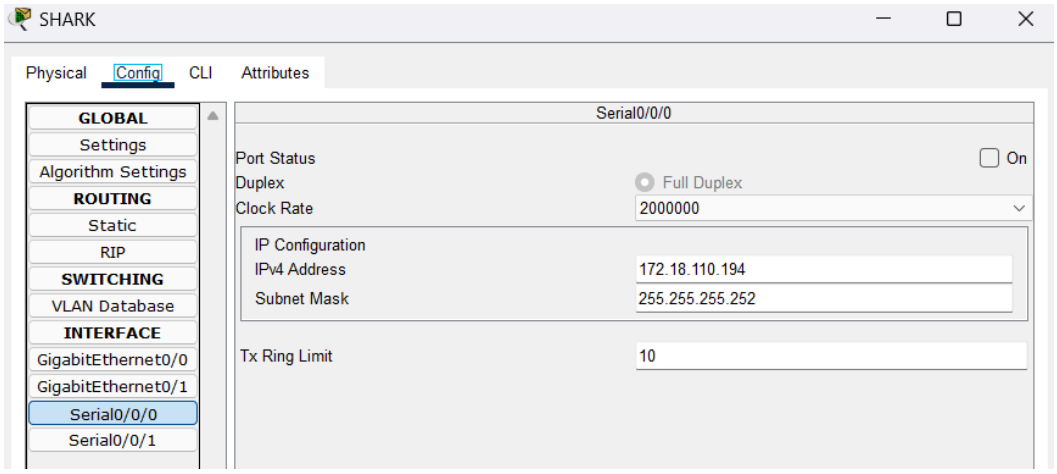
SHARK:

ethernet

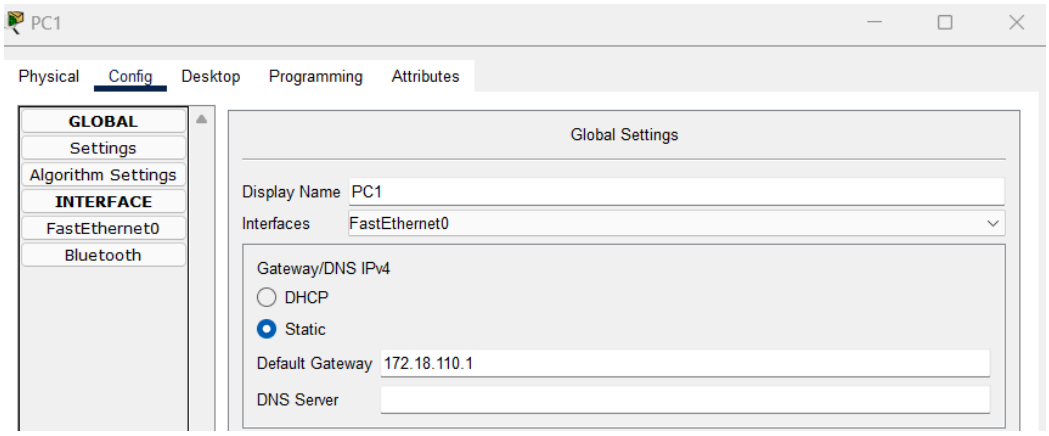

SHARK
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
GigabitEthernet0/0
GigabitEthernet0/1
Serial0/0/0
Serial0/0/1
GigabitEthernet0/0
Port Status
On
Bandwidth
1000 Mbps
100 Mbps
10 Mbps
Auto
Duplex
Half Duplex
Full Duplex
Auto
MAC Address
0040.0B2C.0A01
IP Configuration
IPv4 Address
172.18.110.129
Subnet Mask
255.255.255.192
Tx Ring Limit
10

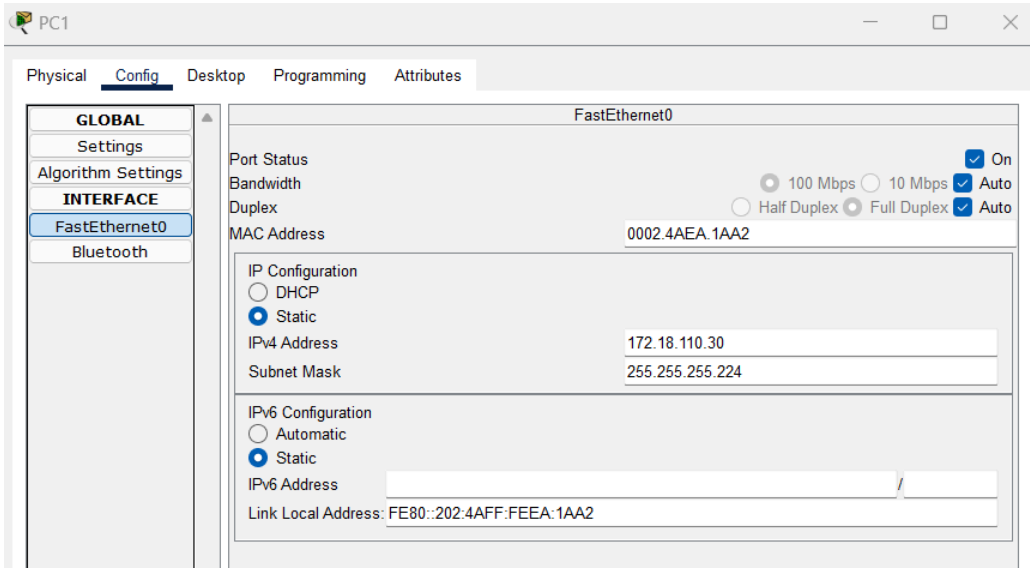
serial


SHARK
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
GigabitEthernet0/0
GigabitEthernet0/1
Serial0/0/0
Serial0/0/1
Serial0/0/1
Port Status
On
Duplex
Full Duplex
Clock Rate
2000000
IP Configuration
IPv4 Address
172.18.110.201
Subnet Mask
255.255.255.252
Tx Ring Limit
10

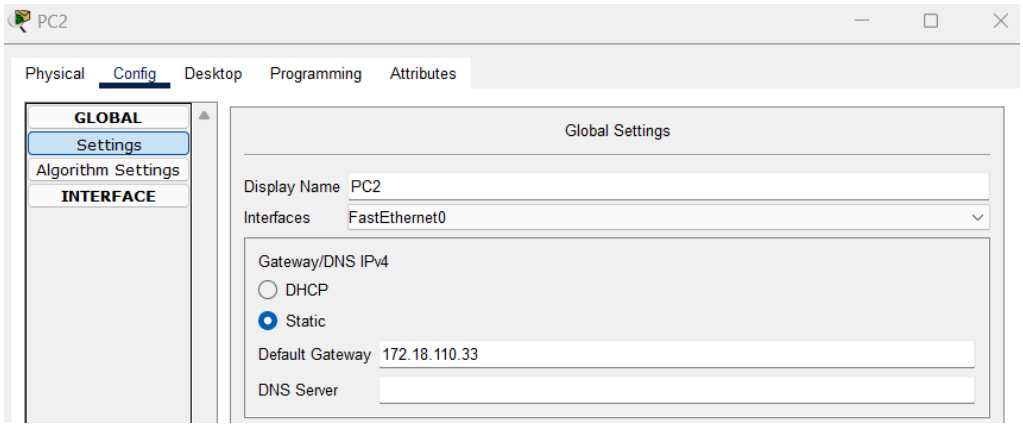

SHARK
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
GigabitEthernet0/0
GigabitEthernet0/1
Serial0/0/0
Serial0/0/1
Serial0/0/0
Port Status
On
Duplex
Full Duplex
Clock Rate
2000000
IP Configuration
IPv4 Address
172.18.110.194
Subnet Mask
255.255.255.252
Tx Ring Limit
10

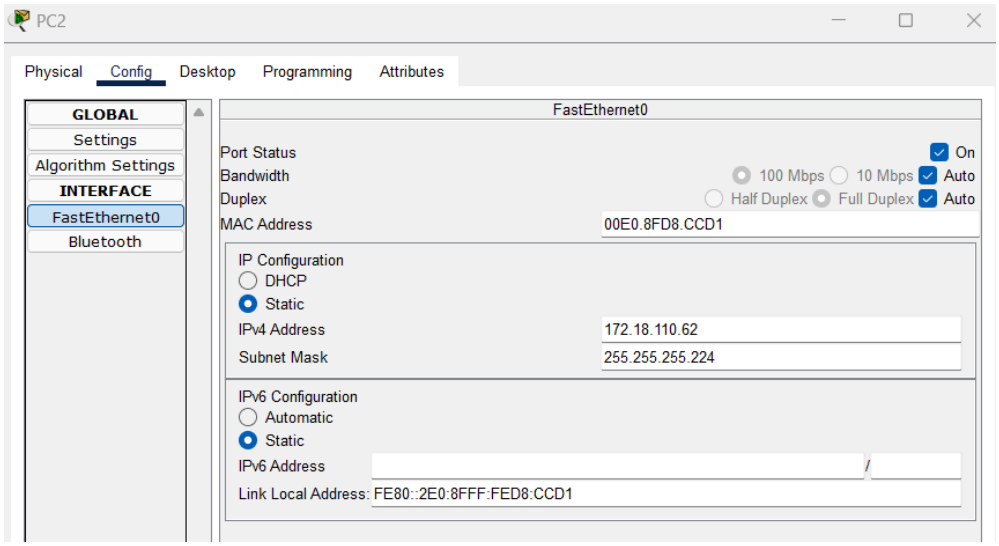
pc1


PC1
Physical
Config
Desktop
Programming
Attributes
GLOBAL
Settings
Algorithm Settings
INTERFACE
FastEthernet0
Bluetooth
Global Settings
Display Name
PC1
Interfaces
FastEthernet0
Gateway/DNS IPv4
DHCP
Static
Default Gateway
172.18.110.1
DNS Server

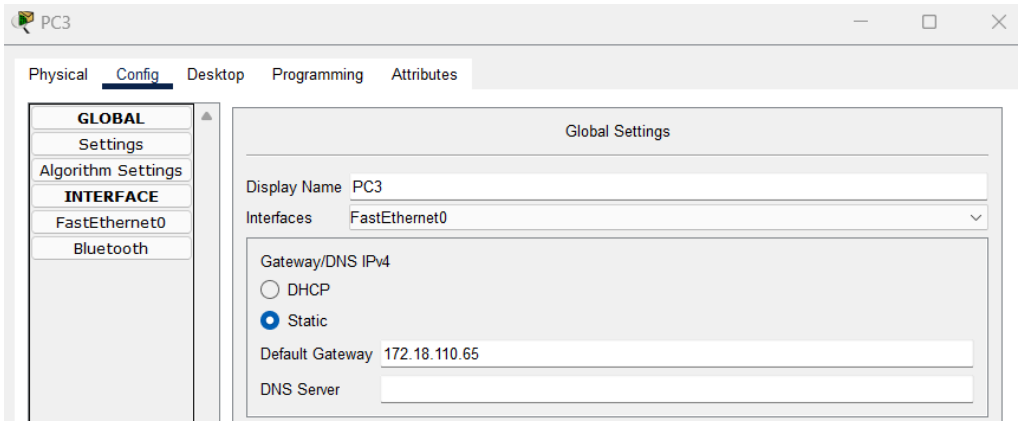

PC1
Physical
Config
Desktop
Programming
Attributes
GLOBAL
Settings
Algorithm Settings
INTERFACE
FastEthernet0
Bluetooth
FastEthernet0
Port Status
On
Bandwidth
100 Mbps
10 Mbps
Auto
Duplex
Half Duplex
Full Duplex
Auto
MAC Address
0002.4AEA.1AA2
IP Configuration
DHCP
Static
IPv4 Address
172.18.110.30
Subnet Mask
255.255.255.224
IPv6 Configuration
Automatic
Static
IPv6 Address
Link Local Address:
FE80::202:4AFF:FEEA:1AA2

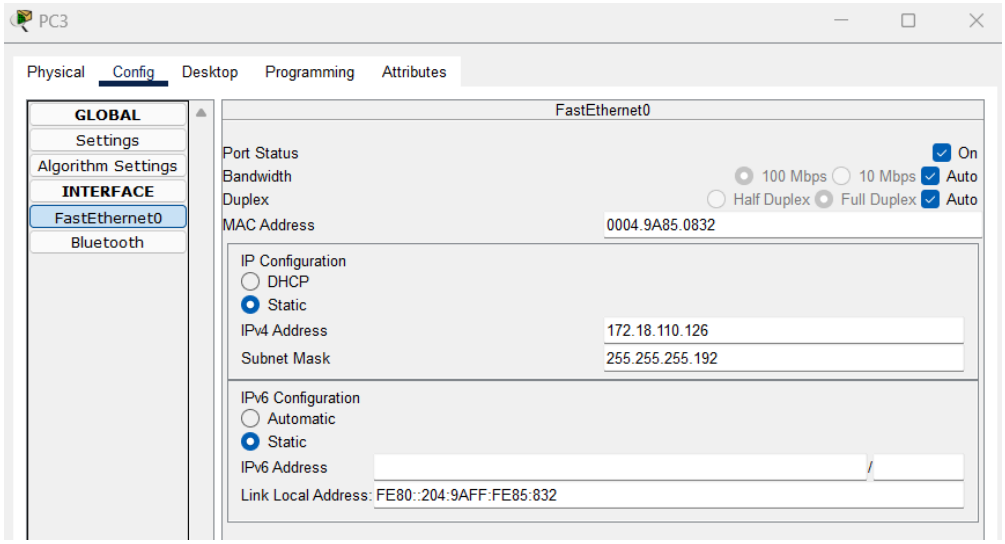
pc2


PC2
Physical
Config
Desktop
Programming
Attributes
GLOBAL
Settings
Algorithm Settings
INTERFACE
Global Settings
Display Name
PC2
Interfaces
FastEthernet0
Gateway/DNS IPv4
DHCP
Static
Default Gateway
172.18.110.33
DNS Server

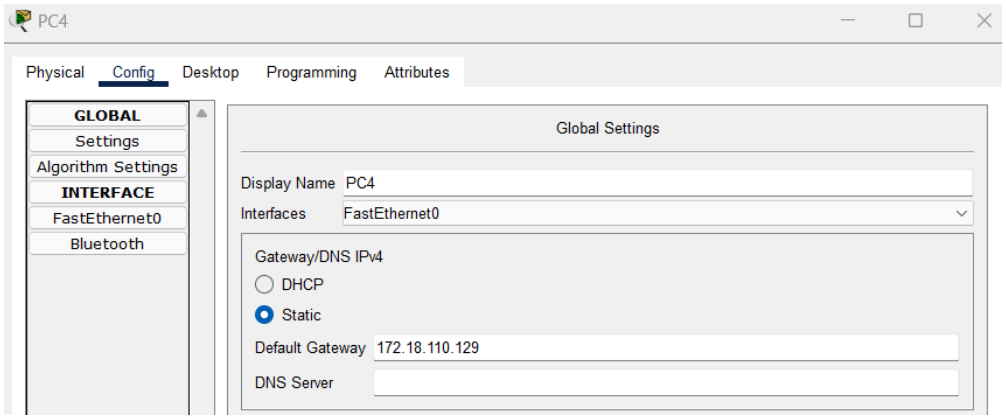

PC2
Physical
Config
Desktop
Programming
Attributes
GLOBAL
Settings
Algorithm Settings
INTERFACE
FastEthernet0
Bluetooth
FastEthernet0
Port Status
On
Bandwidth
100 Mbps
10 Mbps
Auto
Duplex
Half Duplex
Full Duplex
Auto
MAC Address
00E0.8FD8.CCD1
IP Configuration
DHCP
Static
IPv4 Address
172.18.110.62
Subnet Mask
255.255.255.224
IPv6 Configuration
Automatic
Static
IPv6 Address
Link Local Address:
FE80::2E0:8FFF:FED8:CCD1

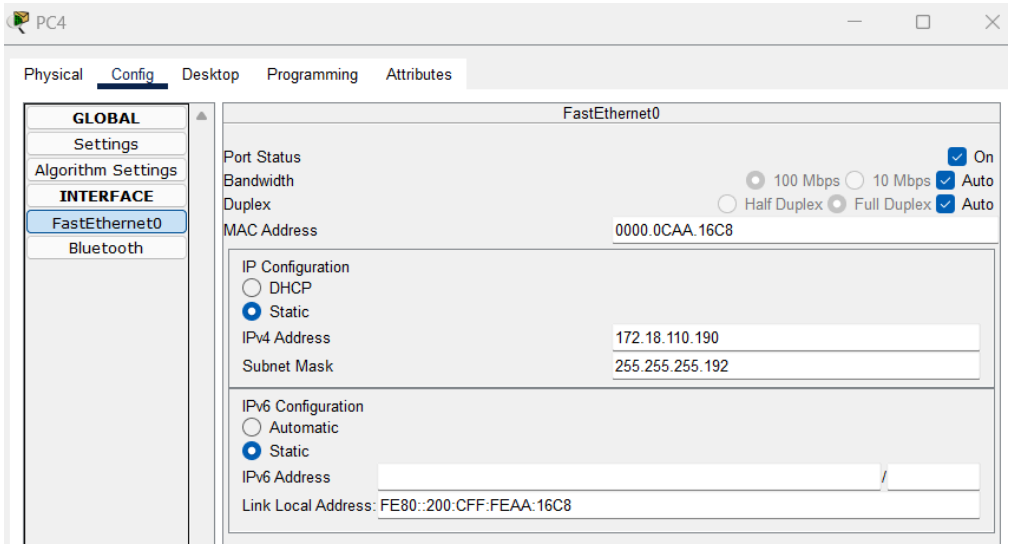
pc3


PC3
Physical
Config
Desktop
Programming
Attributes
GLOBAL
Settings
Algorithm Settings
INTERFACE
FastEthernet0
Bluetooth
Global Settings
Display Name
PC3
Interfaces
FastEthernet0
Gateway/DNS IPv4
DHCP
Static
Default Gateway
172.18.110.65
DNS Server


PC3
Physical
Config
Desktop
Programming
Attributes
GLOBAL
Settings
Algorithm Settings
INTERFACE
FastEthernet0
Bluetooth
FastEthernet0
Port Status
On
Bandwidth
100 Mbps
10 Mbps
Auto
Duplex
Half Duplex
Full Duplex
Auto
MAC Address
0004.9A85.0832
IP Configuration
DHCP
Static
IPv4 Address
172.18.110.126
Subnet Mask
255.255.255.192
IPv6 Configuration
Automatic
Static
IPv6 Address
Link Local Address:
FE80::204:9AFF:FE85:832

pc4





Task 2 – Routing Table

1. Paste the current routing table of each router here. There are 2 ways to this – via CLI and via Packet Tracer (PT) tool. Use both ways to show the routing table of all the routers.
    a. CLI
        i. Click on a router. In the prompt, type show ip route. The routing table of the router will be shown, as shown in Figure A.

```
SHARK#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

     172.18.0.0/16 is variably subnetted, 2 subnets, 2 masks
C       172.18.110.0/26 is directly connected, GigabitEthernet0/0
L       172.18.110.1/32 is directly connected, GigabitEthernet0/0
```

Figure A

b. PT tool
   i. Click on the magnifying glass (shown in Figure B), then click on a router, then choose Routing Table. A sample of the result is shown in Figure C.

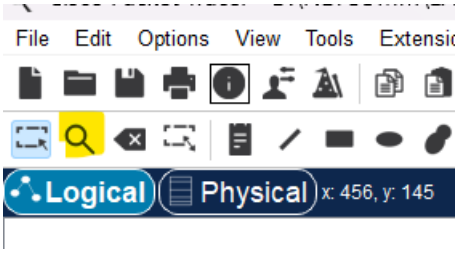


Figure B

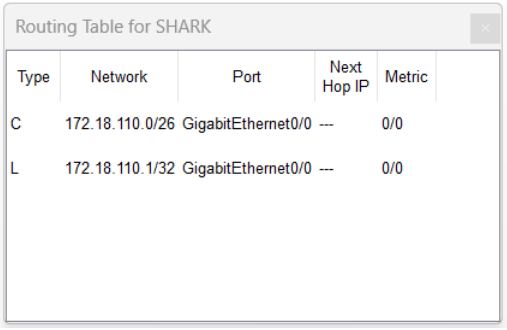


Figure C

SHARK:

```
SHARK#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

     172.18.0.0/16 is variably subnetted, 6 subnets, 3 masks
C       172.18.110.128/26 is directly connected, GigabitEthernet0/0
L       172.18.110.129/32 is directly connected, GigabitEthernet0/0
C       172.18.110.192/30 is directly connected, Serial0/0/0
L       172.18.110.194/32 is directly connected, Serial0/0/0
C       172.18.110.200/30 is directly connected, Serial0/0/1
L       172.18.110.201/32 is directly connected, Serial0/0/1
```

Routing Table for SHARK

Type	Network	Port	Next Hop IP	Metric
C	172.18.110.128/26	GigabitEthernet0/0	---	0/0
L	172.18.110.129/32	GigabitEthernet0/0	---	0/0
C	172.18.110.192/30	Serial0/0/0	---	0/0
L	172.18.110.194/32	Serial0/0/0	---	0/0
C	172.18.110.200/30	Serial0/0/1	---	0/0
L	172.18.110.201/32	Serial0/0/1	---	0/0

JERUNG:

```
JERUNG#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

     172.18.0.0/16 is variably subnetted, 8 subnets, 3 masks
C       172.18.110.0/27 is directly connected, GigabitEthernet0/0
L       172.18.110.1/32 is directly connected, GigabitEthernet0/0
C       172.18.110.32/27 is directly connected, GigabitEthernet0/1
L       172.18.110.33/32 is directly connected, GigabitEthernet0/1
C       172.18.110.192/30 is directly connected, Serial0/0/0
L       172.18.110.193/32 is directly connected, Serial0/0/0
C       172.18.110.196/30 is directly connected, Serial0/0/1
L       172.18.110.197/32 is directly connected, Serial0/0/1
```

Routing Table for JERUNG

Type	Network	Port	Next Hop IP	Metric
C	172.18.110.0/27	GigabitEthernet0/0	---	0/0
L	172.18.110.1/32	GigabitEthernet0/0	---	0/0
C	172.18.110.32/27	GigabitEthernet0/1	---	0/0
L	172.18.110.33/32	GigabitEthernet0/1	---	0/0
C	172.18.110.192/30	Serial0/0/0	---	0/0
L	172.18.110.193/32	Serial0/0/0	---	0/0
C	172.18.110.196/30	Serial0/0/1	---	0/0
L	172.18.110.197/32	Serial0/0/1	---	0/0

TIBURON:

```
TIBURON#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

     172.18.0.0/16 is variably subnetted, 6 subnets, 3 masks
C       172.18.110.64/26 is directly connected, GigabitEthernet0/0
L       172.18.110.65/32 is directly connected, GigabitEthernet0/0
C       172.18.110.196/30 is directly connected, Serial0/1/1
L       172.18.110.198/32 is directly connected, Serial0/1/1
C       172.18.110.200/30 is directly connected, Serial0/1/0
L       172.18.110.202/32 is directly connected, Serial0/1/0
```

Routing Table for TIBURON

Type	Network	Port	Next Hop IP	Metric
C	172.18.110.64/26	GigabitEthernet0/0	---	0/0
L	172.18.110.65/32	GigabitEthernet0/0	---	0/0
C	172.18.110.196/30	Serial0/1/1	---	0/0
L	172.18.110.198/32	Serial0/1/1	---	0/0
C	172.18.110.200/30	Serial0/1/0	---	0/0
L	172.18.110.202/32	Serial0/1/0	---	0/0

2. Try to ping PC2 from PC1, paste the results here.

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 172.18.110.62

Pinging 172.18.110.62 with 32 bytes of data:

Reply from 172.18.110.62: bytes=32 time=20ms TTL=128
Reply from 172.18.110.62: bytes=32 time=15ms TTL=128
Reply from 172.18.110.62: bytes=32 time=15ms TTL=128
Reply from 172.18.110.62: bytes=32 time=9ms TTL=128

Ping statistics for 172.18.110.62:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 9ms, Maximum = 20ms, Average = 14ms
```

3.

4. Try to ping PC4 from PC1, paste the results here.

```
C:\>ping 172.18.110.190

Pinging 172.18.110.190 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 172.18.110.190:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

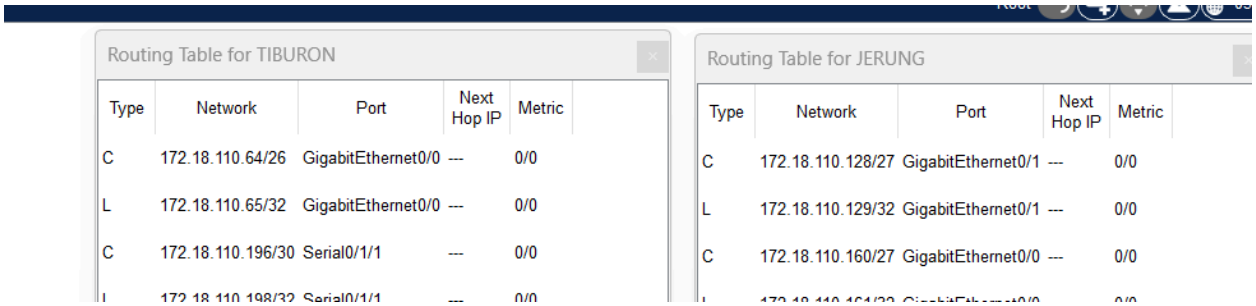
5. Explain the reason(s) behind the results.
   pc1 and 2 has the same subnet mask and same router,
   pc1 and 4 are in different subnets and routers

6. What needs to be done to ensure all PCs can ping each other successfully?

   correct configuration of getaways and ip for routers.

Task 2 – Routing Configuration

1. Let's start by opening the routing table (using the PT tool) for TIBURON and JERUNG. This is done to show changes to the routing table as configurations are made.



Routing Table for TIBURON

Type	Network	Port	Next Hop IP	Metric
C	172.18.110.64/26	GigabitEthernet0/0	---	0/0
L	172.18.110.65/32	GigabitEthernet0/0	---	0/0
C	172.18.110.196/30	Serial0/1/1	---	0/0
L	172.18.110.198/32	Serial0/1/1	---	0/0

Routing Table for JERUNG

Type	Network	Port	Next Hop IP	Metric
C	172.18.110.128/27	GigabitEthernet0/1	---	0/0
L	172.18.110.129/32	GigabitEthernet0/1	---	0/0
C	172.18.110.160/27	GigabitEthernet0/0	---	0/0
L	172.18.110.161/32	GigabitEthernet0/0	---	0/0

Figure D

2. In router JERUNG, configure the RIP routing protocol as shown in Figure E.

```
JERUNG#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
JERUNG(config)#router rip
JERUNG(config-router)#version 2
JERUNG(config-router)#network 172.18.110.128
JERUNG(config-router)#network 172.18.110.160
JERUNG(config-router)#network 172.18.110.192
JERUNG(config-router)#network 172.18.110.196
JERUNG(config-router)#no auto-summary
JERUNG(config-router)#
```

Figure E

   a. What can you say about the addresses used in the 'network' instructions in Figure E?
   the addresses in the routing process and under the same subnet mask.

3. Then configure RIP in TIBURON. All are similar except use the network address. Use the instructions as shown below.

```
TIBURON (config-router) #network 172.18.110.64
TIBURON (config-router) #network 172.18.110.196
TIBURON (config-router) #network 172.18.110.200
```

4. As you may have seen, there are changes in the routing tables of both TIBURON and JERUNG. Paste a copy of these routing tables here.

JERUNG:

Routing Table for JERUNG

Type	Network	Port	Next Hop IP	Metric
C	172.18.110.0/27	GigabitEthernet0/0	---	0/0
L	172.18.110.1/32	GigabitEthernet0/0	---	0/0
C	172.18.110.32/27	GigabitEthernet0/1	---	0/0
L	172.18.110.33/32	GigabitEthernet0/1	---	0/0
R	172.18.110.64/26	Serial0/0/1	172.18.110.198	120/1
C	172.18.110.192/30	Serial0/0/0	---	0/0
L	172.18.110.193/32	Serial0/0/0	---	0/0
C	172.18.110.196/30	Serial0/0/1	---	0/0
L	172.18.110.197/32	Serial0/0/1	---	0/0
R	172.18.110.200/30	Serial0/0/1	172.18.110.198	120/1

TIBURON:

Routing Table for TIBURON

Type	Network	Port	Next Hop IP	Metric
R	172.18.110.0/27	Serial0/1/1	172.18.110.197	120/1
R	172.18.110.32/27	Serial0/1/1	172.18.110.197	120/1
C	172.18.110.64/26	GigabitEthernet0/0	---	0/0
L	172.18.110.65/32	GigabitEthernet0/0	---	0/0
R	172.18.110.192/30	Serial0/1/1	172.18.110.197	120/1
C	172.18.110.196/30	Serial0/1/1	---	0/0
L	172.18.110.198/32	Serial0/1/1	---	0/0
C	172.18.110.200/30	Serial0/1/0	---	0/0
L	172.18.110.202/32	Serial0/1/0	---	0/0

a. What are the changes seen in TIBURON?
There are three new networks added to the routing table indicating new hop.

b. What are the Networks with type R in TIBURON and JERUNG?
the network was discovered or learnt through RIP, Routing Information Protocol

c. Ping PC3 from PC1. Was it successful?

```
C:\>ping 172.18.110.126

Pinging 172.18.110.126 with 32 bytes of data:

Request timed out.
Reply from 172.18.110.126: bytes=32 time=1ms TTL=126
Reply from 172.18.110.126: bytes=32 time=8ms TTL=126
Reply from 172.18.110.126: bytes=32 time=1ms TTL=126

Ping statistics for 172.18.110.126:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 8ms, Average = 3ms
```

Yes.

d. Ping PC4 from PC1. Was it successful?

```
C:\>ping 172.18.110.190

Pinging 172.18.110.190 with 32 bytes of data:

Reply from 172.18.110.1: Destination host unreachable.
Reply from 172.18.110.1: Destination host unreachable.
Reply from 172.18.110.1: Destination host unreachable.
Reply from 172.18.110.1: Destination host unreachable.

Ping statistics for 172.18.110.190:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

No

e. Explain the reasons for your answer.
There was no connection established between the router of pc4(Shark) and the router of pc1(Jerung).

f. Continue with configuration of RIP in SHARK. Paste your configurations here.

```
SHARK(config-router)#
SHARK(config-router)#version 2
SHARK(config-router)#network 172.18.110.192
SHARK(config-router)#network 172.18.110.200
SHARK(config-router)#network 172.18.110.128
SHARK(config-router)#no auto-summary
SHARK(config-router)#^Z
SHARK#
%SYS-5-CONFIG_I: Configured from console by console
```

g. Open router SHARK's routing table and paste here.

Routing Table for SHARK

Type	Network	Port	Next Hop IP	Metric
R	172.18.110.0/27	Serial0/0/0	172.18.110.193	120/1
R	172.18.110.32/27	Serial0/0/0	172.18.110.193	120/1
R	172.18.110.64/26	Serial0/0/1	172.18.110.202	120/1
C	172.18.110.128/26	GigabitEthernet0/0	---	0/0
L	172.18.110.129/32	GigabitEthernet0/0	---	0/0
C	172.18.110.192/30	Serial0/0/0	---	0/0
L	172.18.110.194/32	Serial0/0/0	---	0/0
R	172.18.110.196/30	Serial0/0/0	172.18.110.193	120/1
R	172.18.110.196/30	Serial0/0/1	172.18.110.202	120/1
C	172.18.110.200/30	Serial0/0/1	---	0/0
L	172.18.110.201/32	Serial0/0/1	---	0/0

h. Try to ping from PC4 to all other PCs in the topology. *Note: Try to ping at least twice to get best results.

from pc1

it pings.

```
C:\>ping 172.18.110.30

Pinging 172.18.110.30 with 32 bytes of data:

Reply from 172.18.110.30: bytes=32 time=12ms TTL=126
Reply from 172.18.110.30: bytes=32 time=1ms TTL=126
Reply from 172.18.110.30: bytes=32 time=1ms TTL=126
Reply from 172.18.110.30: bytes=32 time=7ms TTL=126

Ping statistics for 172.18.110.30:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 12ms, Average = 5ms
```

pc2
it pings.

```
C:\>ping 172.18.110.62

Pinging 172.18.110.62 with 32 bytes of data:

Reply from 172.18.110.62: bytes=32 time=10ms TTL=126
Reply from 172.18.110.62: bytes=32 time=6ms TTL=126
Reply from 172.18.110.62: bytes=32 time=5ms TTL=126
Reply from 172.18.110.62: bytes=32 time=1ms TTL=126

Ping statistics for 172.18.110.62:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 10ms, Average = 5ms
```

pc3
it pings.

```
C:\>ping 172.18.110.190

Pinging 172.18.110.190 with 32 bytes of data:

Reply from 172.18.110.190: bytes=32 time=5ms TTL=128
Reply from 172.18.110.190: bytes=32 time<1ms TTL=128
Reply from 172.18.110.190: bytes=32 time=2ms TTL=128
Reply from 172.18.110.190: bytes=32 time=2ms TTL=128

Ping statistics for 172.18.110.190:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 5ms, Average = 2ms
```

Task 3 – Routing Update

1. Let's try a little experiment. Change the IP addresses of router TIBURON interface G0/0 to 192.168.1.1/24.
    a. This means that the subnet has changed. Find the new Network address of this subnet. Network Address is: 192.168.1.0
    b. As this change happens, PC3 must also have a different IP address, subnet mask and gateway address. What will it be?

IP address: 192.168.1.254
Subnet Mask: 255.255.255.0
Gateway Address:192.168.1.1

c. After this change, can PC4 and PC1 ping PC3?

pc1

```
C:\>ping 192.168.1.254

Pinging 192.168.1.254 with 32 bytes of data:

Reply from 172.18.110.1: Destination host unreachable.
Reply from 172.18.110.1: Destination host unreachable.
Reply from 172.18.110.1: Destination host unreachable.
Reply from 172.18.110.1: Destination host unreachable.

Ping statistics for 192.168.1.254:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

pc4

```
C:\>ping 192.168.1.254

Pinging 192.168.1.254 with 32 bytes of data:

Reply from 172.18.110.129: Destination host unreachable.
Reply from 172.18.110.129: Destination host unreachable.
Reply from 172.18.110.129: Destination host unreachable.
Reply from 172.18.110.129: Destination host unreachable.

Ping statistics for 192.168.1.254:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

d. Copy and paste the routing tables for both SHARK and TIBURON here

Routing Table for SHARK

Type	Network	Port	Next Hop IP	Metric
R	172.18.110.0/27	Serial0/0/0	172.18.110.193	120/1
R	172.18.110.32/27	Serial0/0/0	172.18.110.193	120/1
R	172.18.110.64/26	Serial0/0/1	172.18.110.202	120/1
C	172.18.110.128/26	GigabitEthernet0/0	---	0/0
L	172.18.110.129/32	GigabitEthernet0/0	---	0/0
C	172.18.110.192/30	Serial0/0/0	---	0/0
L	172.18.110.194/32	Serial0/0/0	---	0/0
R	172.18.110.196/30	Serial0/0/0	172.18.110.193	120/1
R	172.18.110.196/30	Serial0/0/1	172.18.110.202	120/1
C	172.18.110.200/30	Serial0/0/1	---	0/0
L	172.18.110.201/32	Serial0/0/1	---	0/0

Routing Table for TIBURON

Type	Network	Port	Next Hop IP	Metric
R	172.18.110.0/27	Serial0/1/1	172.18.110.197	120/1
R	172.18.110.32/27	Serial0/1/1	172.18.110.197	120/1
R	172.18.110.128/26	Serial0/1/0	172.18.110.201	120/1
R	172.18.110.192/30	Serial0/1/1	172.18.110.197	120/1
R	172.18.110.192/30	Serial0/1/0	172.18.110.201	120/1
C	172.18.110.196/30	Serial0/1/1	---	0/0
L	172.18.110.198/32	Serial0/1/1	---	0/0
C	172.18.110.200/30	Serial0/1/0	---	0/0
L	172.18.110.202/32	Serial0/1/0	---	0/0
C	192.168.1.0/24	GigabitEthernet0/0	---	0/0
L	192.168.1.1/32	GigabitEthernet0/0	---	0/0

e. Referring to the routing table, explain your findings.

in the router Tiburon the RIP protocol couldn't recognize or configure the new IP of pc3, and other routers(Shark) couldn't reach it.

f. What is your next move to ensure end-to-end connectivity (i.e. all PCs can ping each other successfully)?

configure any new IP address in RIP for each router.

g. Show your configurations in TIBURON to ensure end-to-end connectivity.

```
TIBURON>enable
TIBURON#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
TIBURON(config)#router rip
TIBURON(config-router)#version 2
TIBURON(config-router)#network 192.168.1.0
TIBURON(config-router)#no auto-summary
TIBURON(config-router)#^Z
TIBURON#
%SYS-5-CONFIG_I: Configured from console by console
```

h. To ensure end-to-end connectivity, ping to all the PCs from PC3.

it was successful.

pc1

```
C:\>ping 172.18.110.30

Pinging 172.18.110.30 with 32 bytes of data:

Reply from 172.18.110.30: bytes=32 time=1ms TTL=126
Reply from 172.18.110.30: bytes=32 time=6ms TTL=126
Reply from 172.18.110.30: bytes=32 time=1ms TTL=126
Reply from 172.18.110.30: bytes=32 time=2ms TTL=126

Ping statistics for 172.18.110.30:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 6ms, Average = 2ms
```

pc2

```
C:\>ping 172.18.110.62

Pinging 172.18.110.62 with 32 bytes of data:

Request timed out.
Reply from 172.18.110.62: bytes=32 time=1ms TTL=126
Reply from 172.18.110.62: bytes=32 time=5ms TTL=126
Reply from 172.18.110.62: bytes=32 time=5ms TTL=126

Ping statistics for 172.18.110.62:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 5ms, Average = 3ms
```

pc4

```
C:\>ping 172.18.110.190

Pinging 172.18.110.190 with 32 bytes of data:

Reply from 172.18.110.190: bytes=32 time=9ms TTL=126
Reply from 172.18.110.190: bytes=32 time=1ms TTL=126
Reply from 172.18.110.190: bytes=32 time=5ms TTL=126
Reply from 172.18.110.190: bytes=32 time=5ms TTL=126

Ping statistics for 172.18.110.190:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 9ms, Average = 5ms
```

REFLECTION

What have you learned in this task?

Abdalla Ali Abdalla:

How subnetting works, also how communication between different subnets work, devices configuration, router configuration, and port configuration, the relation between routing table, subnet mask and communication between devices, communication issues and what is the main cause of the problem, also a general knowledge of Cisco packet tracer usage on networking and IT.

Chen Wei Jay Nickolas:

This lab enhanced my understanding of subnetting, IP addressing, and dynamic routing using RIP. I learned to configure routers, troubleshoot connectivity issues, and adapt to network changes to ensure end-to-end communication. The hands-on experience improved my practical networking skills and prepared me to handle real-world scenarios effectively.