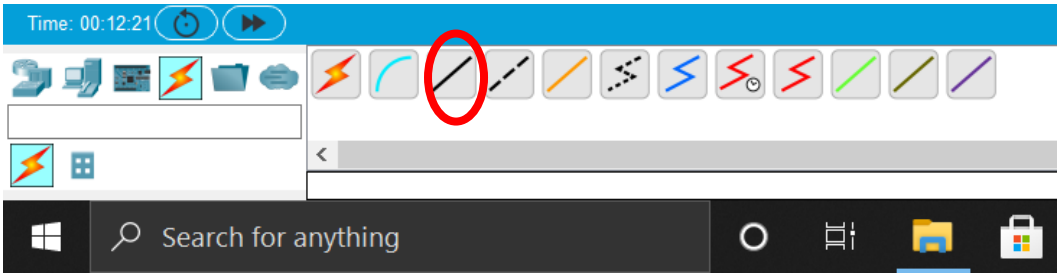
Department of Computer Engineering TE Computer-A (2020-21 Sem I) Computer Networks Practical Assignment B3 [Max Marks: 10]

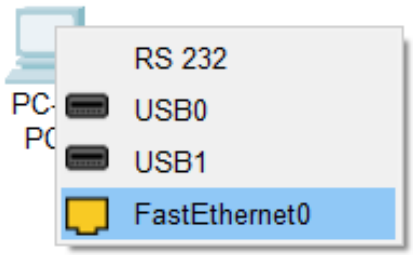
Submitted by : Himanshu Shekhar Padhi (3325)

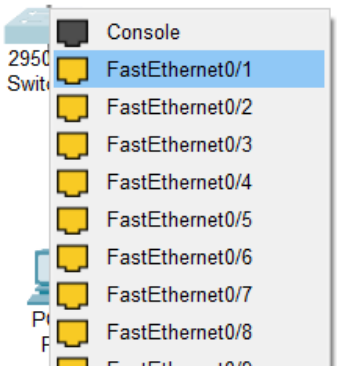
➢ RIP(Routing Information Protocol) PROTOCOL

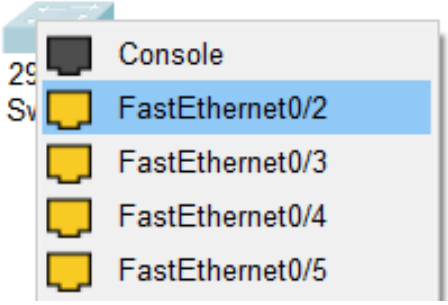
Network Topology (RIP)

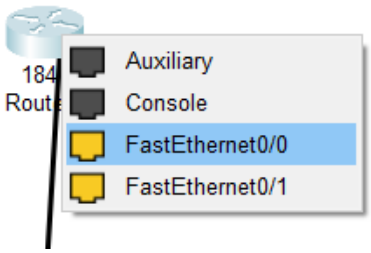
1. Drag and drop PC from End Devices.
2. Drag and drop switch(2950-24) for each network and router(1841) for each network.
3. Connect the PC and switch using Copper straight through cable in fast ethernet ports of both PC and switch.
4. Repeat Step 3 to connect switch to router.





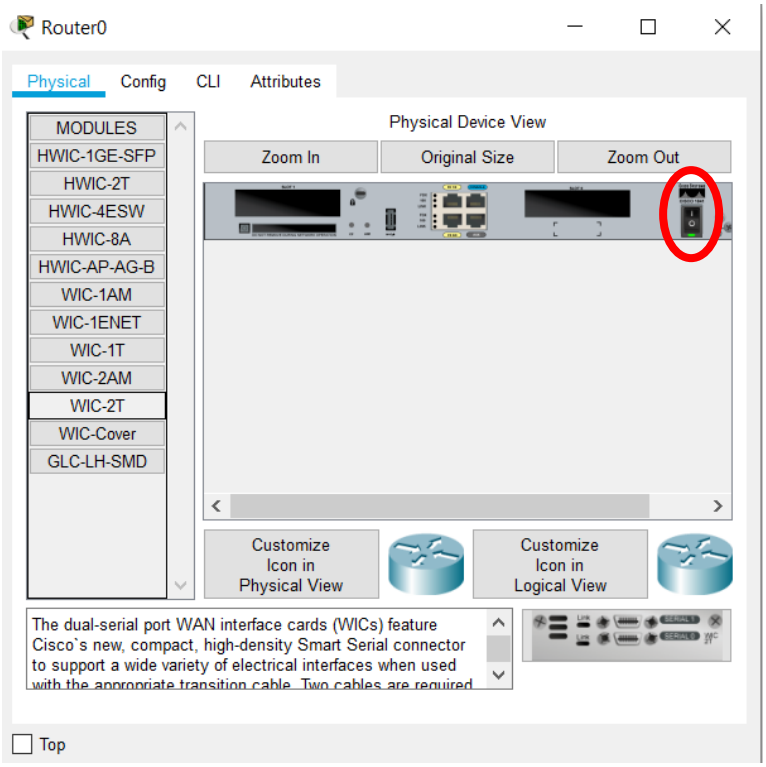




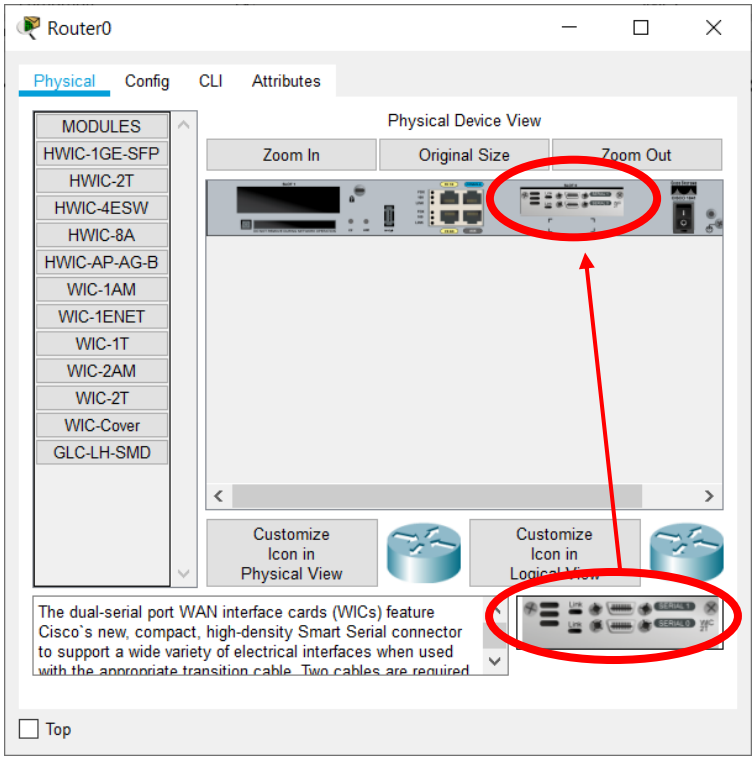


5. As by default not many ports are available on routers, we need to add some extra serial ports to form the network.

6. To add the serial ports click on the router go to PHYSICAL ----> WIC-2T.
7. Turn off the router by toggling(click) the switch.(FOR ALL ROUTERS)

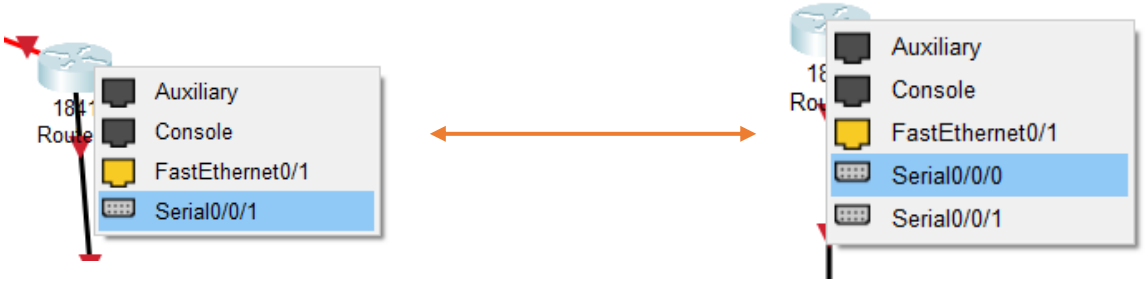


8. Now Drag and drop the ports image from bottom just to the left of switch.

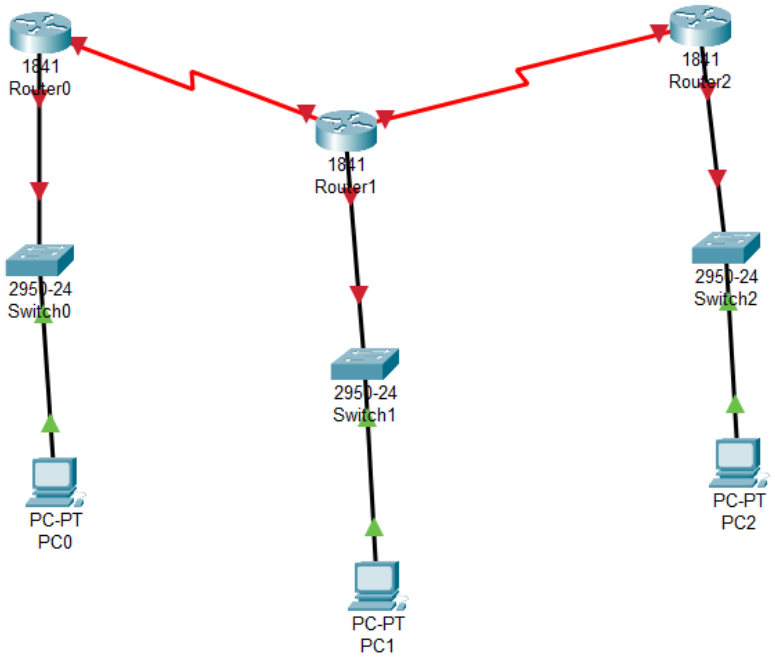


9. Now toggle(click) the switch to turn on the router.
10. Now to connect the routers select the **serial DTE cable** and connect the routers using the serial ports.

Router 0 **Router 1**



Router 1 **Router 2**

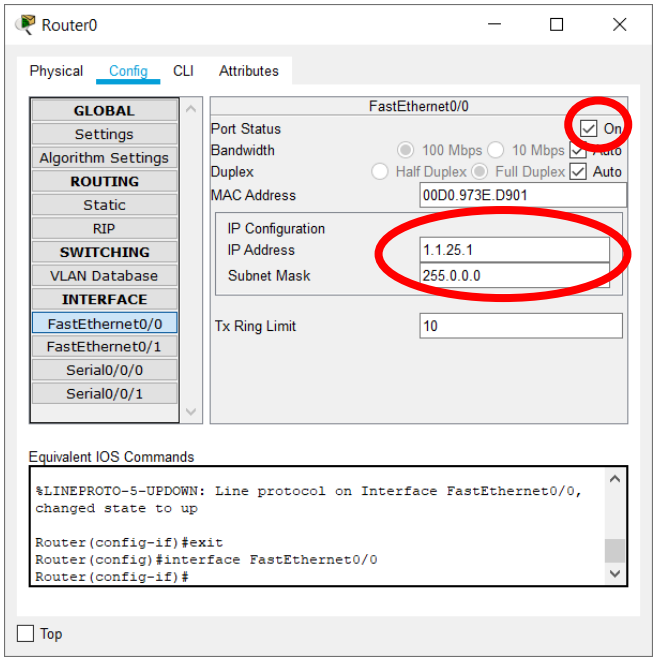


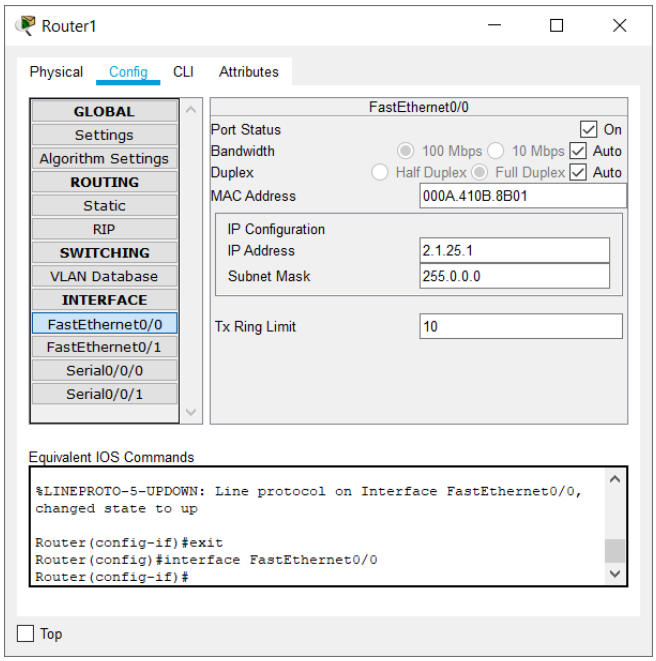
NETWORK

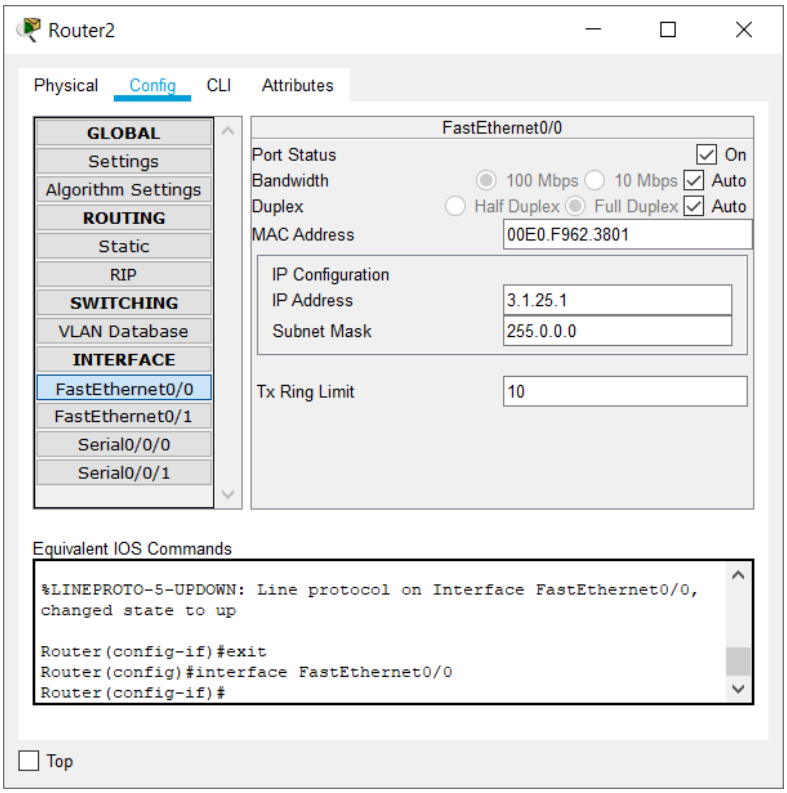
Ip Address Configuration (RIP)

ADDING gateway in router

1. Click on the router.
2. Go to Config ->Fast ethernet 0/0.
3. Then add the gateway for each network in all the routers.
4. Then turn on the port.

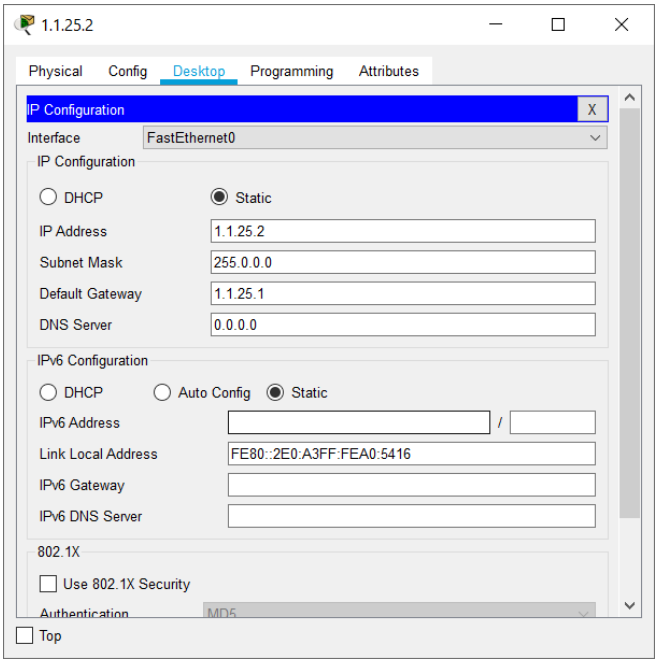


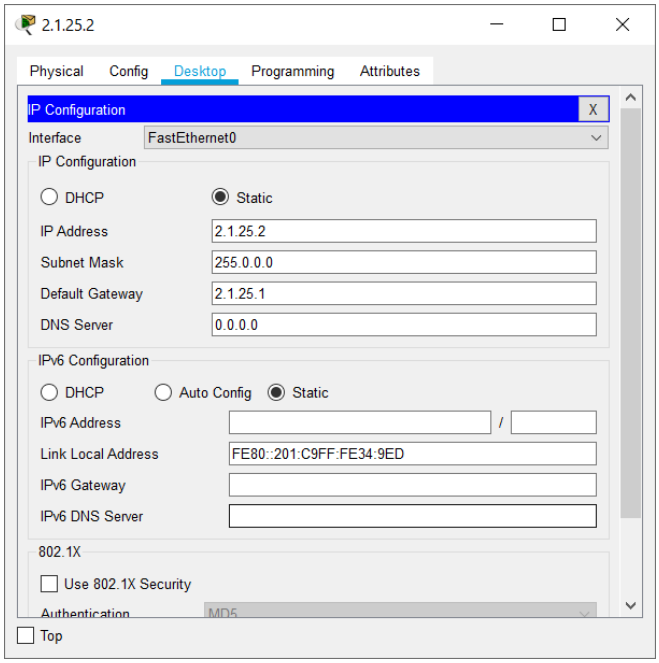


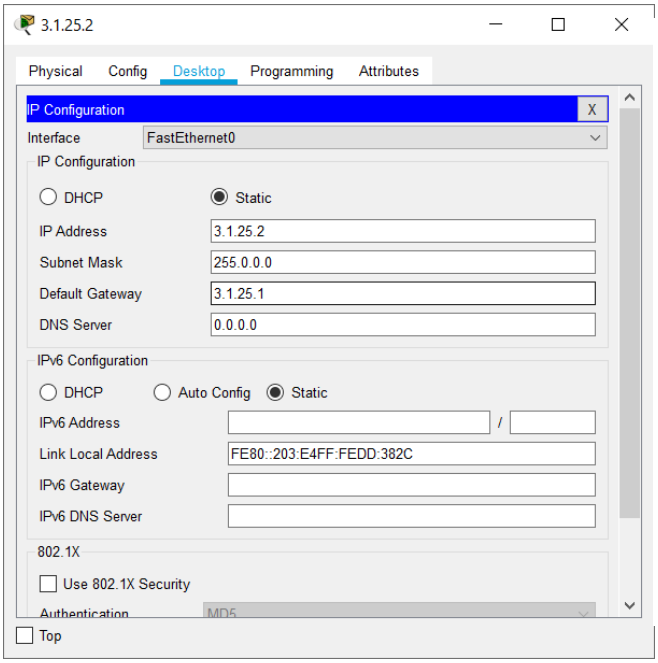


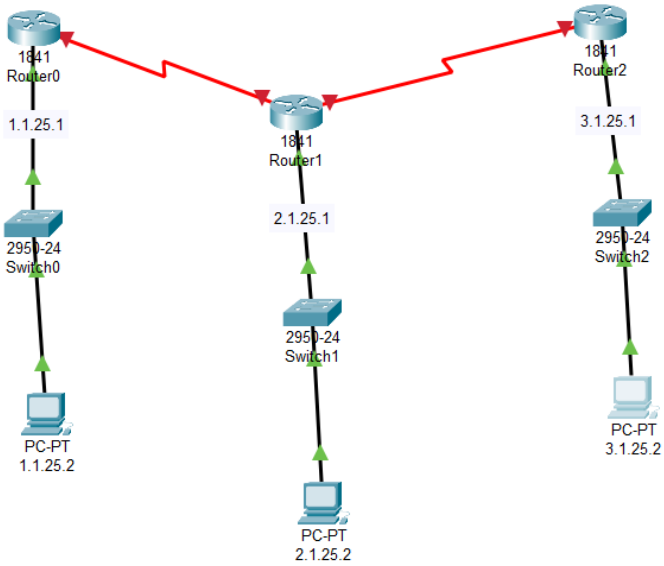
Assigning IP address to the PC's

1. Click on the PC.
2. Go to Desktop ->IP configuration.
3. Add the Ip address and the gateway.



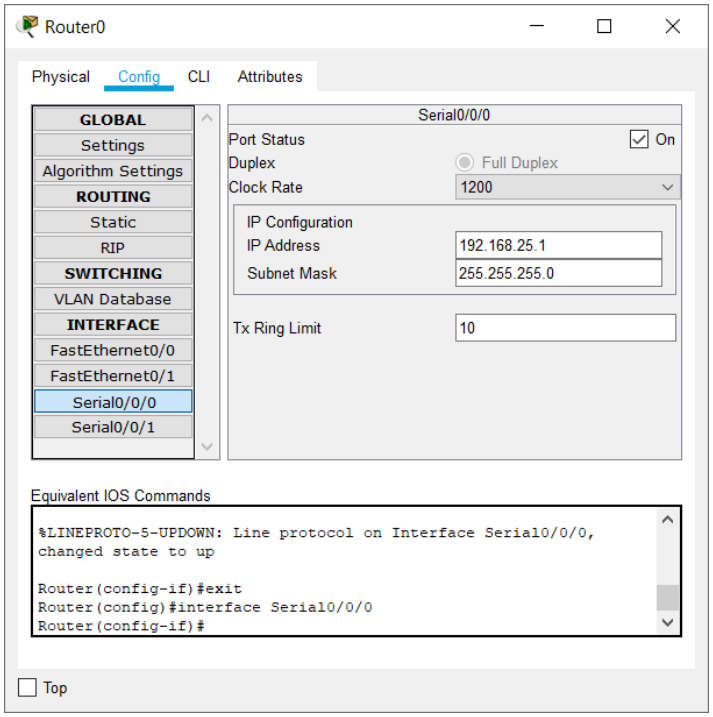


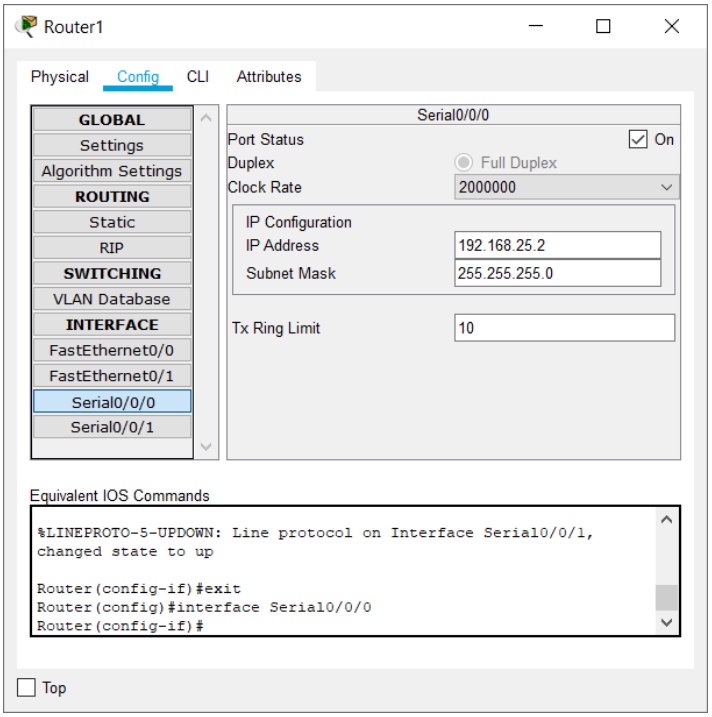


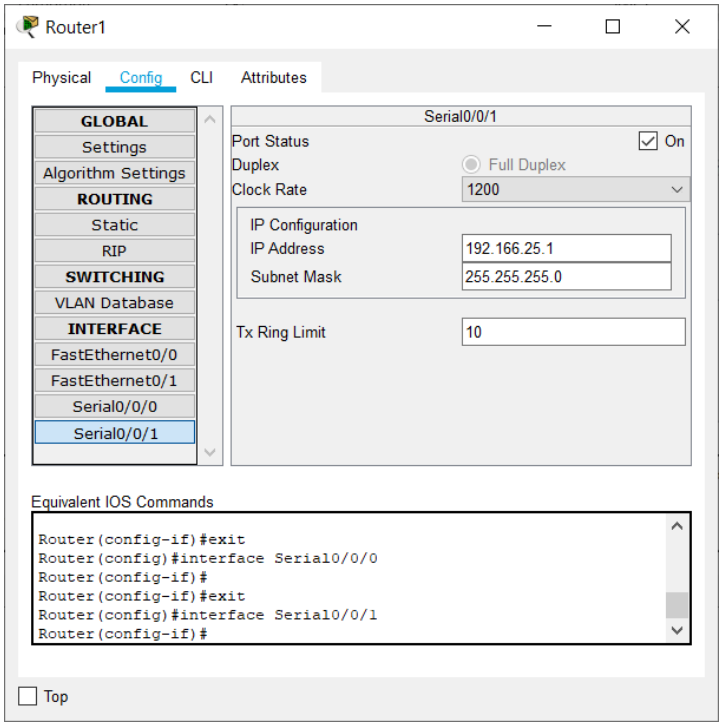


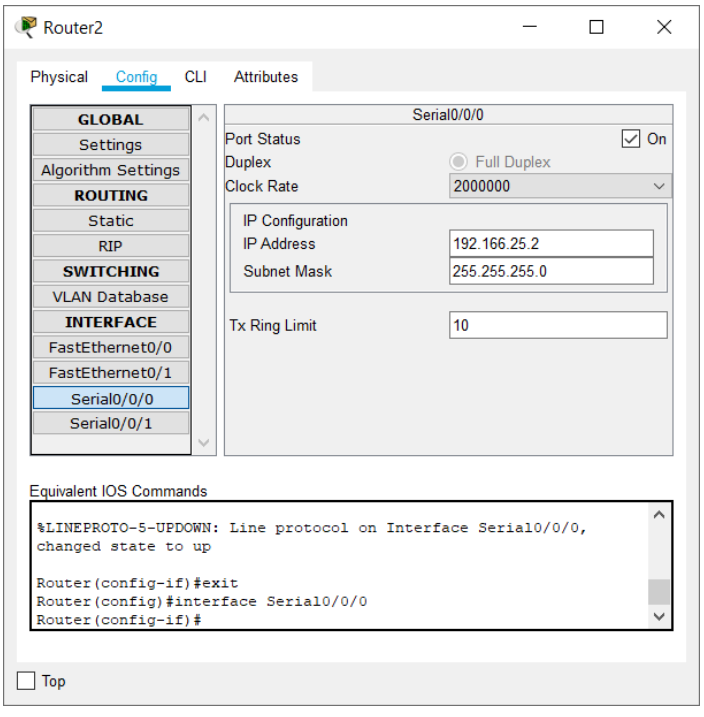
Connecting Router's

1. Click on the router.
2. Go to Config.
3. Then config the serial ports as required.





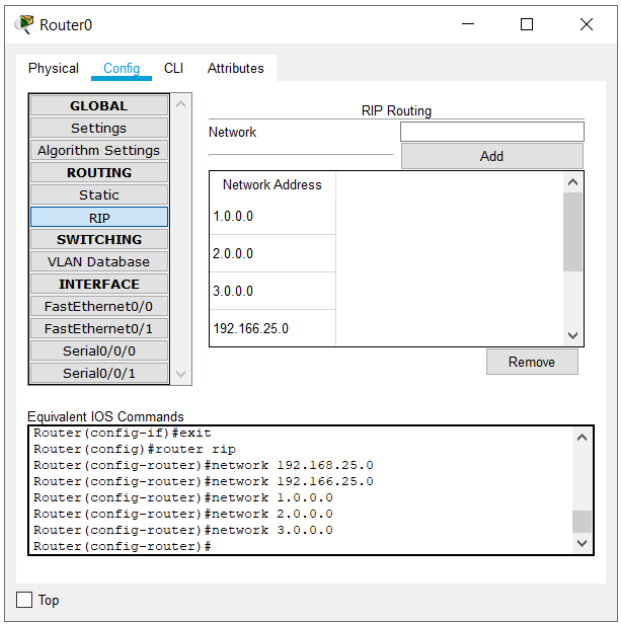


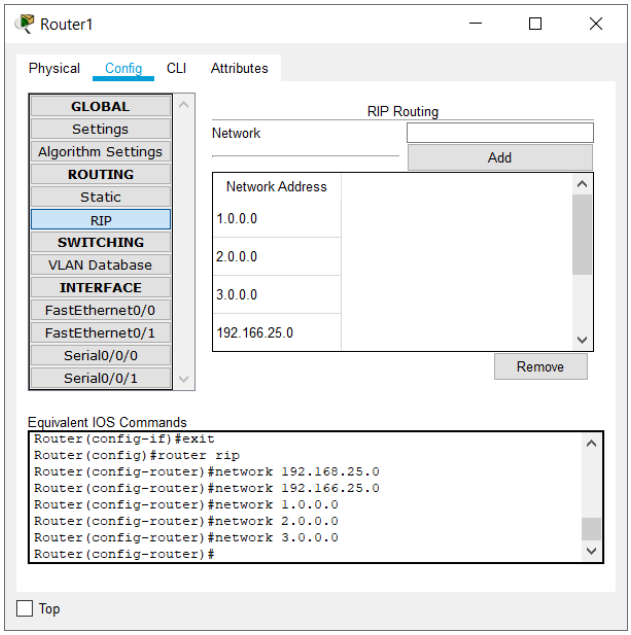


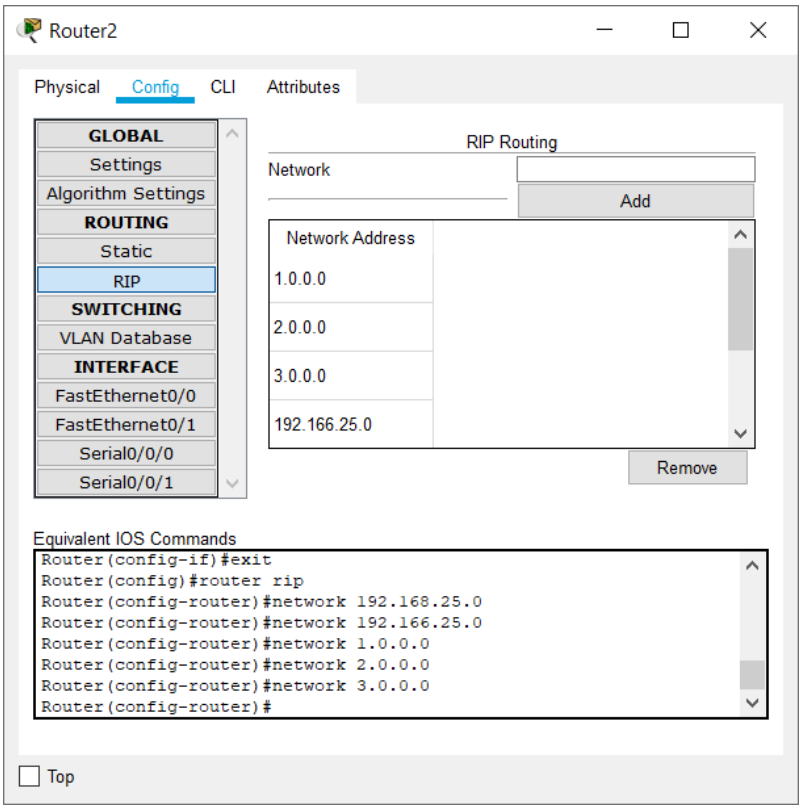
Configuring RIP

Adding networks to communicate between (for each router)

1. Click on the router.
2. Go to Config -> RIP.
3. Add the network Id's for each network (192.168.25.0 , 192.166.25.0 , 1.0.0.0 , 2.0.0.0 , 3.0.0.0).
4. Then click Add.

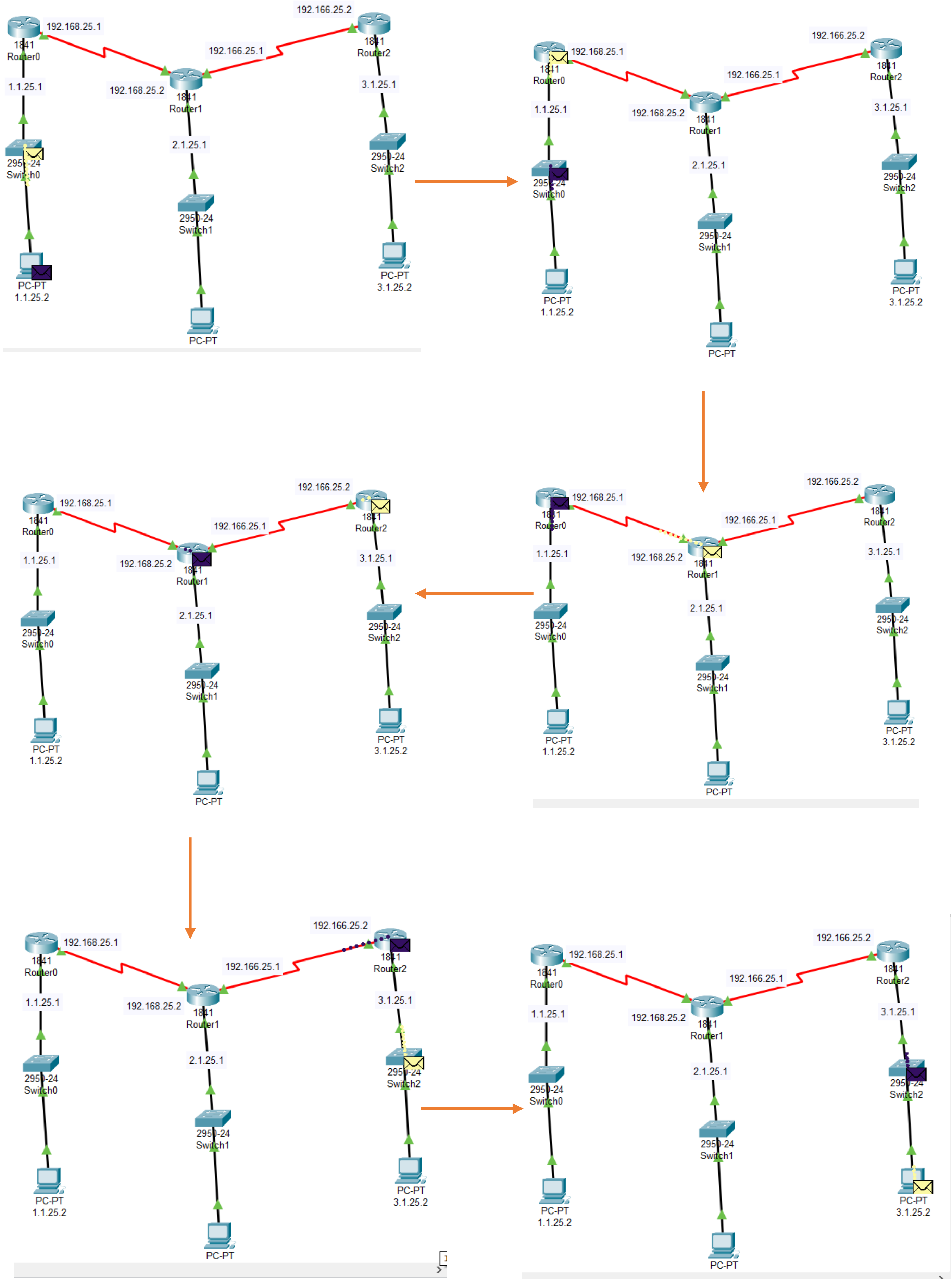


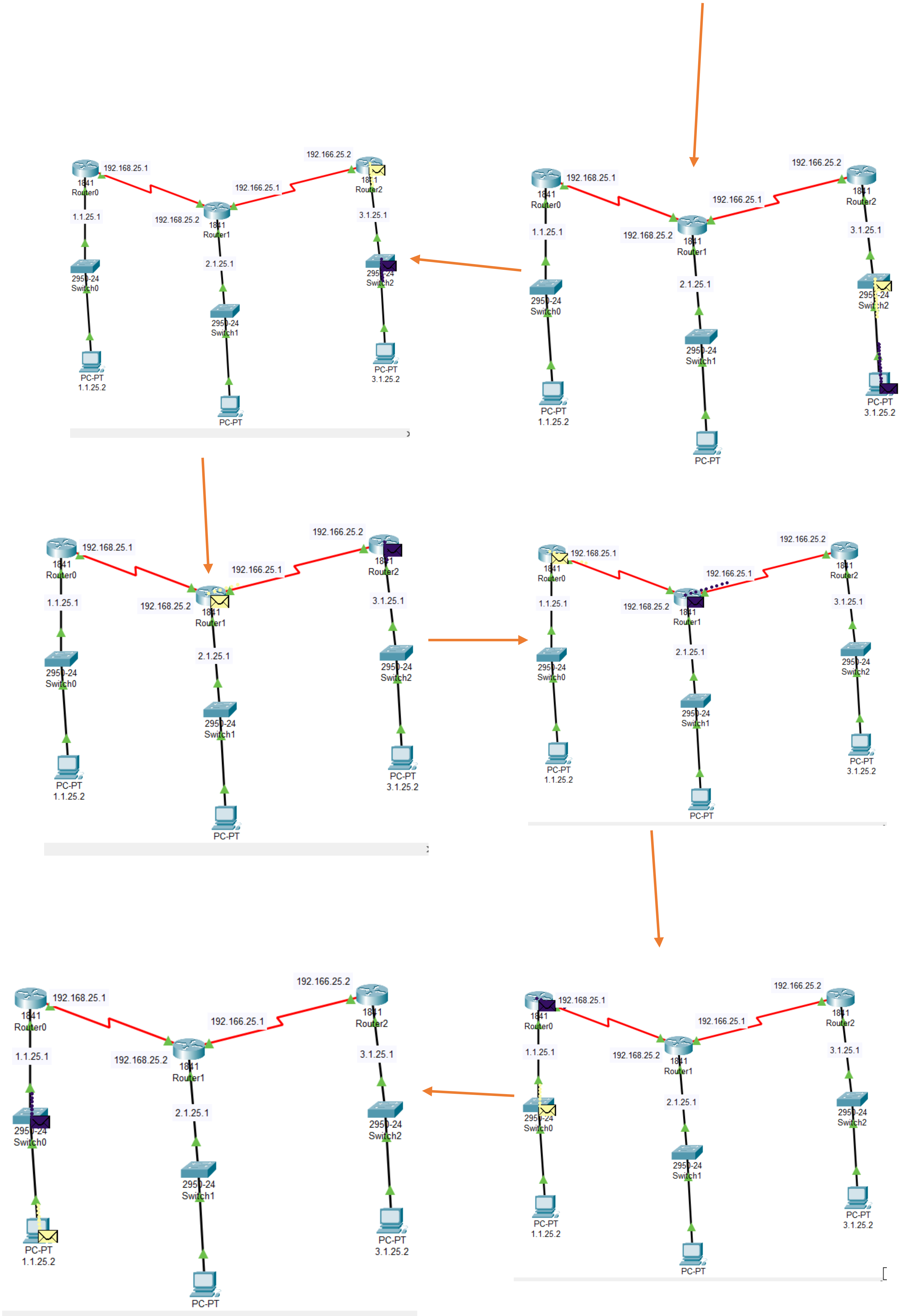


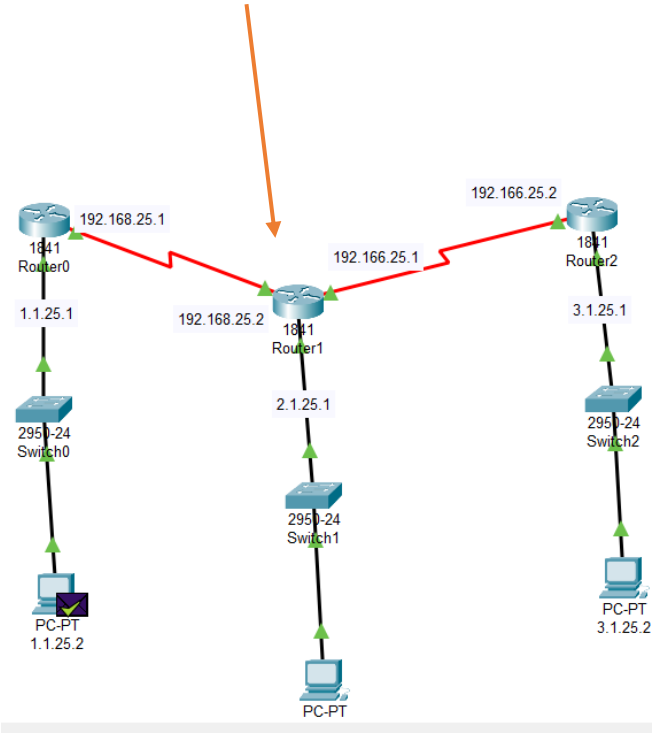


Real Mode Simulation (RIP)

Note : It may take 2 tries for the packet to reach successfully.




192.168.25.1
1841
Router0
192.166.25.2
192.166.25.1
192.168.25.2
1841
Router1
1841
Router2
1.1.25.1
2.1.25.1
3.1.25.1
2950-24
Switch0
2950-24
Switch1
2950-24
Switch2
PC-PT
1.1.25.2
PC-PT
PC-PT
3.1.25.2



Event List

Vis.	Time(sec)	Last Device	At Device	Type
	0.000	--	1.1.25.2	ICMP
	0.000	--	1.1.25.2	ICMP
	0.001	1.1.25.2	Switch0	ICMP
	0.001	--	1.1.25.2	ICMP
	0.002	1.1.25.2	Switch0	ICMP
	0.002	Switch0	Router0	ICMP
	0.003	Switch0	Router0	ICMP
	0.003	Router0	Router1	ICMP
	0.004	Router0	Router1	ICMP
	0.004	Router1	Router2	ICMP
	0.005	Router1	Router2	ICMP
	0.005	Router2	Switch2	ICMP
	0.006	Router2	Switch2	ICMP
	0.006	Switch2	3.1.25.2	ICMP
	0.007	Switch2	3.1.25.2	ICMP
	0.007	3.1.25.2	Switch2	ICMP
	0.008	3.1.25.2	Switch2	ICMP
	0.008	Switch2	Router2	ICMP
	0.009	Switch2	Router2	ICMP
	0.009	Router2	Router1	ICMP
	0.010	Router2	Router1	ICMP
	0.010	Router1	Router0	ICMP
	0.011	Router1	Router0	ICMP
	0.011	Router0	Switch0	ICMP
	0.012	Router0	Switch0	ICMP
	0.012	Switch0	1.1.25.2	ICMP
	0.013	Switch0	1.1.25.2	ICMP

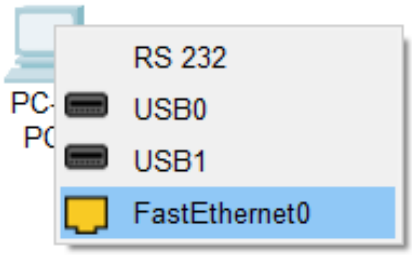
PDU List Window

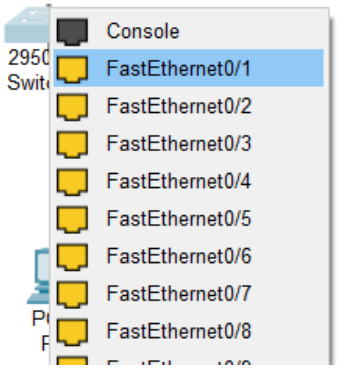
Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	Successful	1.1.25.2	3.1.25.2	ICMP		0.000	N	0	(edit)	
	Successful	1.1.25.2	3.1.25.2	ICMP		0.000	N	1	(edit)	

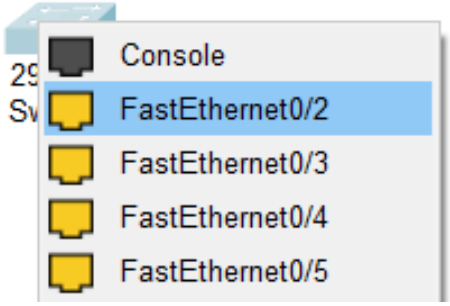
➢ OSPF(Open Shortest Path first) PROTOCOL

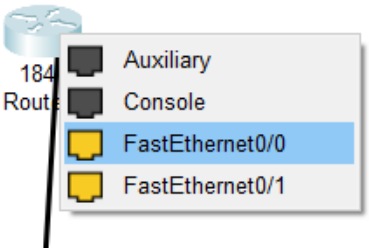
Network Topology (OSPF)

1. Drag and drop PC from End Devices.
2. Drag and drop switch(2950-24) for each network and router(1841) for each network.
3. Connect the PC and switch using Copper straight through cable in fast ethernet ports of both PC and switch.
4. Repeat Step 3 to connect switch to router.

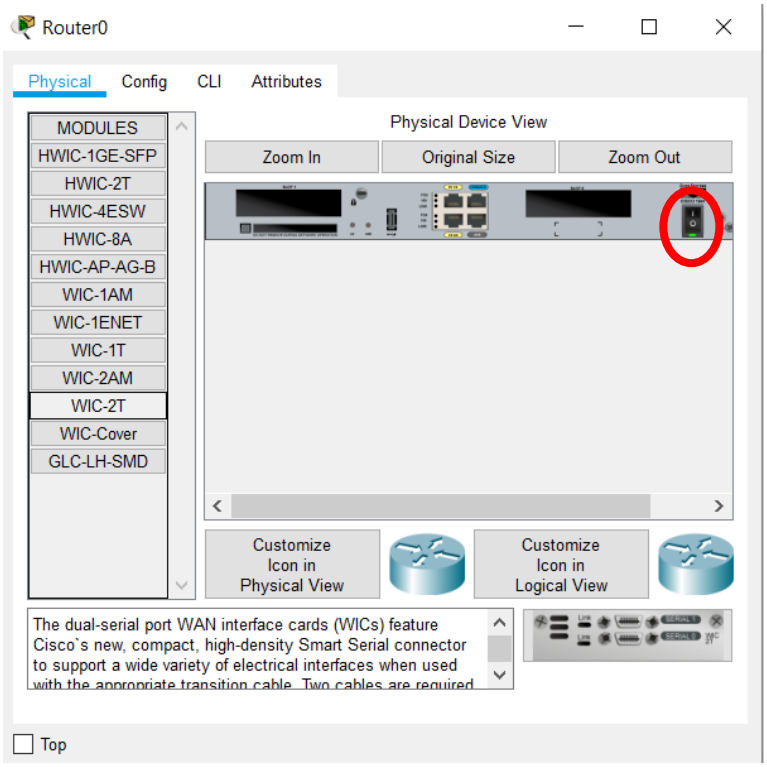




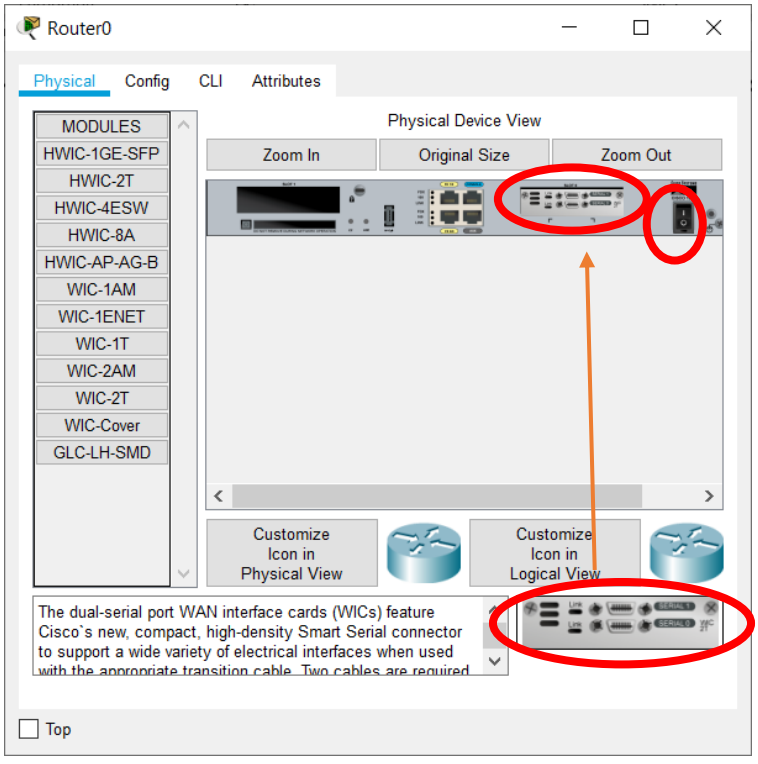




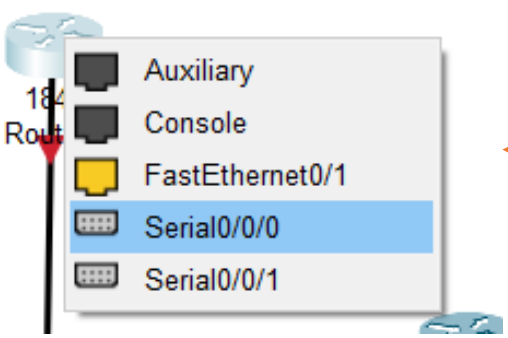
5. As by default not many ports are available on routers, we need to add some extra serial ports to form the network.
6. To add the serial ports click on the router go to PHYSICAL ----> WIC-2T.
7. Turn off the router by toggling(click) the switch.(FOR ALL ROUTERS)



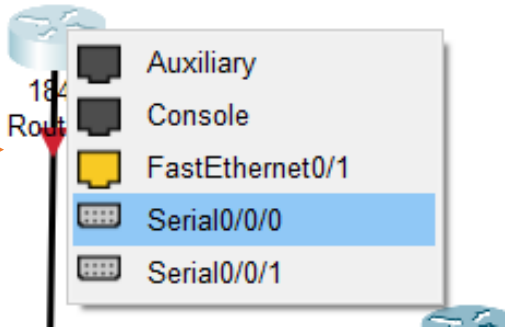
8. Now Drag and drop the ports image from bottom just to the left of switch.



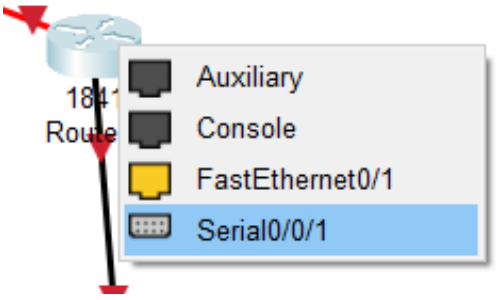
9. Now toggle(click) the switch to turn on the router.
10. Now to connect the routers select the **serial DTE cable** and connect the routers using the serial ports.



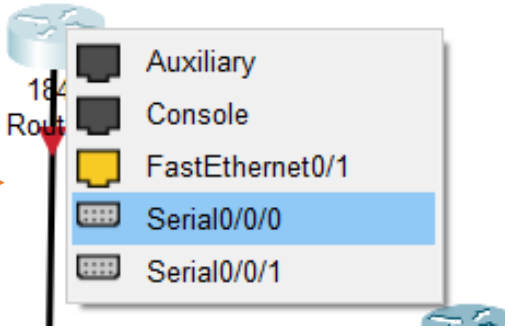
Router 0



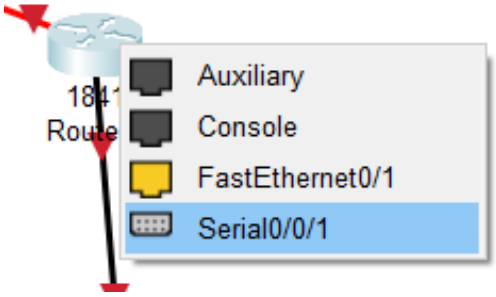
Router 1



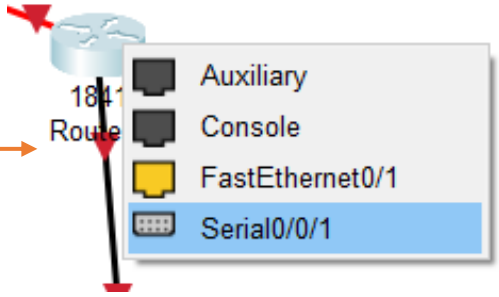
Router 1



Router 2

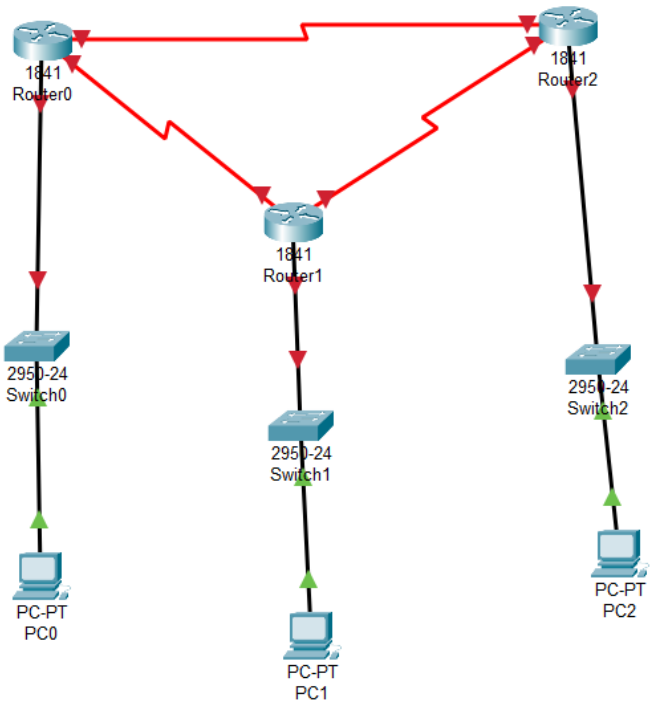


Router 0



Router 1

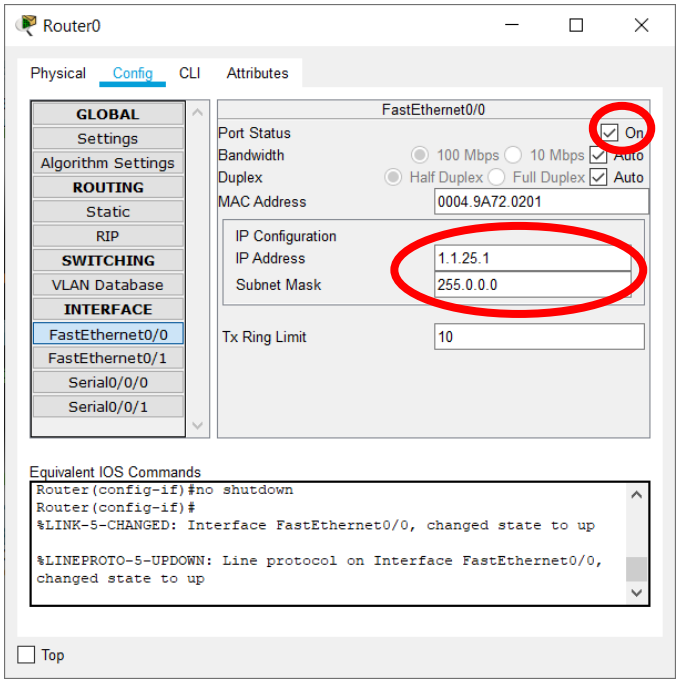
Network

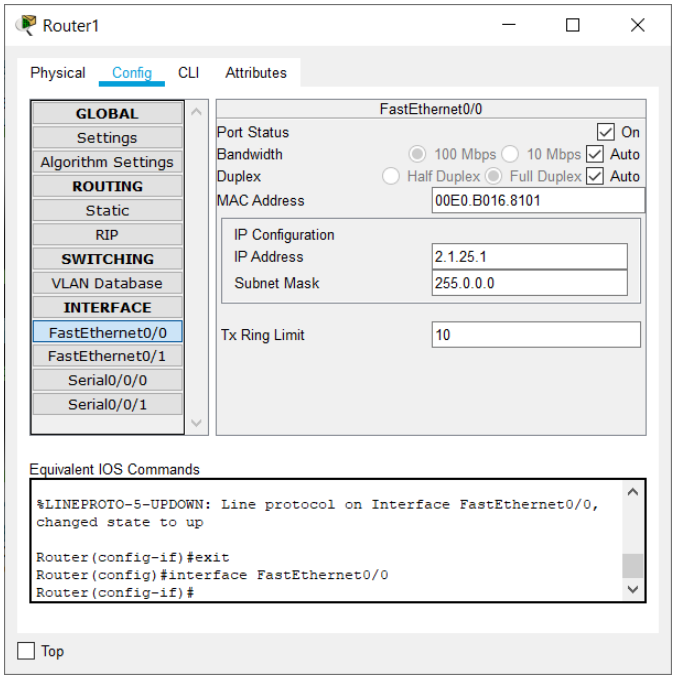


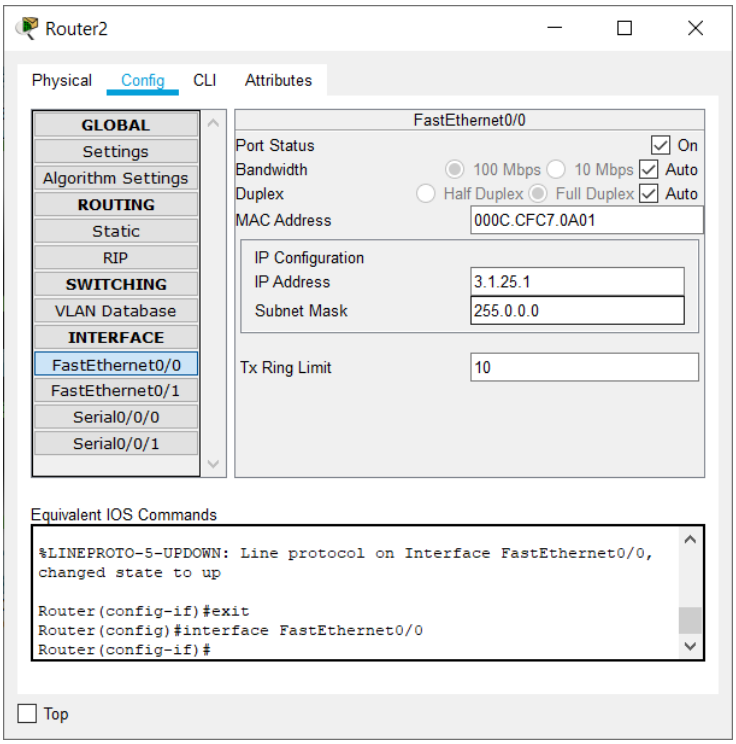
Ip Address Configuration (OSPF)

ADDING gateway in router

1. Click on the router.
2. Go to Config ->Fast ethernet 0/0.
3. Then add the gateway for each network in all the routers.
4. Then turn on the port.

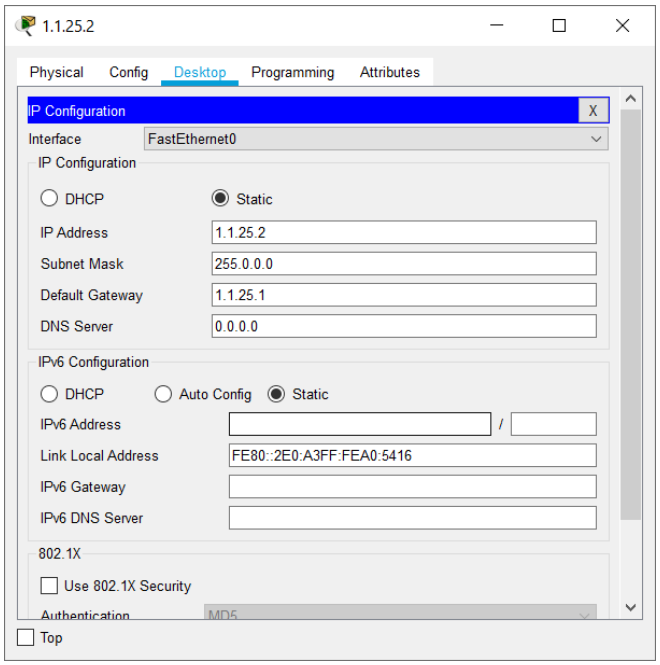


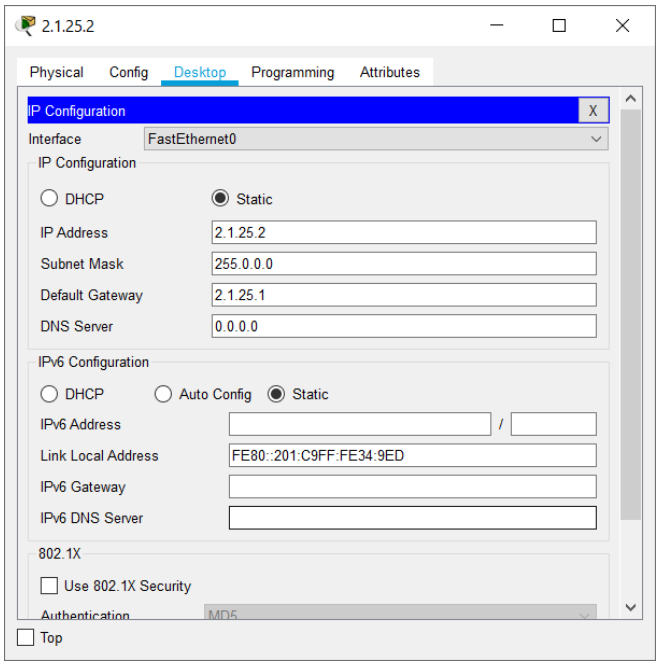


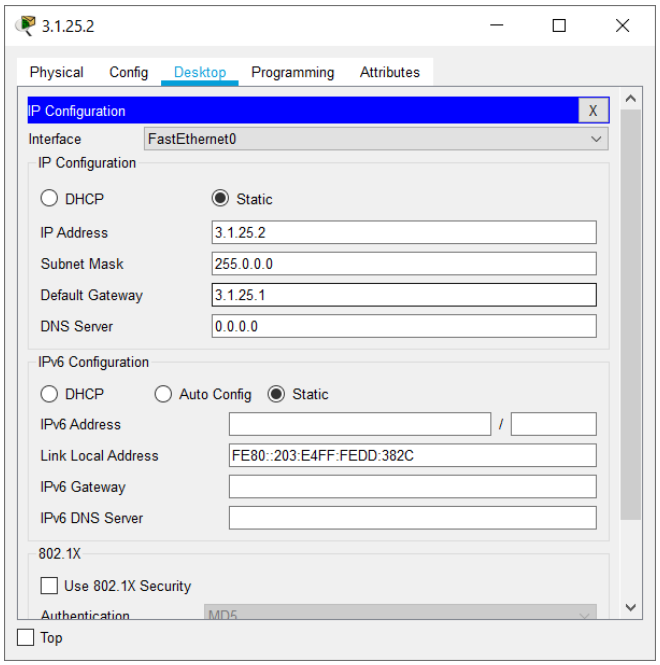


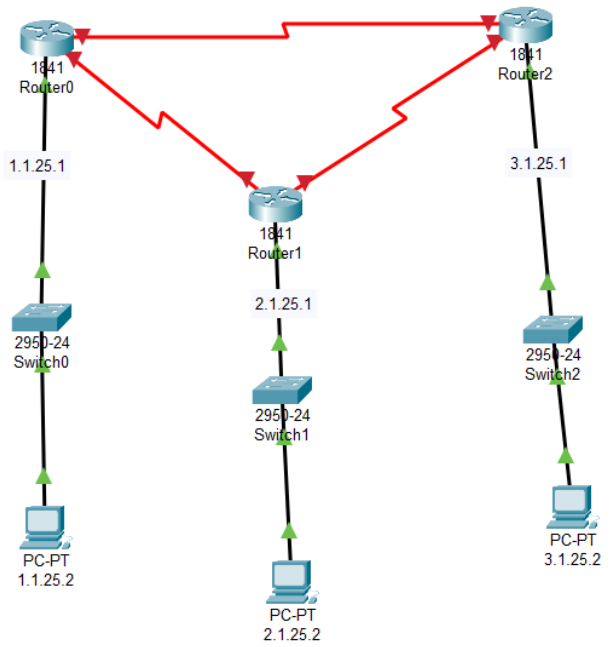
Assigning IP address to the PC's

1. Click on the PC.
2. Go to Desktop ->IP configuration.
3. Add the Ip address and the gateway.



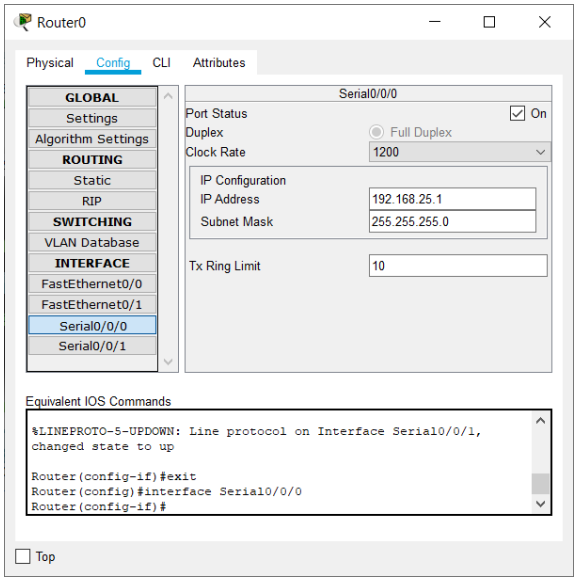


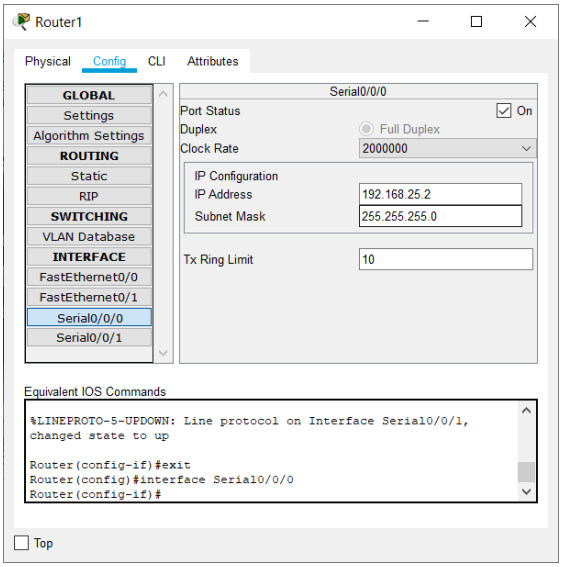


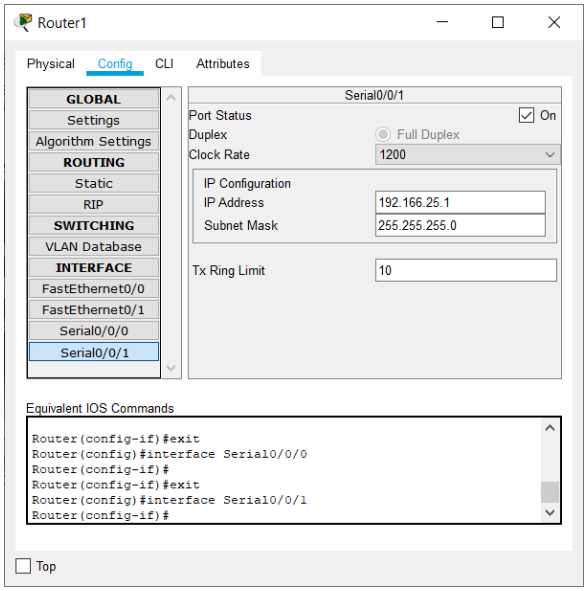


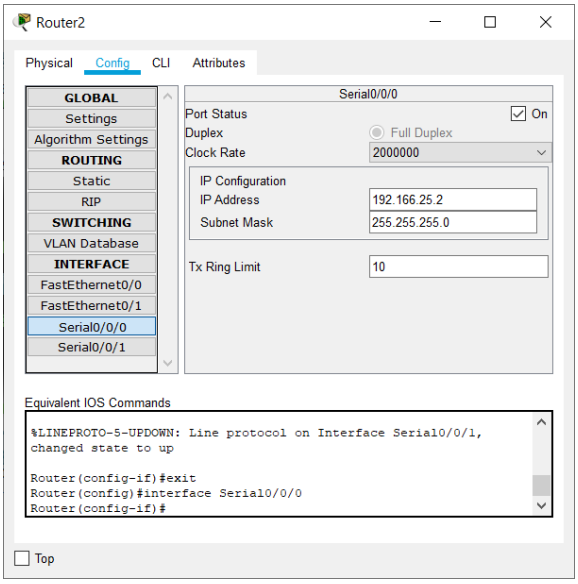
Connecting Router's

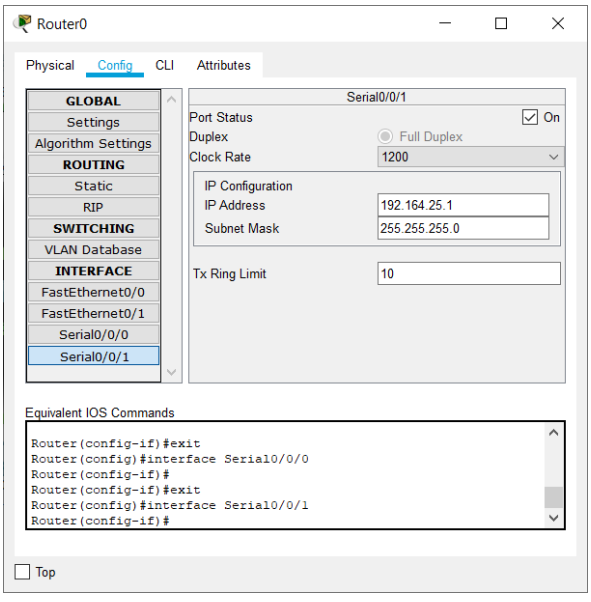
1. Click on the router.
2. Go to Config.
3. Then config the serial ports as required.

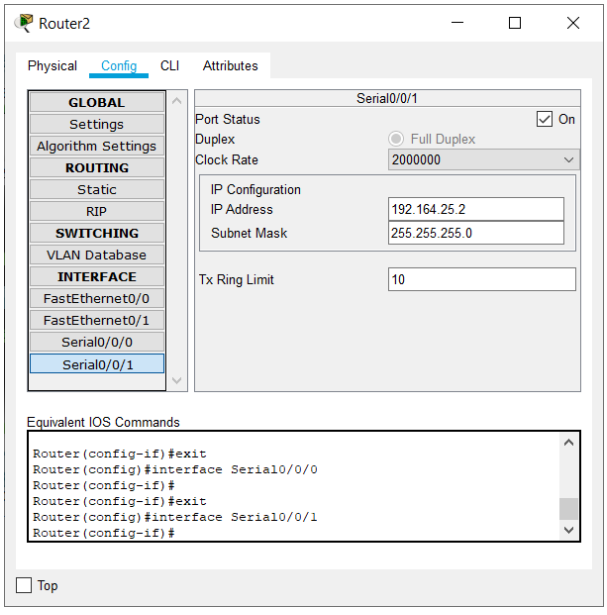








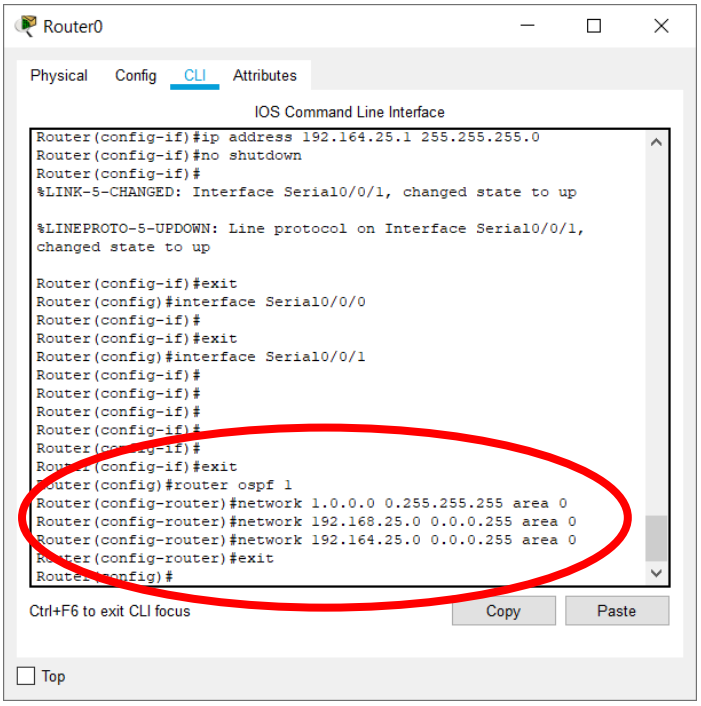


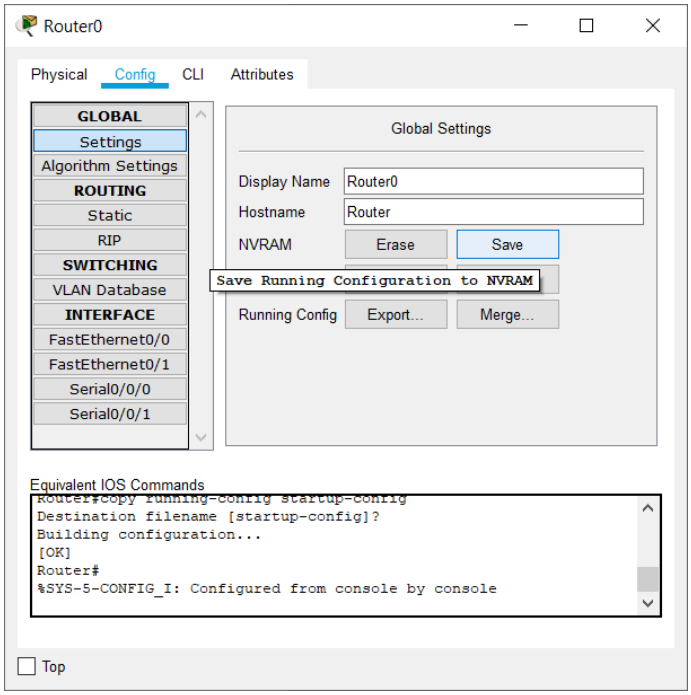


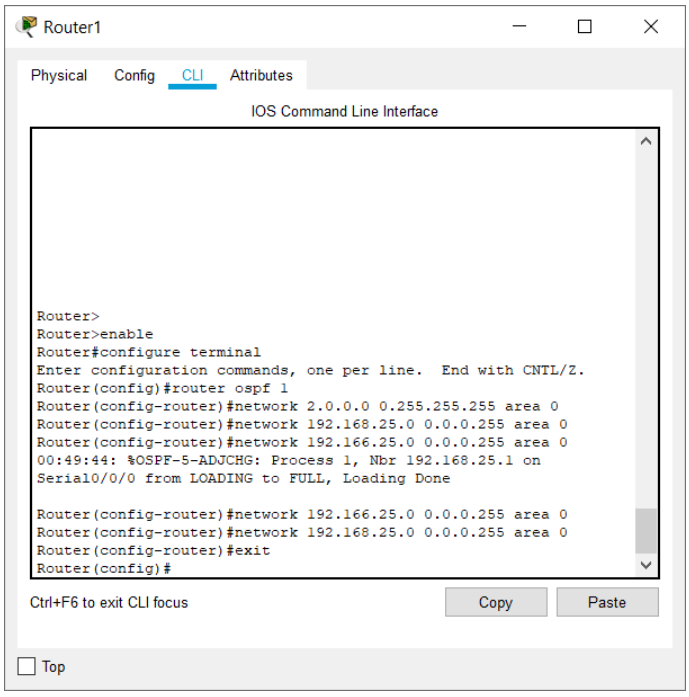
Configuring OSPF

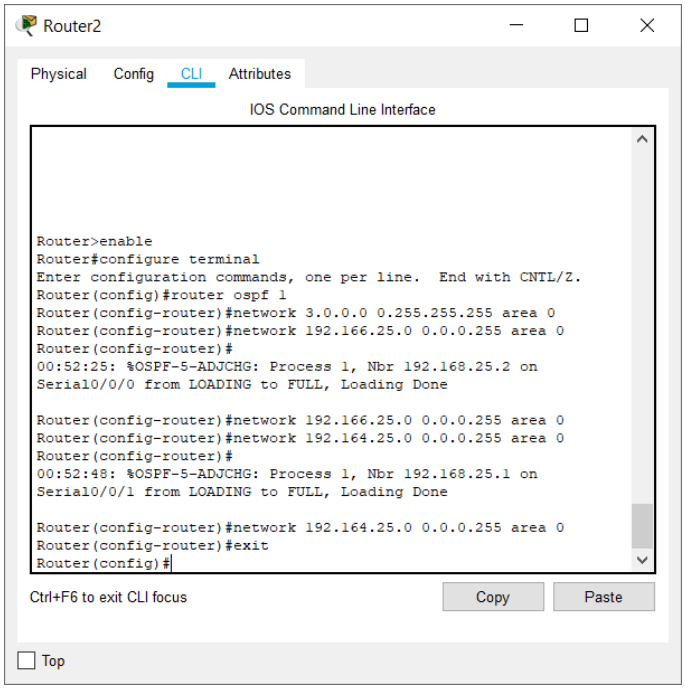
Adding networks to communicate between (for each router)

1. Click on the router.
2. Go to CLI.
3. Type "exit" and hit ENTER to enter the config mode.
4. Then type "router ospf 1" to configure OSPF protocol for this router
5. Then type "network <the immediate network id> <compliment of its subnet mask> area 0".
6. Repeat step 5 to add all the neighbour networks.
7. Then type "exit".
8. Go to CONFIG -> settings and select SAVE.
9. Repeat the abbove steps for all routers.

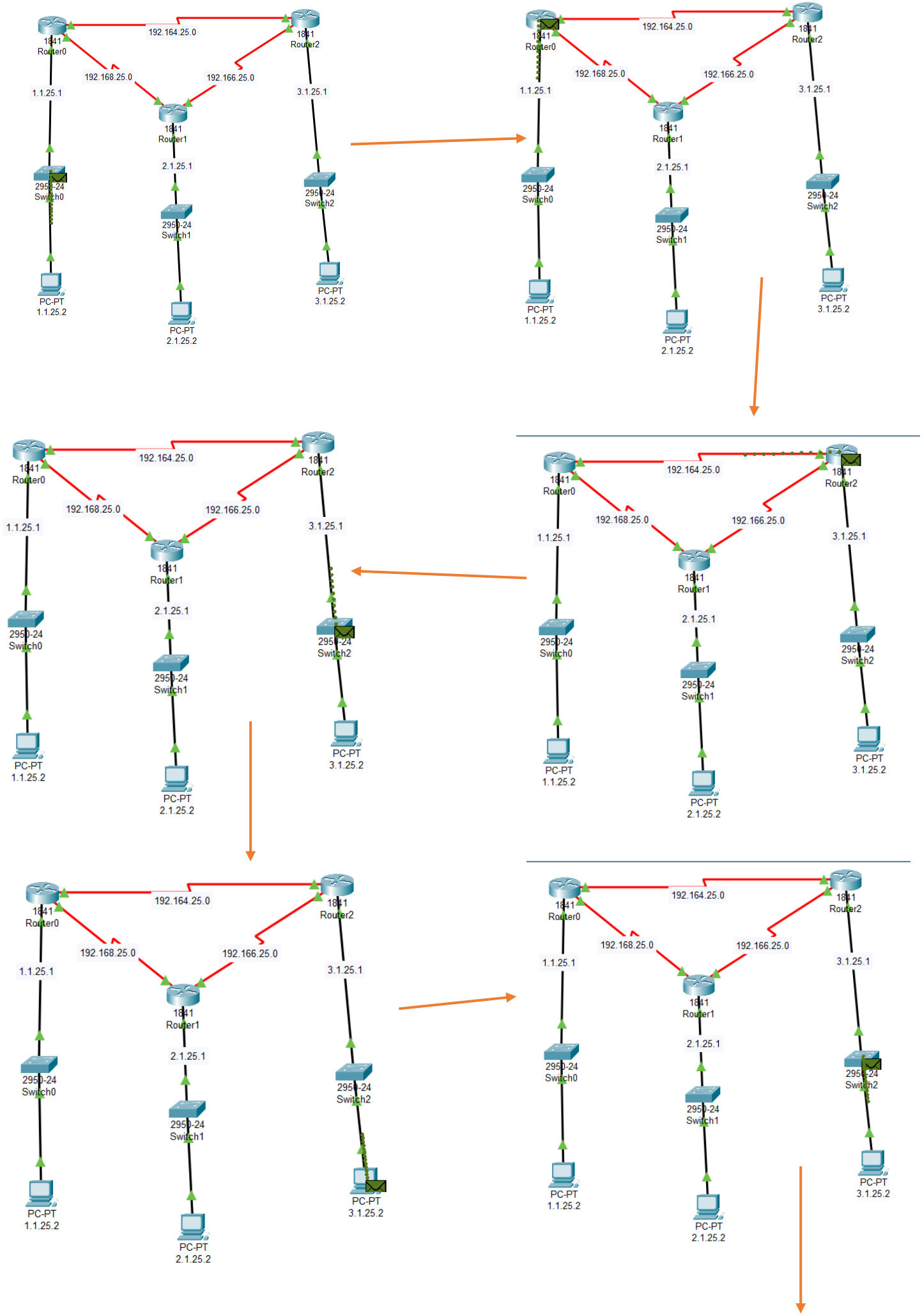


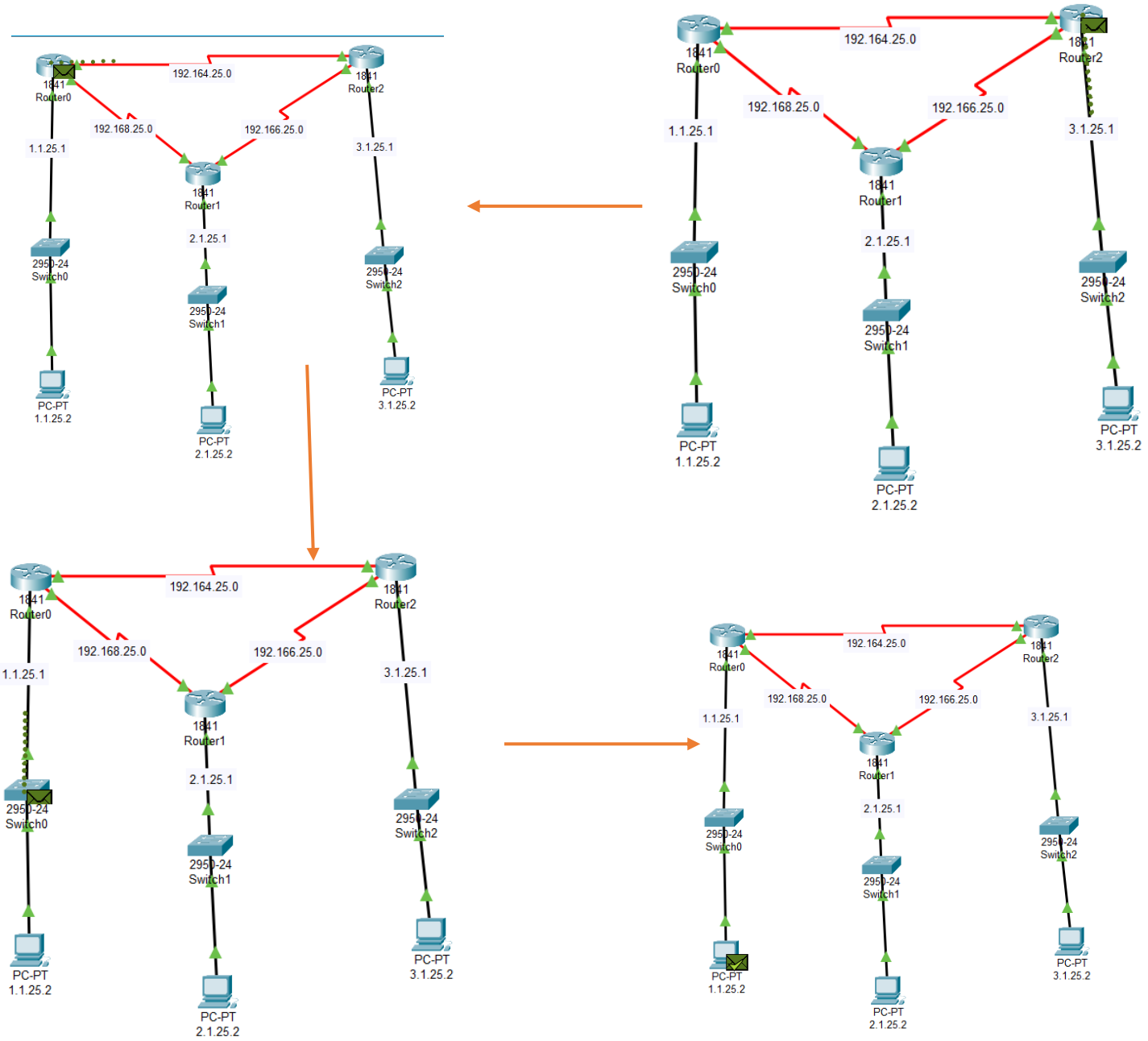






Real Mode Simulation (OSPF)





Event List

Vis.	Time(sec)	Last Device	At Device	Type
	0.000	--	1.1.25.2	ICMP
	0.001	1.1.25.2	Switch0	ICMP
	0.002	Switch0	Router0	ICMP
	0.003	Router0	Router2	ICMP
	0.004	Router2	Switch2	ICMP
	0.005	Switch2	3.1.25.2	ICMP
	0.006	3.1.25.2	Switch2	ICMP
	0.007	Switch2	Router2	ICMP
	0.008	Router2	Router0	ICMP
	0.009	Router0	Switch0	ICMP
	0.010	Switch0	1.1.25.2	ICMP

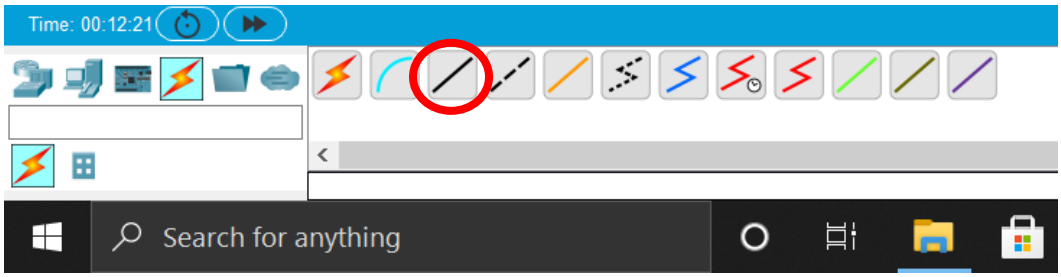
PDU List Window

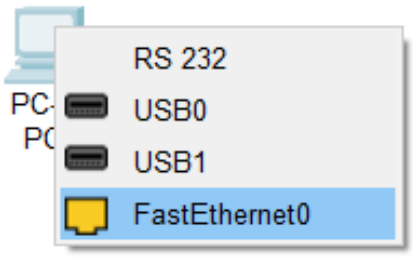
Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num
	Successful	1.1.25.2	3.1.25.2	ICMP		0.000	N	0

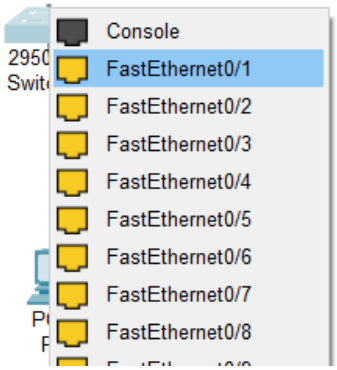
➢ BGP(Broder Gateway Protocol) PROTOCOL

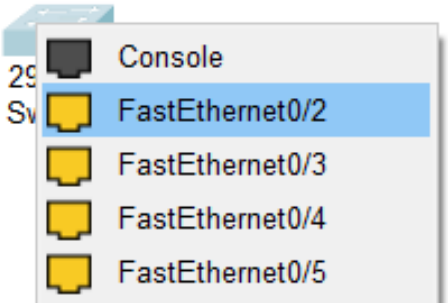
Network Topology (BGP)

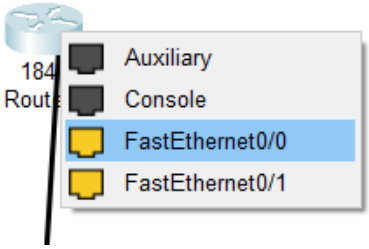
1. Drag and drop PC from End Devices.
2. Drag and drop switch(2950-24) for each network and router(1841) for each network.
3. Connect the PC and switch using Copper straight through cable in fast ethernet ports of both PC and switch.
4. Repeat Step 3 to connect switch to router.



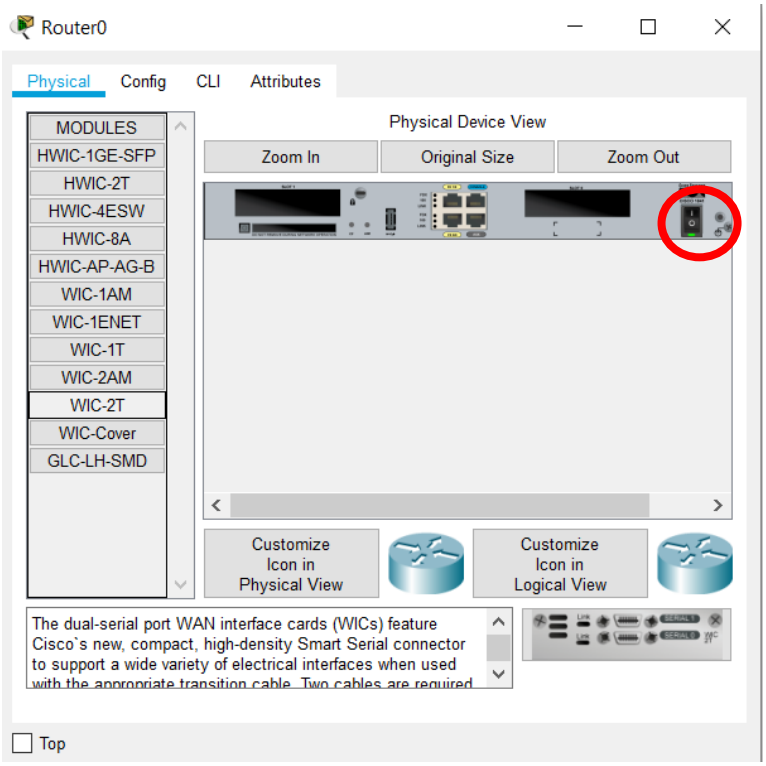




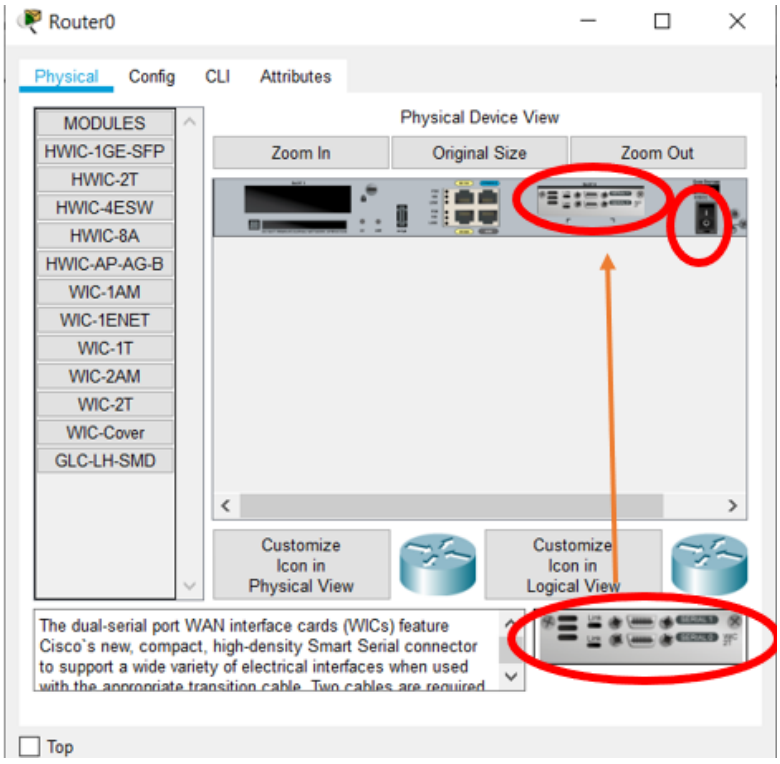




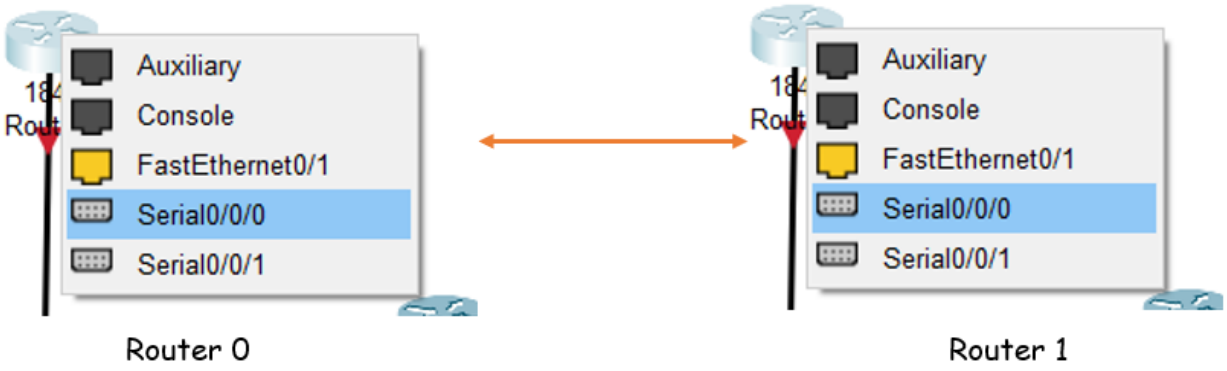
5. As by default not many ports are available on routers, we need to add some extra serial ports to form the network.
6. To add the serial ports click on the router go to PHYSICAL ----> WIC-2T.
7. Turn off the router by toggling(click) the switch.(FOR ALL ROUTERS)



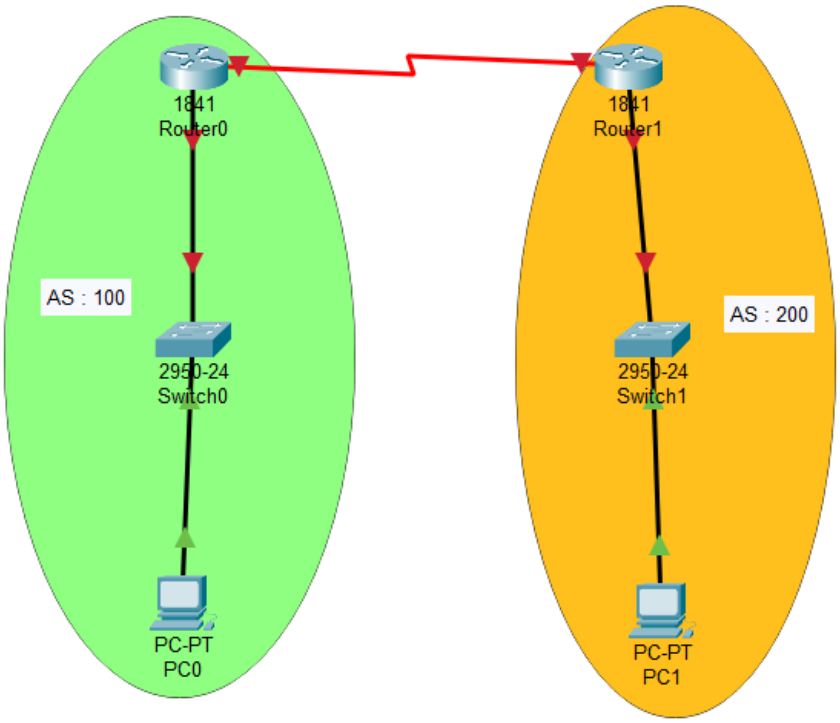
8. Now Drag and drop the ports image from bottom just to the left of switch.



9. Now toggle(click) the switch to turn on the router.
10. Now to connect the routers select the **serial DTE cable** and connect the routers using the serial ports.



Router 0 Router 1

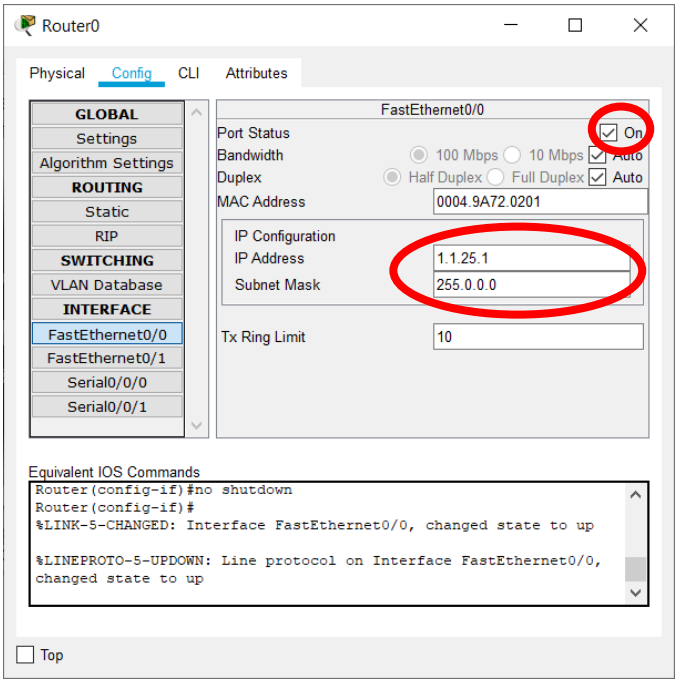


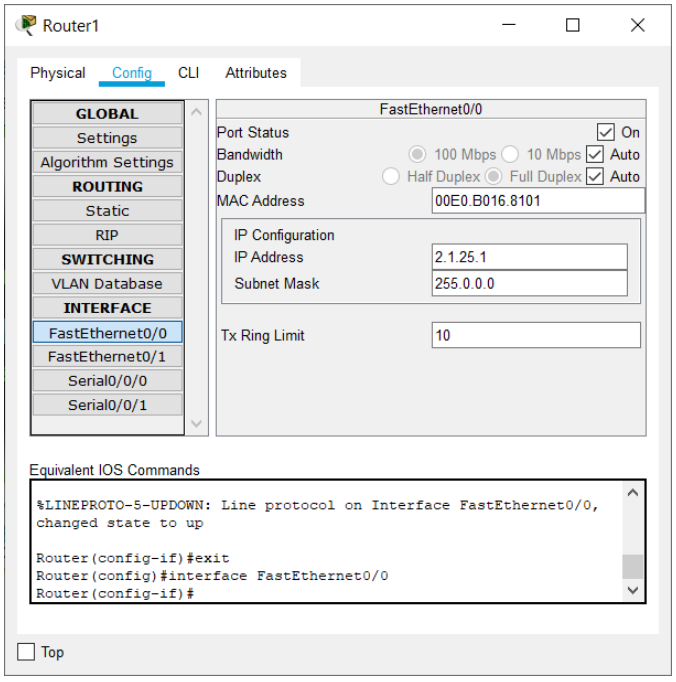
Network

Ip Address Configuration (BGP)

ADDING gateway in router

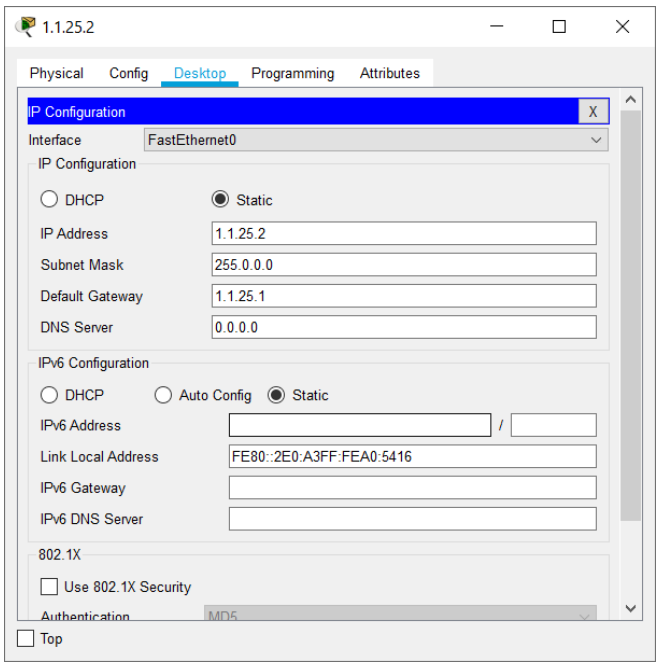
1. Click on the router.
2. Go to Config ->Fast ethernet 0/0.
3. Then add the gateway for each network in all the routers.
4. Then turn on the port.

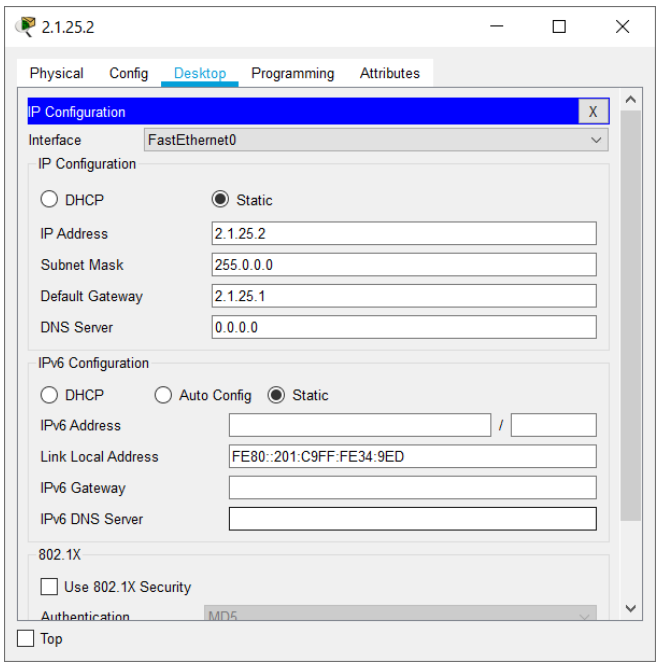




Assigning IP address to the PC's

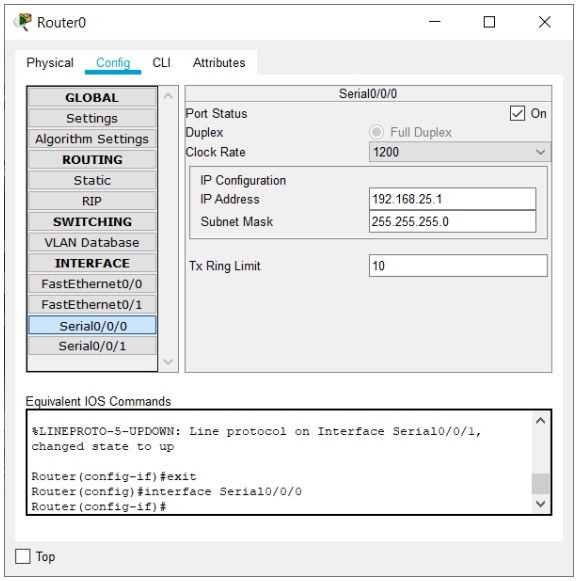
1. Click on the PC.
2. Go to Desktop ->IP configuration.
3. Add the Ip address and the gateway.

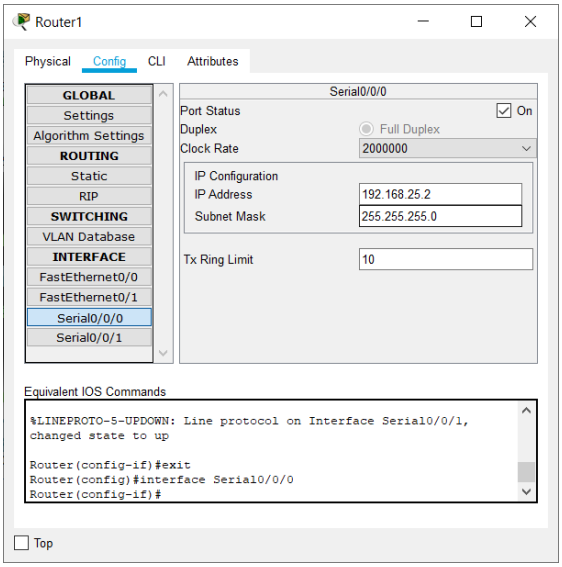


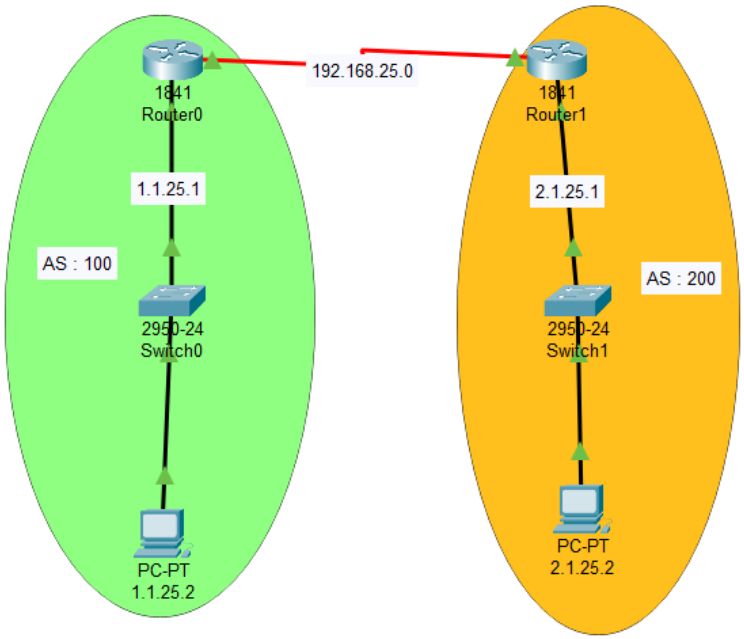


Connecting Router's

1. Click on the router.
2. Go to Config.
3. Then config the serial ports as required.







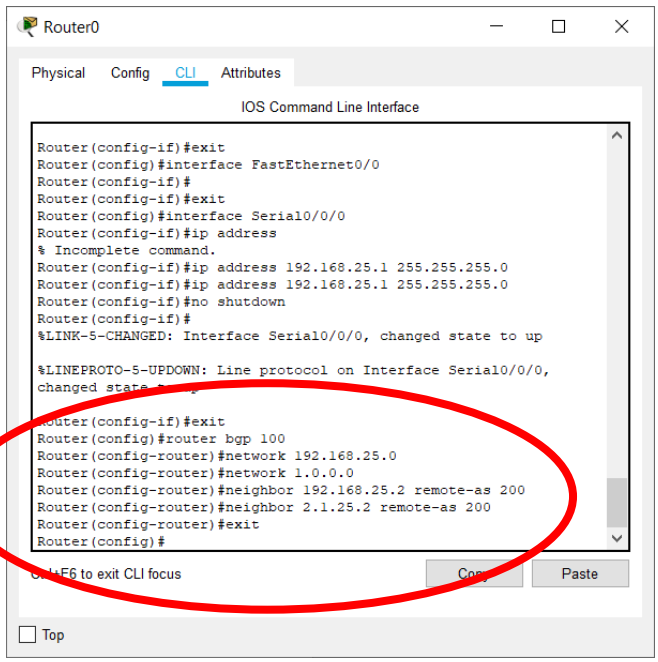
Configuring BGP

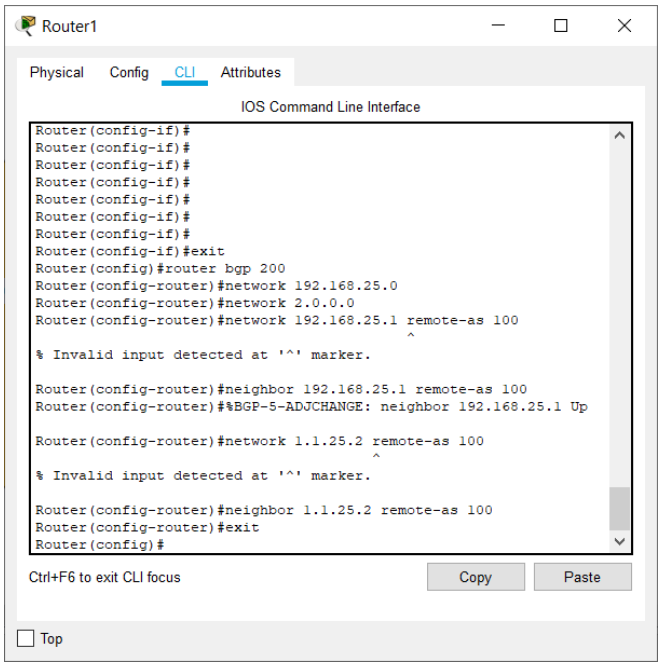
For Router0 :

1. Click on the router.
2. Go to CLI.
3. Type "exit" and hit ENTER to enter the config mode.
4. Then type "router bgp 100" .
5. Then type "network 192.168.25.0".
6. Then type "network 1.0.0.0".
7. Then type "neighbor 192.168.25.2 remote-as 200".
8. Then type "neighbor 2.1.25.2 remote-as 200".
9. Then type "exit".
10. Go to CONFIG -> settings and select SAVE.

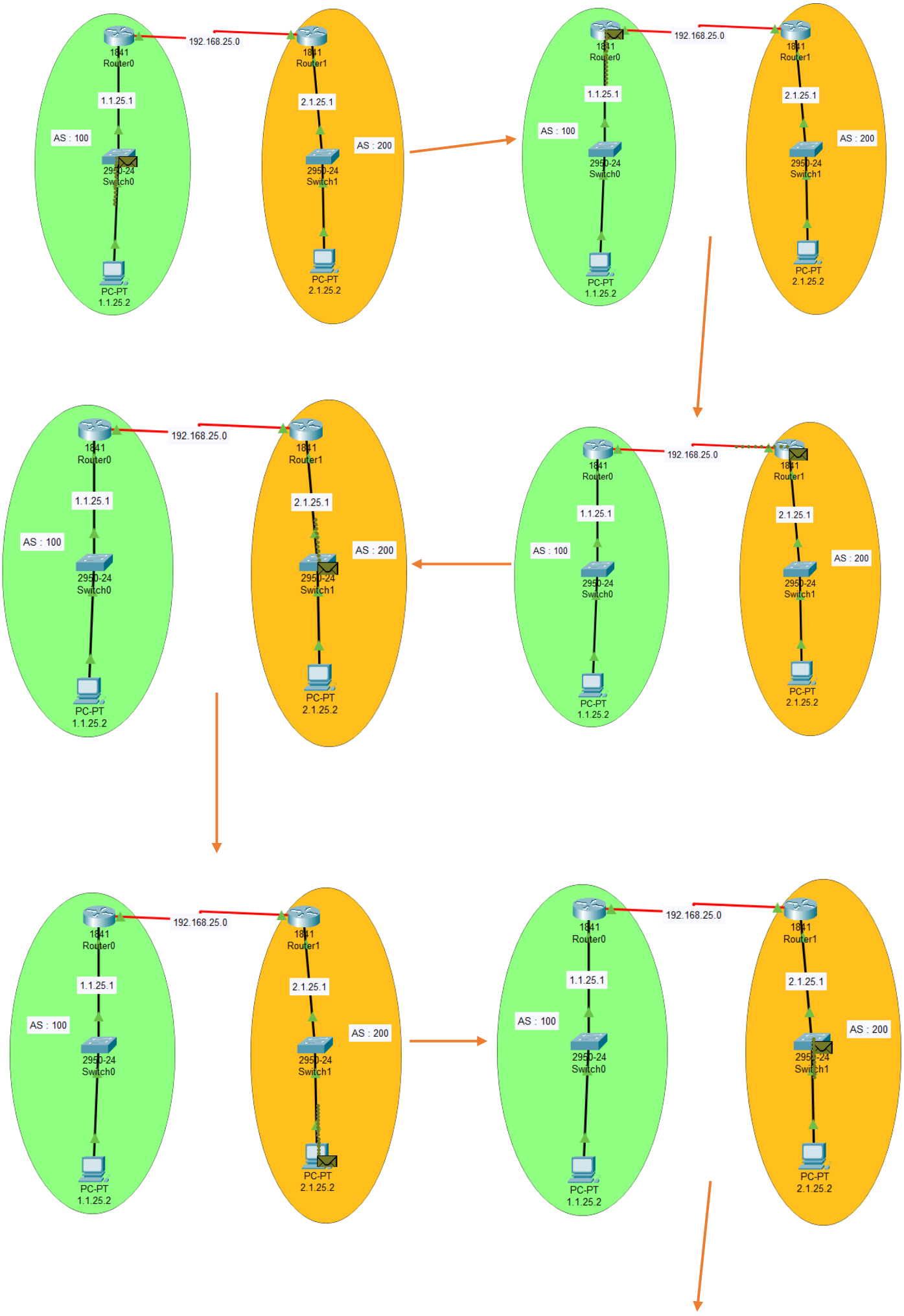
For Router1 :

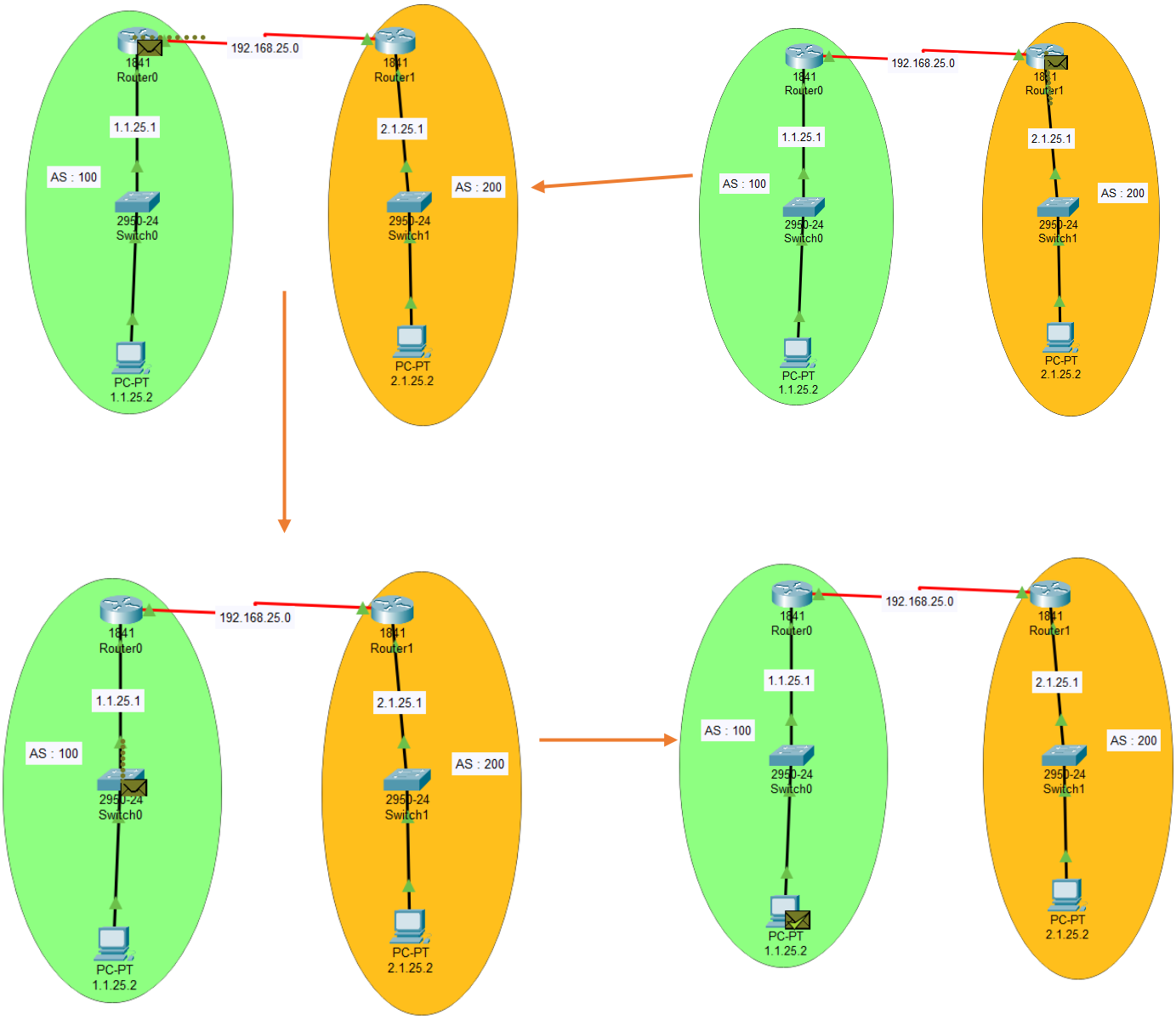
1. Click on the router.
2. Go to CLI.
3. Type "exit" and hit ENTER to enter the config mode.
4. Then type "router bgp 200" .
5. Then type "network 192.168.25.0".
6. Then type "network 2.0.0.0".
7. Then type "neighbor 192.168.25.1 remote-as 100".
8. Then type "neighbor 1.1.25.2 remote-as 100".
9. Then type "exit".
10. Go to CONFIG -> settings and select SAVE.





Real Mode Simulation (BGP)





Event List

Vis.	Time(sec)	Last Device	At Device	Type
	0.000	--	1.1.25.2	ICMP
	0.001	1.1.25.2	Switch0	ICMP
	0.002	Switch0	Router0	ICMP
	0.003	Router0	Router1	ICMP
	0.004	Router1	Switch1	ICMP
	0.005	Switch1	2.1.25.2	ICMP
	0.006	2.1.25.2	Switch1	ICMP
	0.007	Switch1	Router1	ICMP
	0.008	Router1	Router0	ICMP
	0.009	Router0	Switch0	ICMP
	0.010	Switch0	1.1.25.2	ICMP

PDU List Window

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num
	Successful	1.1.25.2	2.1.25.2	ICMP		0.000	N	0