COMPUTER NETWORKS(CS-307)
LAB-11

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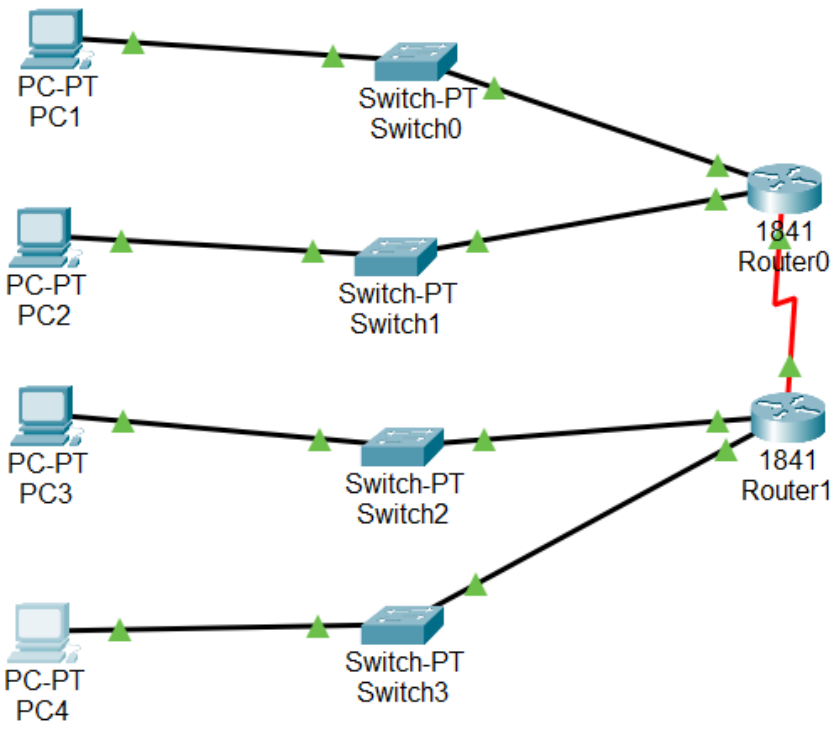
BSSE-5A

Topology A:


PC-PT
PC1
Switch-PT
Switch0
1841
Router0
PC-PT
PC2
Switch-PT
Switch1
PC-PT
PC3
Switch-PT
Switch2
1841
Router1
PC-PT
PC4
Switch-PT
Switch3

Q5: Calculate the binary value for the first five subnets. The first two subnets have been done for you.

Subnet	Network Address	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	192.168.100.0	0	0	0	0	0	0	0	0
1	192.168.100.0	0	0	1	0	0	0	0	0
2	192.168.100.0	0	1	0	0	0	0	0	0
3	192.168.100.0	0	1	1	0	0	0	0	0
4	192.168.100.0	1	0	0	0	0	0	0	0

Q6: Calculate the binary and decimal value of the new subnet mask.

First octet	Second Octet	Third Octet	Mask Bit 7	Mas k Bit 6	Mask Bit 5	Mask Bit 4	Mask Bit 3	Mask Bit 2	Mask Bit 1	Mask Bit 0
11111111	11111111	1111111 1	1	1	1	1	0	0	0	0

First decimal Octet	Second decimal Octet	Third decimal Octet	Formal Decimal Octet
255.	255.	255	224

Q7. Fill in the Subnet Table, listing the decimal value of all available subnets, the first and last usable host address, and the broadcast address. Repeat until all addresses are listed.
Note: You may not need to use all rows.

Subnet Number	Subnet Address	First Usable Host Address	Last Usable Host Address	Broadcast Address
0	192.168.10.0	192.168.10.1	192.168.10.30	192.168.10.31
1	192.168.10.32	192.168.10.33	192.168.10.62	192.168.10.63
2	192.168.10.64	192.168.10.65	192.168.10.94	192.168.10.95
3	192.168.10.96	192.168.10.97	192.168.10.126	192.168.10.127
4	192.168.10.128	192.168.10.129	192.168.10.158	192.168.10.159
5	192.168.10.160	192.168.10.161	192.168.10.190	192.168.10.191
6	192.168.10.192	192.168.10.193	192.168.10.222	192.168.10.223
7	192.168.10.224	192.168.10.225	192.168.10.254	192.168.10.255

Step 2: Assign the subnets to the network shown in the topology.

a) Assign Subnet 0 to the LAN connected to the GigabitEthernet 0/0 interface of R1:
192.168.100.0/27

b) Assign Subnet 1 to the LAN connected to the GigabitEthernet 0/1 interface of R1:
192.168.100.32/27

c) Assign Subnet 2 to the LAN connected to the GigabitEthernet 0/0 interface of R2:
192.168.100.64/27

d) Assign Subnet 3 to the LAN connected to the GigabitEthernet 0/1 interface of R2:
192.168.100.96/27

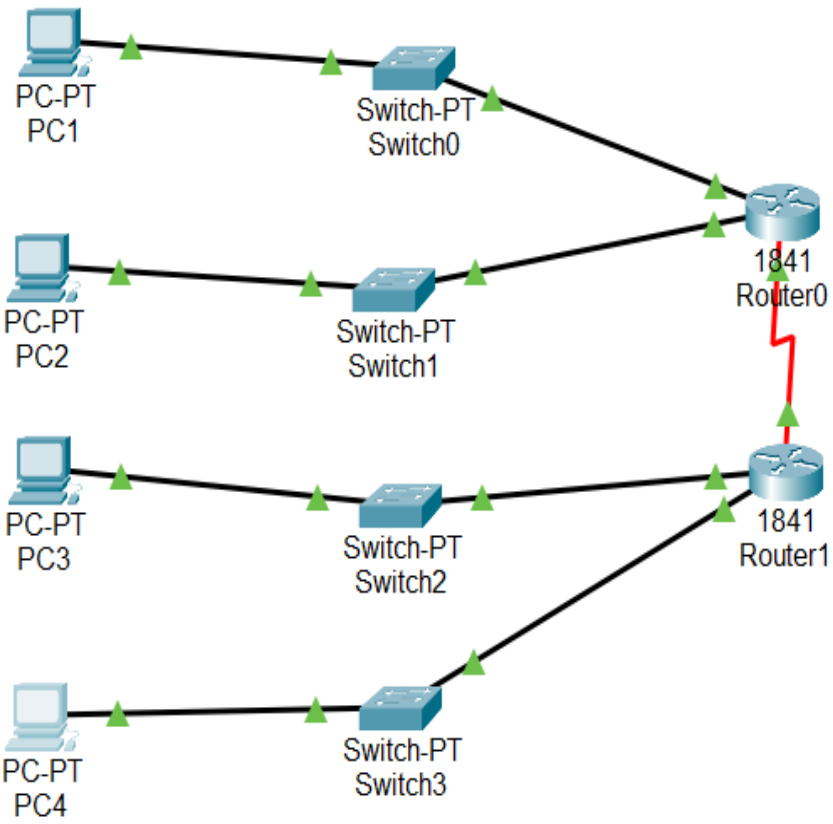
e) Assign Subnet 4 to the WAN link between R1 to R2:
192.168.100.128/27

Step 3: Document the addressing scheme.

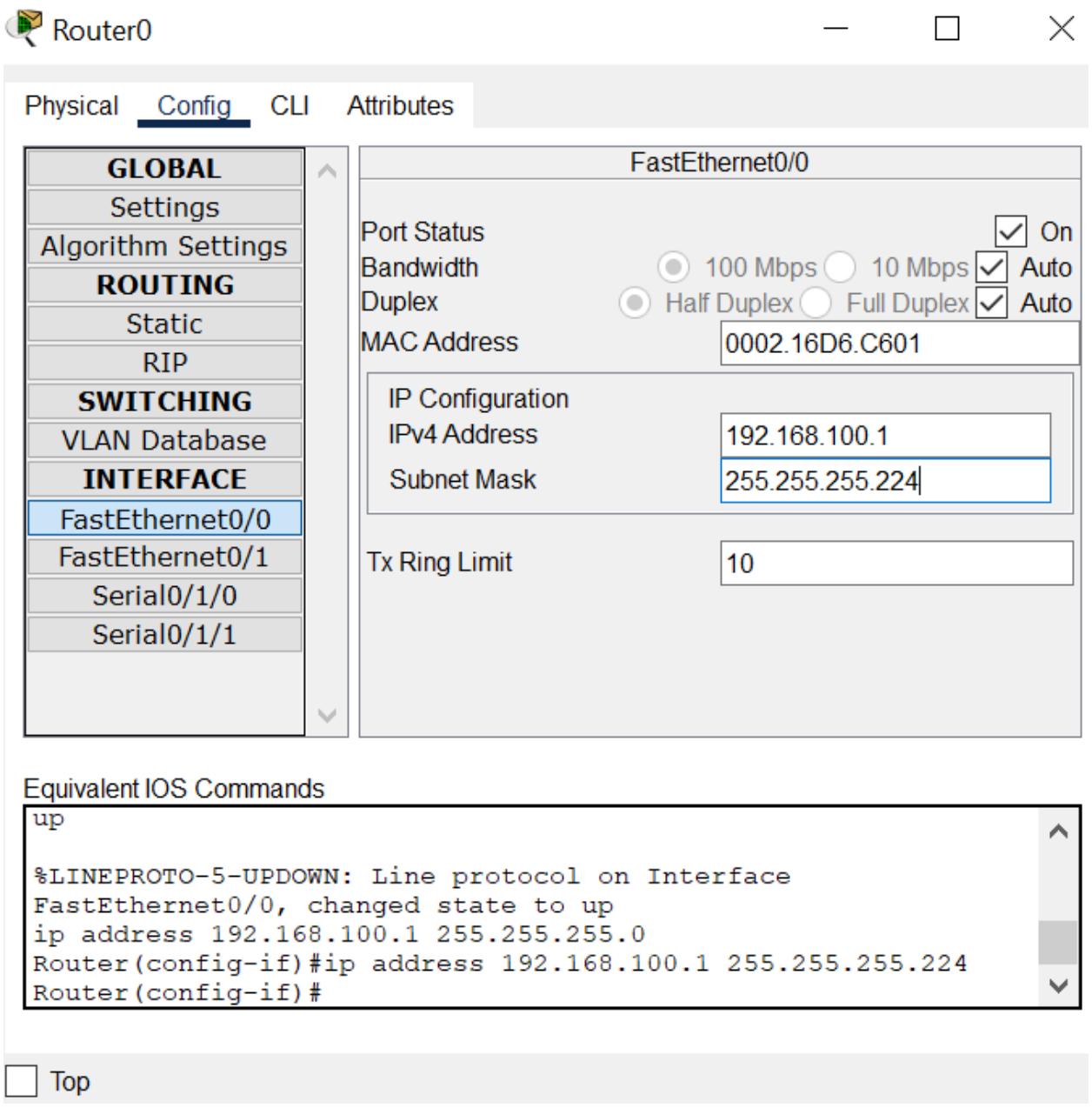
Device	Interface	IP Address	Subnet Mask	Default Gateway
R1	**G0/0**	192.168.100.1	255.255.255.224	-
	G0/1	192.168.100.33	255.255.255.224	-
	S0/0/0	192.168.100.129	255.255.255.224	-
R2	**G0/0**	192.168.100.65	255.255.255.224	-
	G0/1	192.168.100.97	255.255.255.224	-
	S0/0/0	192.168.100.158	255.255.255.224	-
S1	**VLAN 1**	-	-	-
S2	**VLAN 1**	-	-	-
S3	**VLAN 1**	-	-	-
S4	**VLAN 1**	-	-	-
PC1	**NIC**	192.168.100.30	255.255.255.224	192.168.100.1
PC2	**NIC**	192.168.100.62	255.255.255.224	192.168.100.33
PC3	**NIC**	192.168.100.94	255.255.255.224	192.168.100.65
PC4	**NIC**	192.168.100.126	255.255.255.224	192.168.100.97

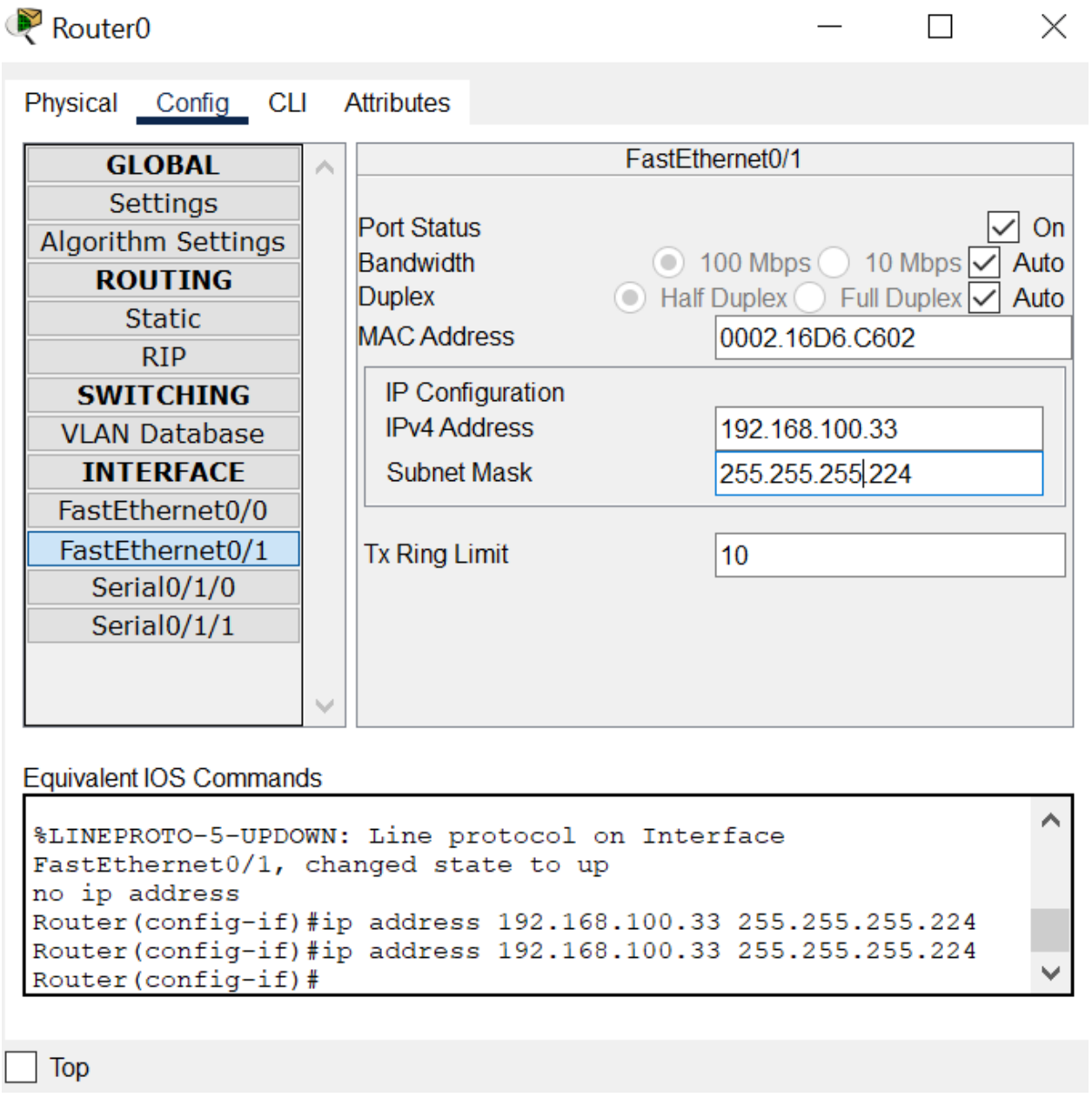
Part 2: Implement given topology in Packet Tracer and Assign IP Addresses to Network Devices and Verify Connectivity.

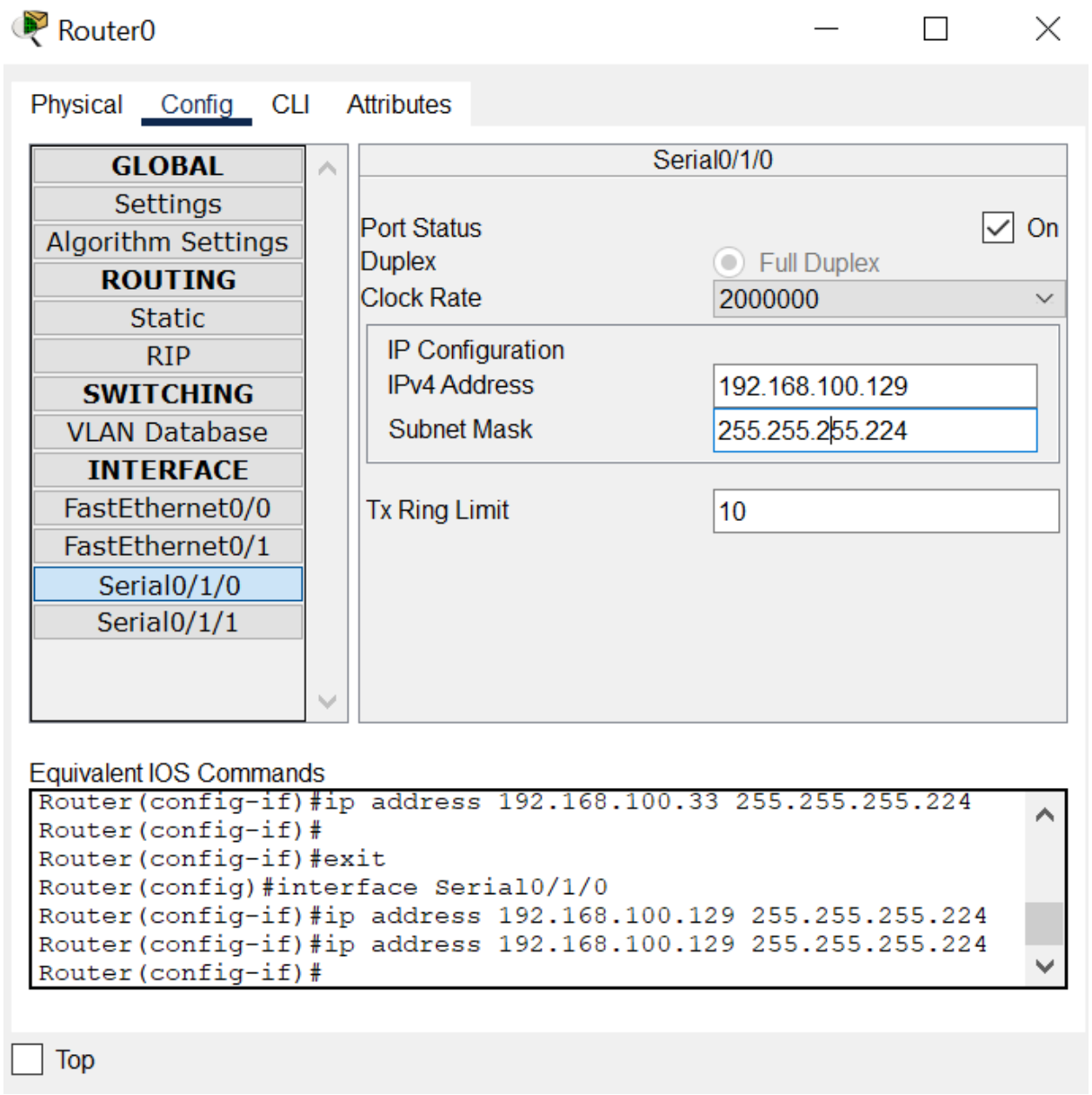
Step 1: Draw topology



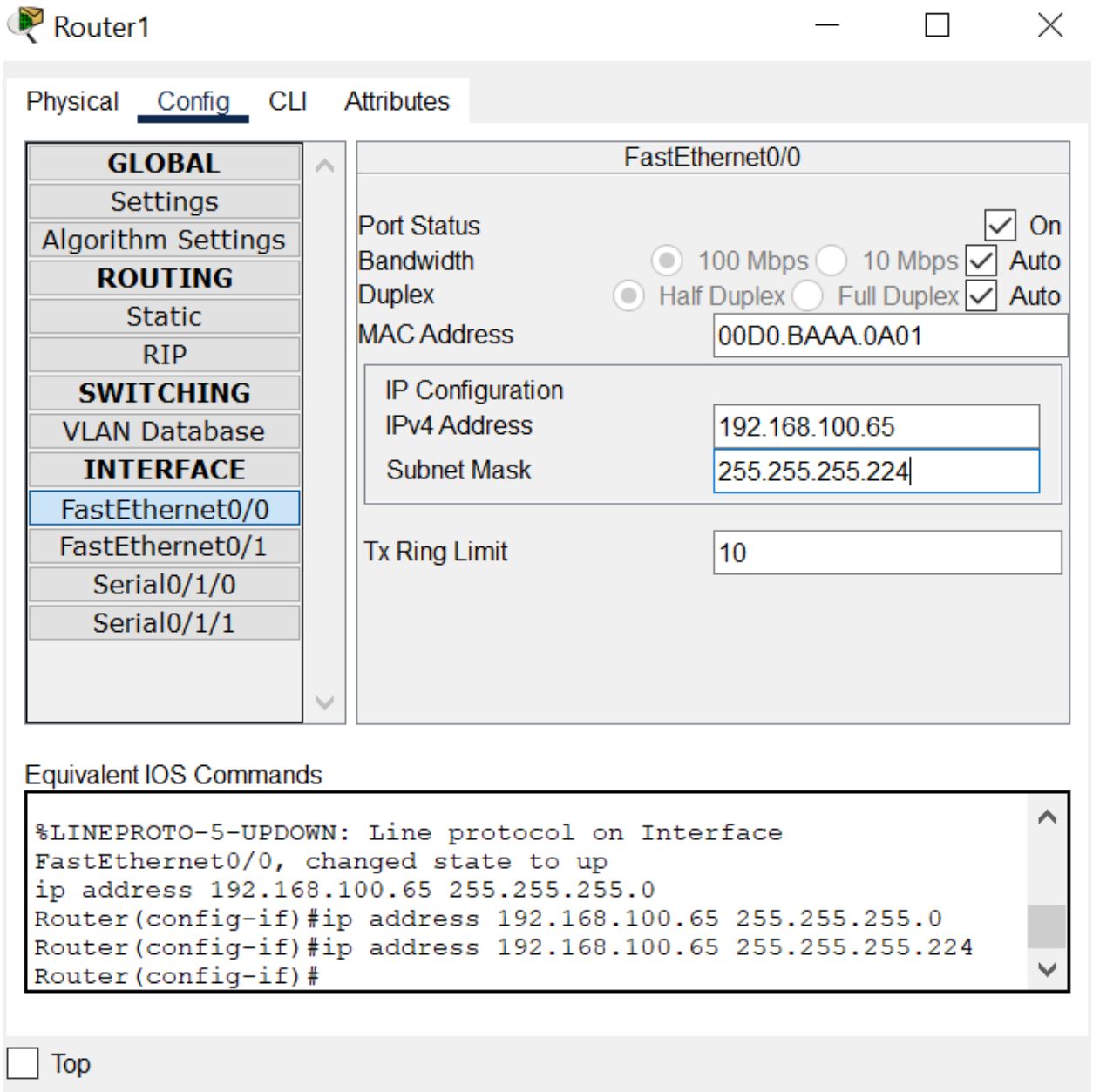
Step 2: Assign IP Address & Serial IP address on Router 0

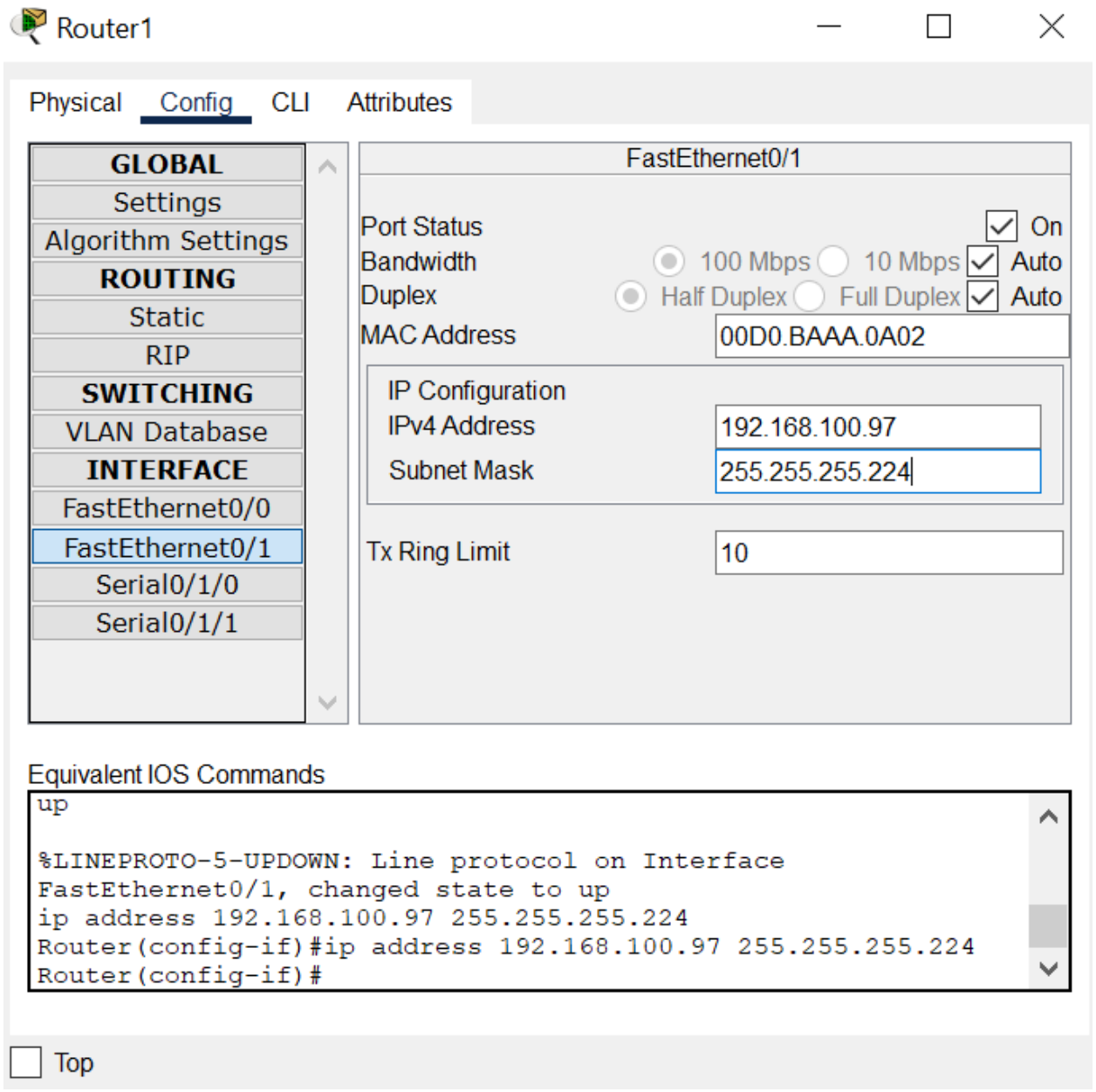


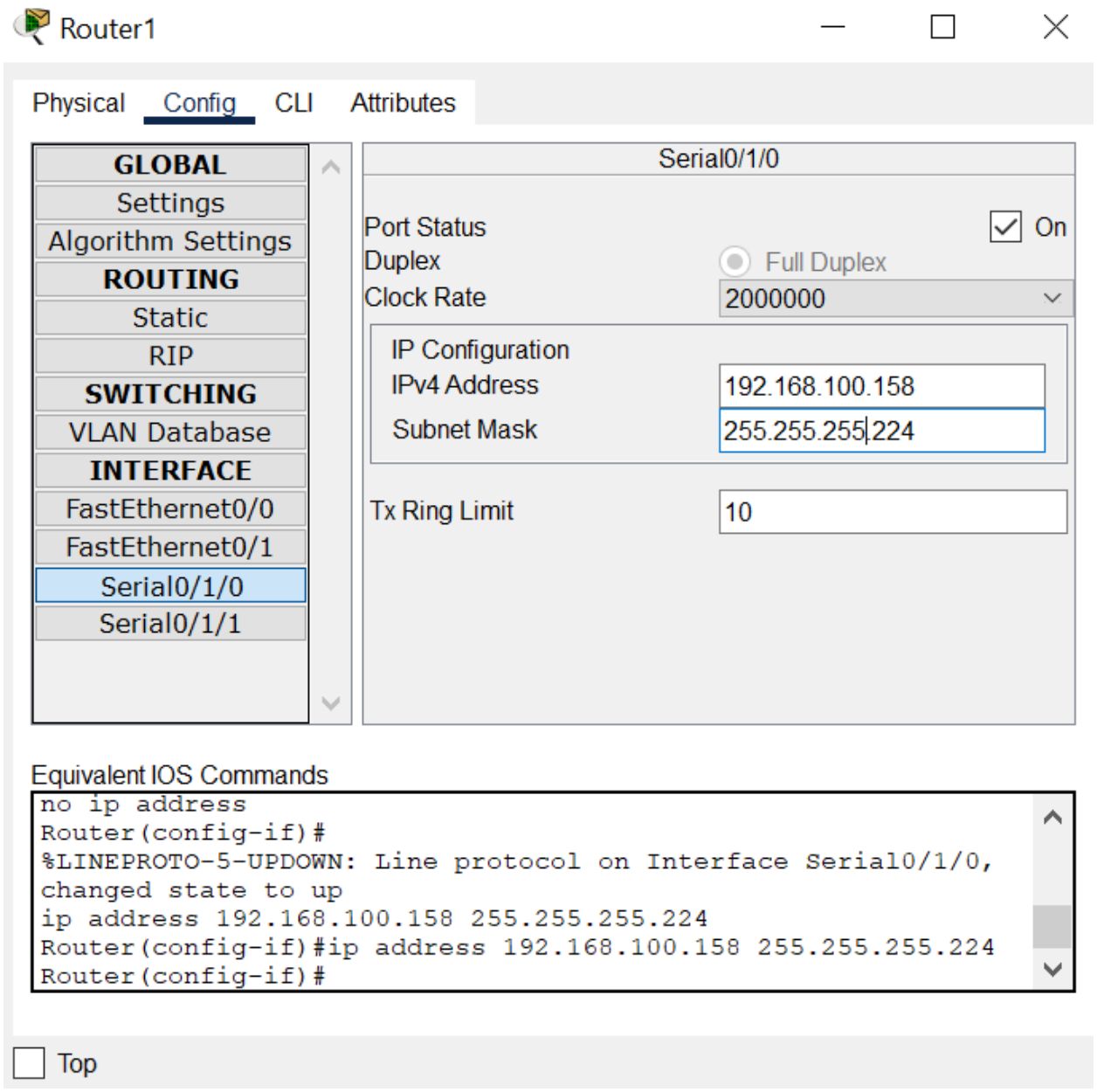

Router0
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
FastEthernet0/0
FastEthernet0/1
Serial0/1/0
Serial0/1/1
FastEthernet0/1
Port Status
On
Bandwidth
100 Mbps
10 Mbps
Auto
Duplex
Half Duplex
Full Duplex
Auto
MAC Address
0002.16D6.C602
IP Configuration
IPv4 Address
192.168.100.33
Subnet Mask
255.255.255.224
Tx Ring Limit
10
Equivalent IOS Commands
%LINEPROTO-5-UPDOWN: Line protocol on Interface
FastEthernet0/1, changed state to up
no ip address
Router(config-if)#ip address 192.168.100.33 255.255.255.224
Router(config-if)#ip address 192.168.100.33 255.255.255.224
Router(config-if)#
Top


Router0
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
FastEthernet0/0
FastEthernet0/1
Serial0/1/0
Serial0/1/1
Serial0/1/0
Port Status
On
Duplex
Full Duplex
Clock Rate
2000000
IP Configuration
IPv4 Address
192.168.100.129
Subnet Mask
255.255.255.224
Tx Ring Limit
10
Equivalent IOS Commands
Router(config-if)#ip address 192.168.100.33 255.255.255.224
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/1/0
Router(config-if)#ip address 192.168.100.129 255.255.255.224
Router(config-if)#ip address 192.168.100.129 255.255.255.224
Router(config-if)#
Top

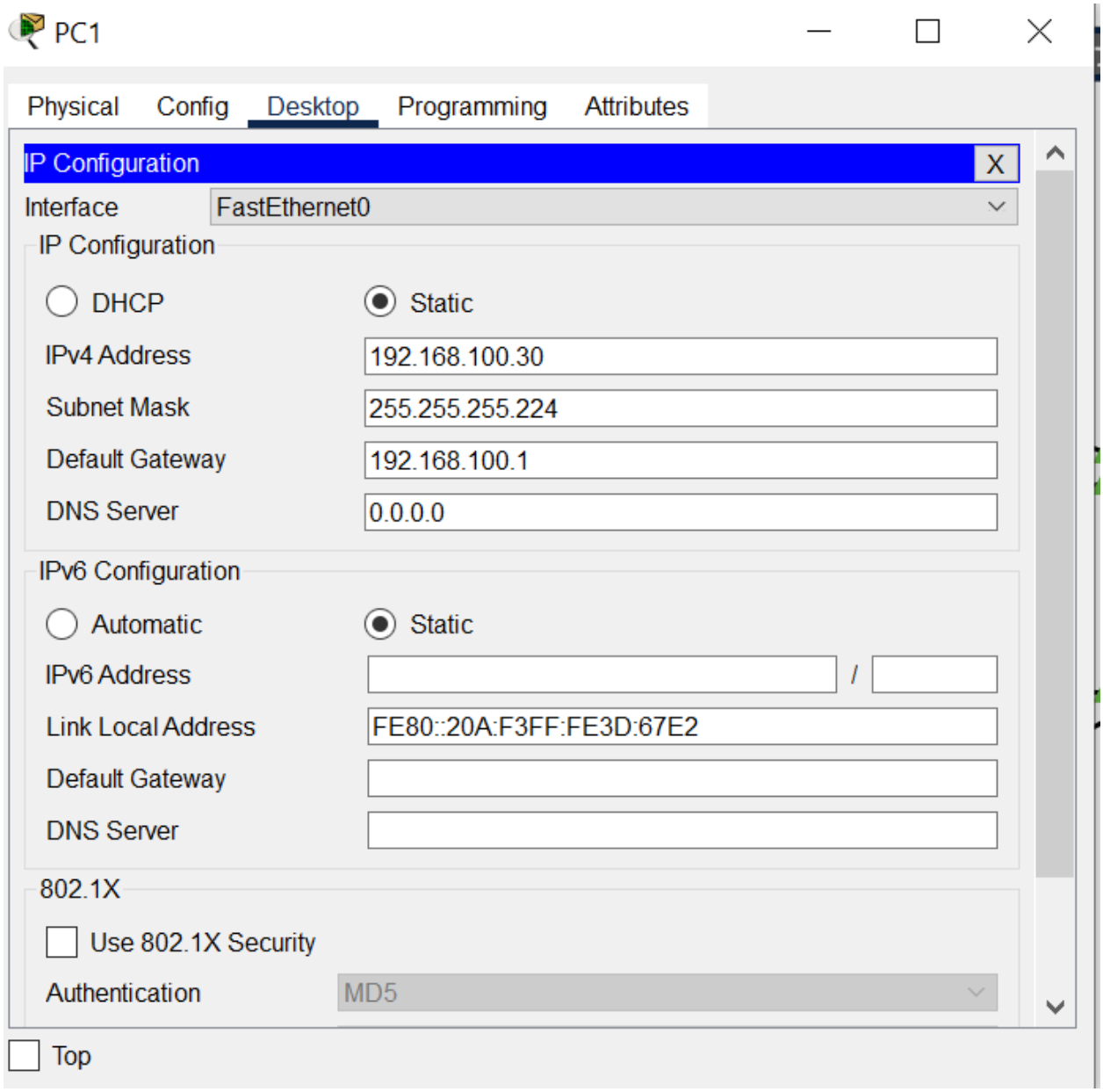
Step 3: Assign IP Address & Serial IP address on Router 1



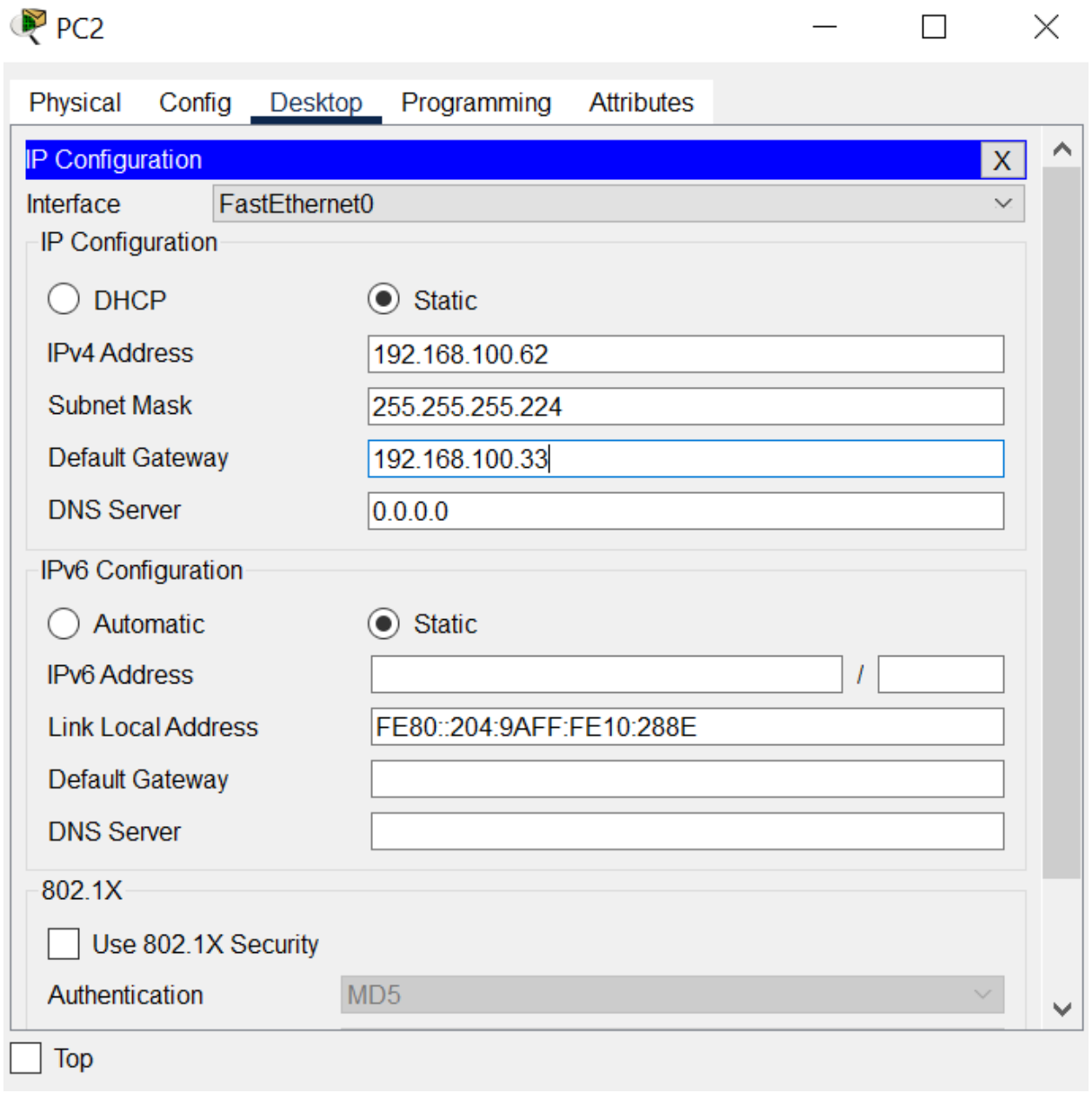

Router1
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
FastEthernet0/0
FastEthernet0/1
Serial0/1/0
Serial0/1/1
FastEthernet0/1
Port Status
On
Bandwidth
100 Mbps
10 Mbps
Auto
Duplex
Half Duplex
Full Duplex
Auto
MAC Address
00D0.BAAA.0A02
IP Configuration
IPv4 Address
192.168.100.97
Subnet Mask
255.255.255.224
Tx Ring Limit
10
Equivalent IOS Commands
up
%LINEPROTO-5-UPDOWN: Line protocol on Interface
FastEthernet0/1, changed state to up
ip address 192.168.100.97 255.255.255.224
Router(config-if)#ip address 192.168.100.97 255.255.255.224
Router(config-if)#
Top


Router1
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
FastEthernet0/0
FastEthernet0/1
Serial0/1/0
Serial0/1/1
Serial0/1/0
Port Status
On
Duplex
Full Duplex
Clock Rate
2000000
IP Configuration
IPv4 Address
192.168.100.158
Subnet Mask
255.255.255.224
Tx Ring Limit
10
Equivalent IOS Commands
no ip address
Router(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/0,
changed state to up
ip address 192.168.100.158 255.255.255.224
Router(config-if)#ip address 192.168.100.158 255.255.255.224
Router(config-if)#
Top

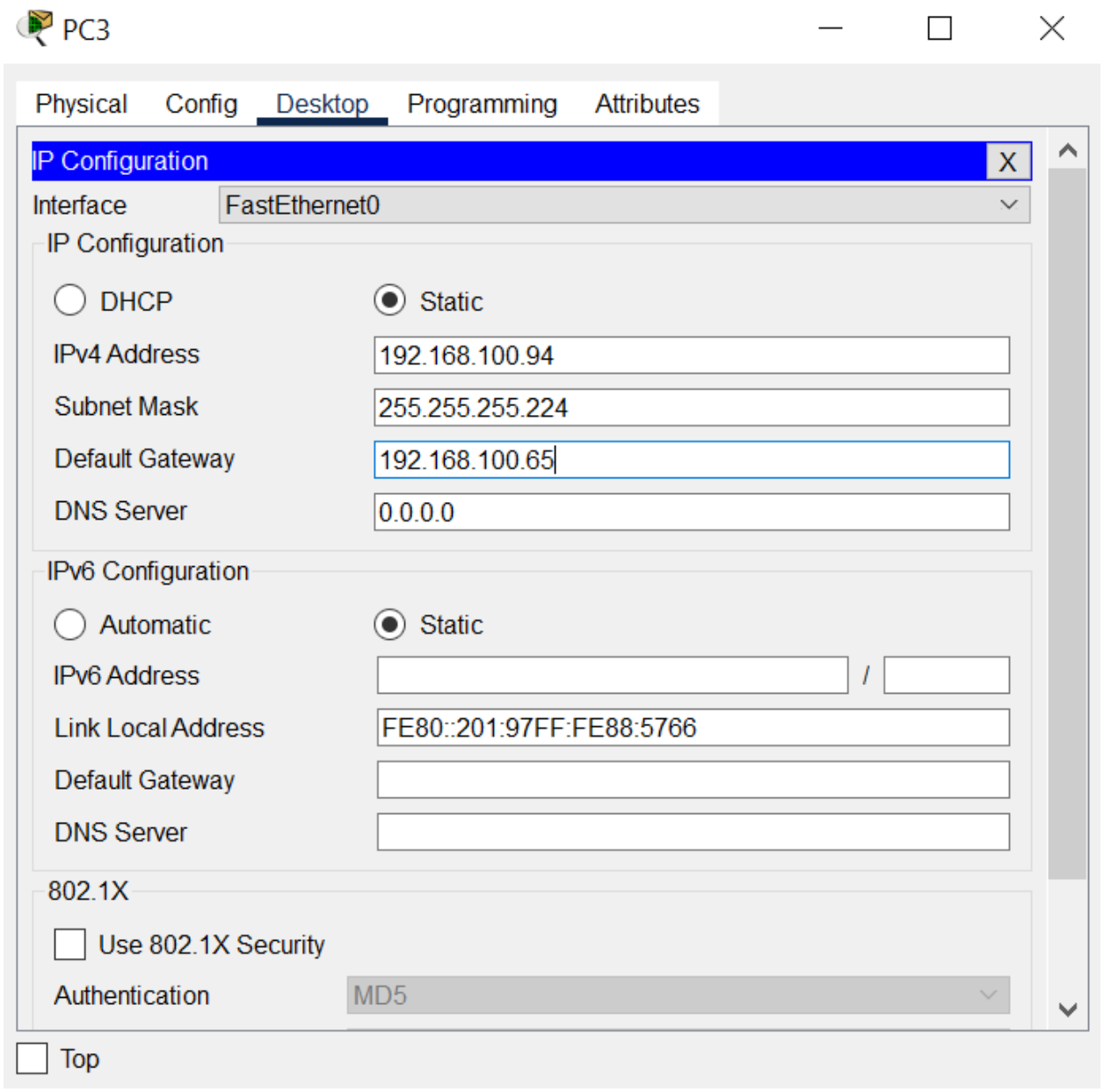
Step 4: Assign IP Address on PC1:



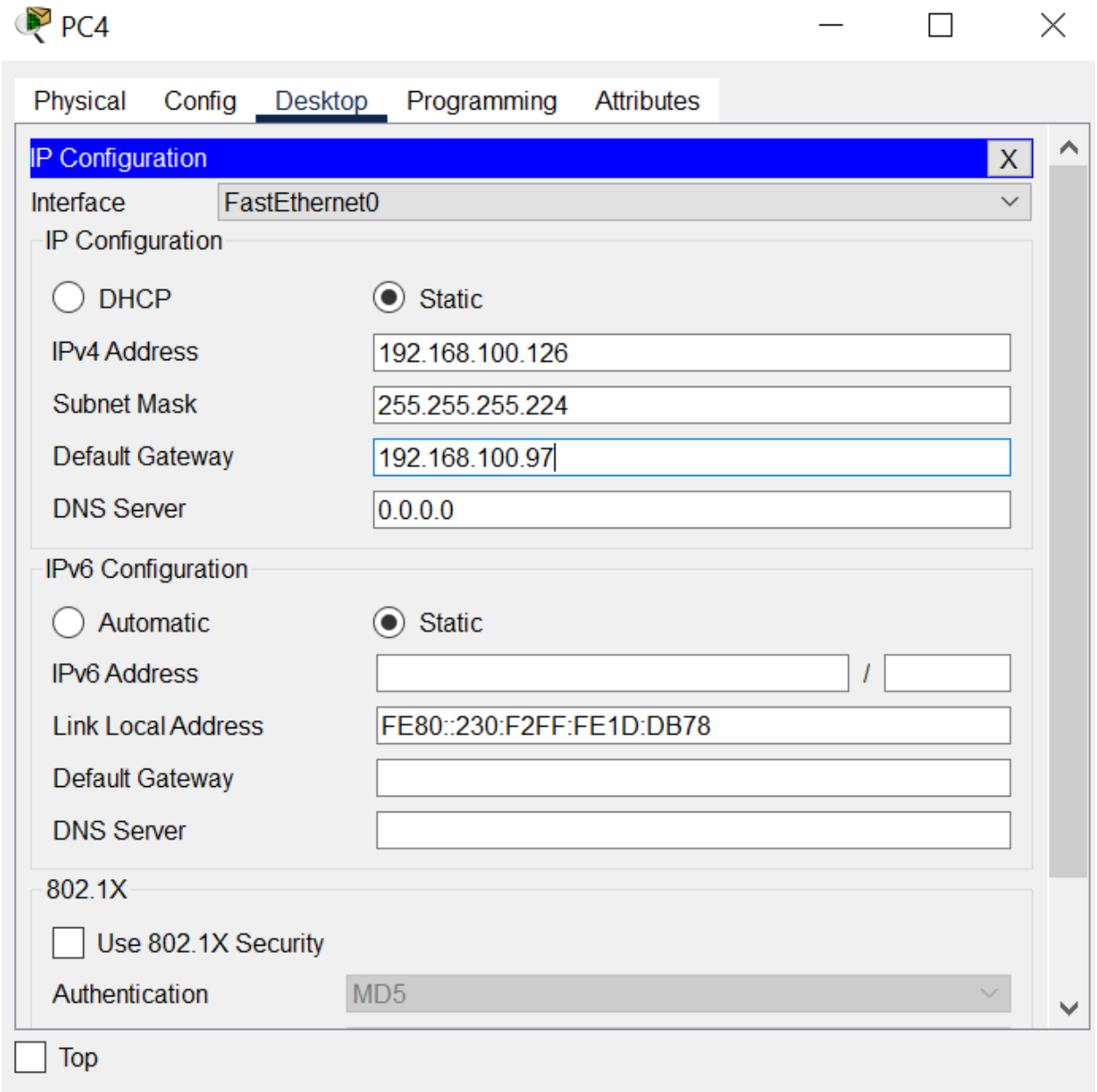
Step 5: Assign IP Address on PC2:



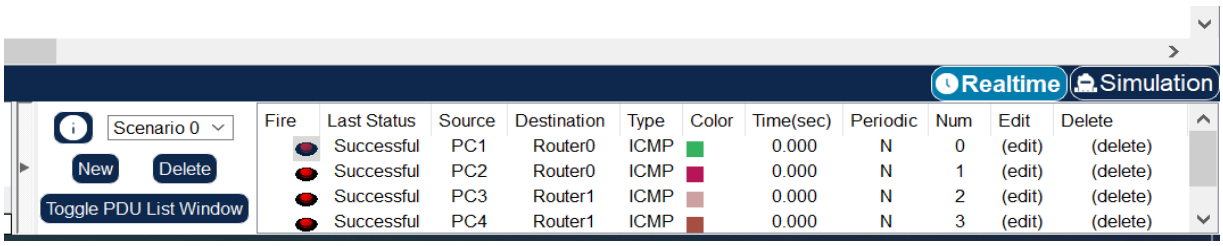
Step 6: Assign IP Address on PC3:



Step 7: Assign IP Address on PC4:

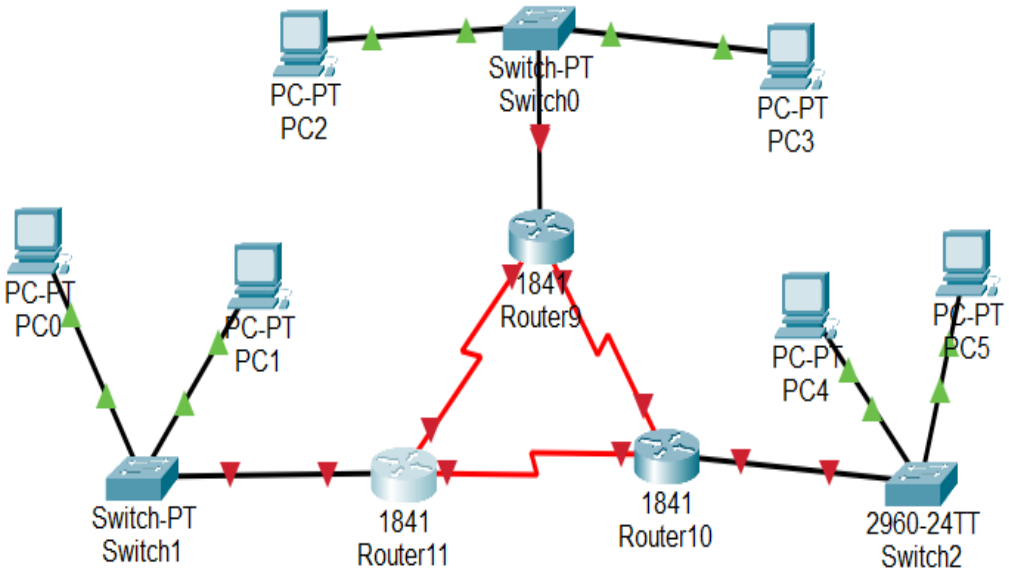


Step 8: Verify Connectivity by passing packets between routers

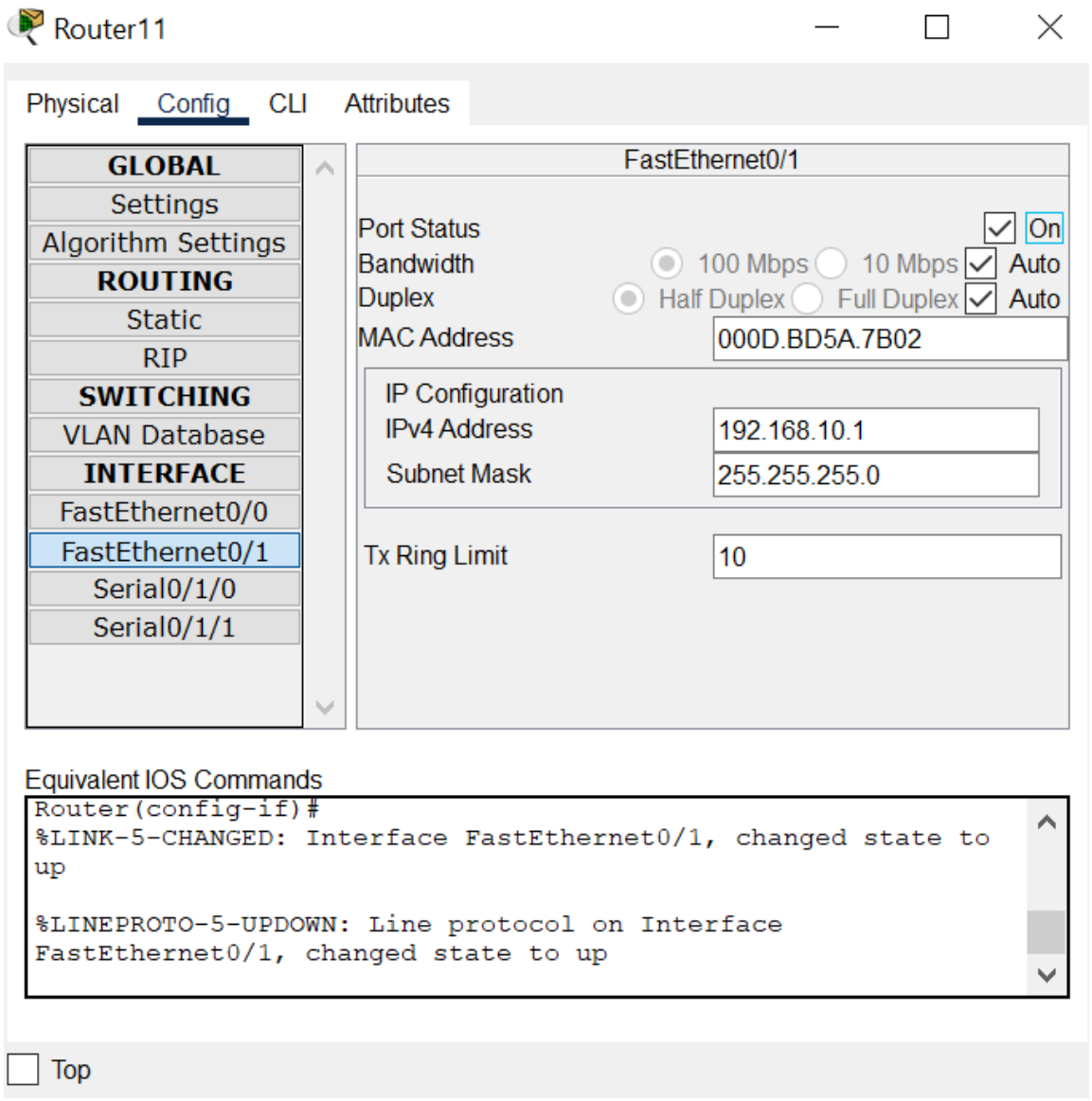


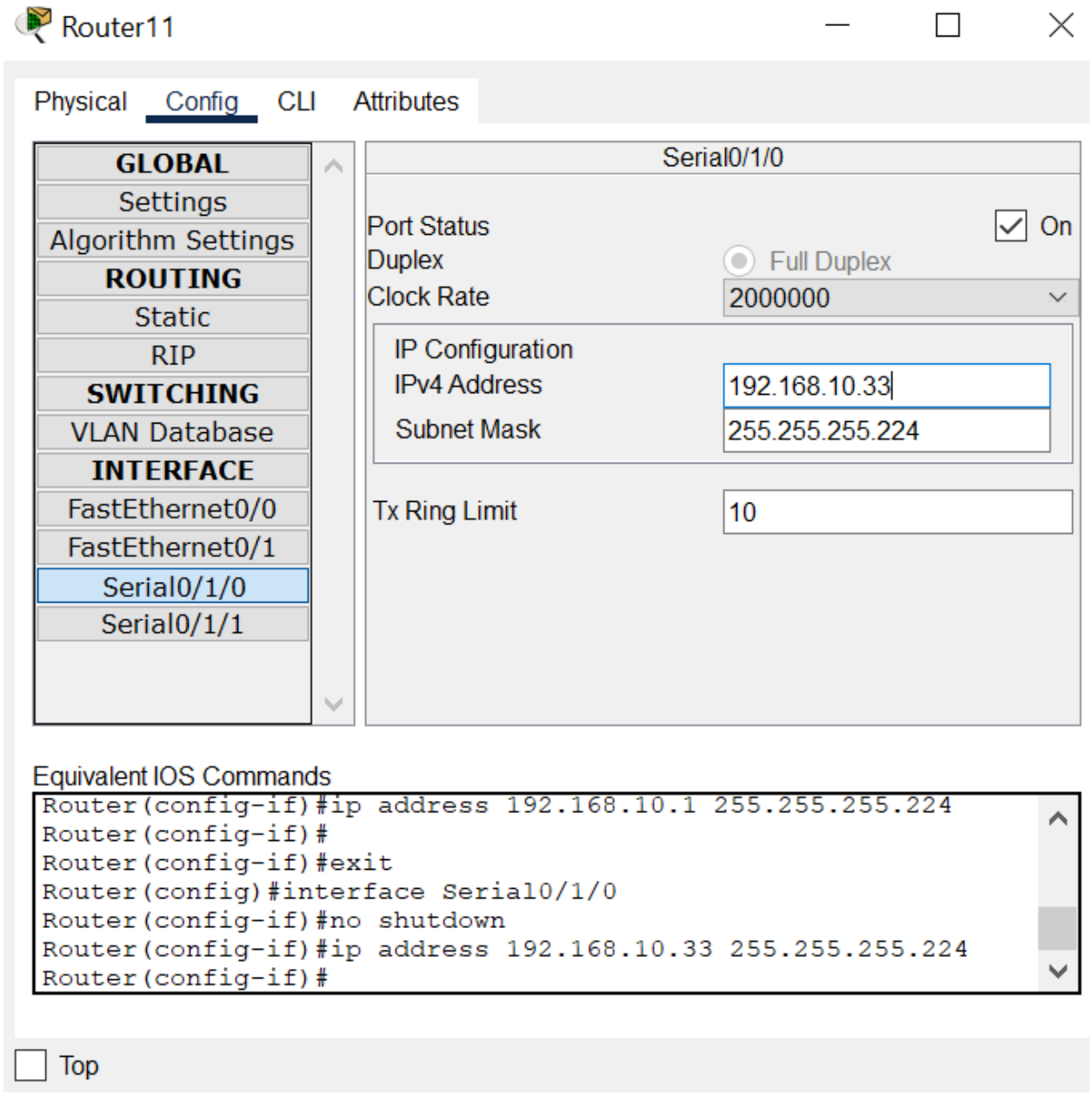
Topology B:
Implement Task 4 (Lab 10) in Packet Tracer and Assign IP Addresses to Network Devices and Verify Connectivity.

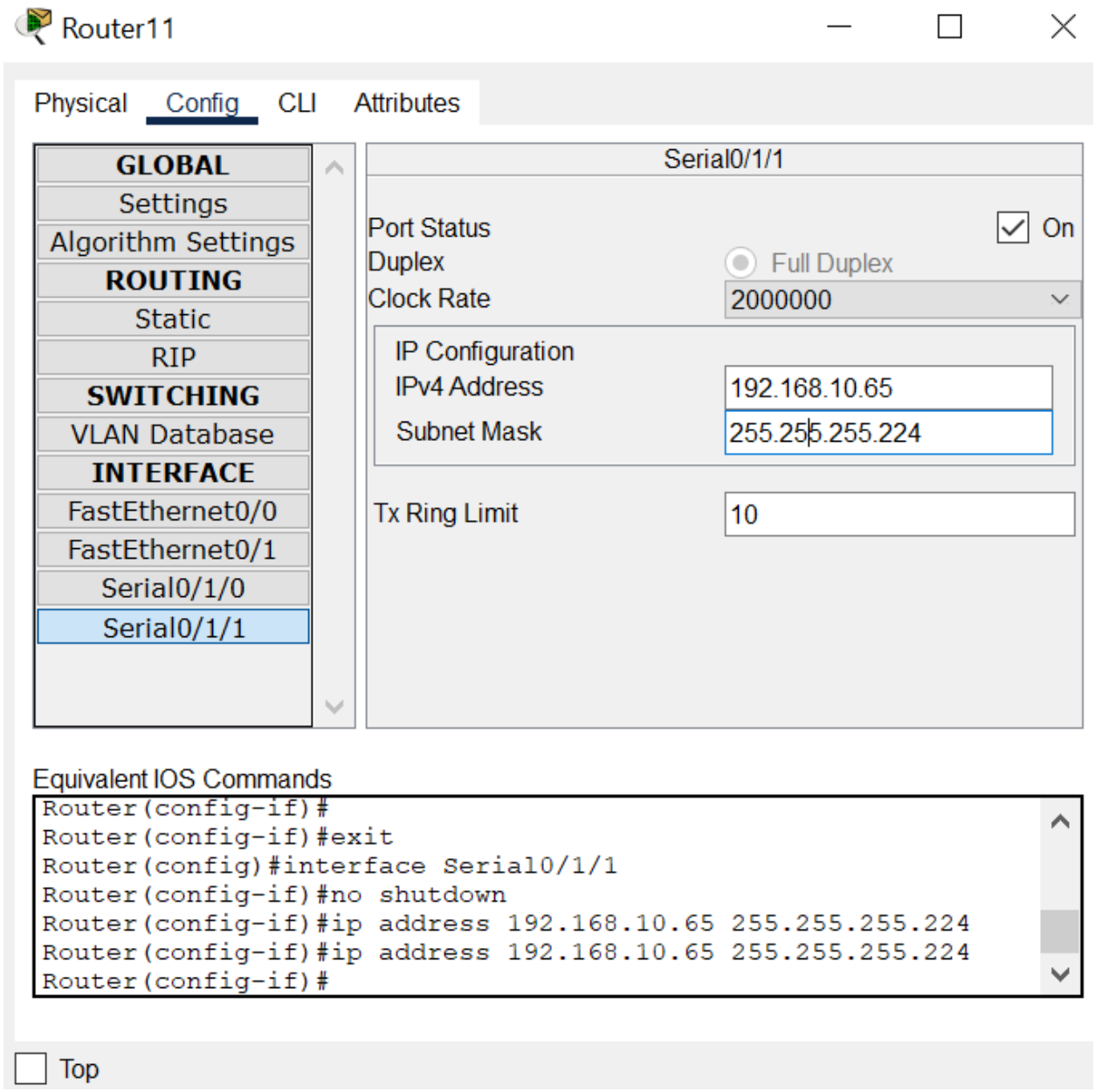
Step 1: Draw topology



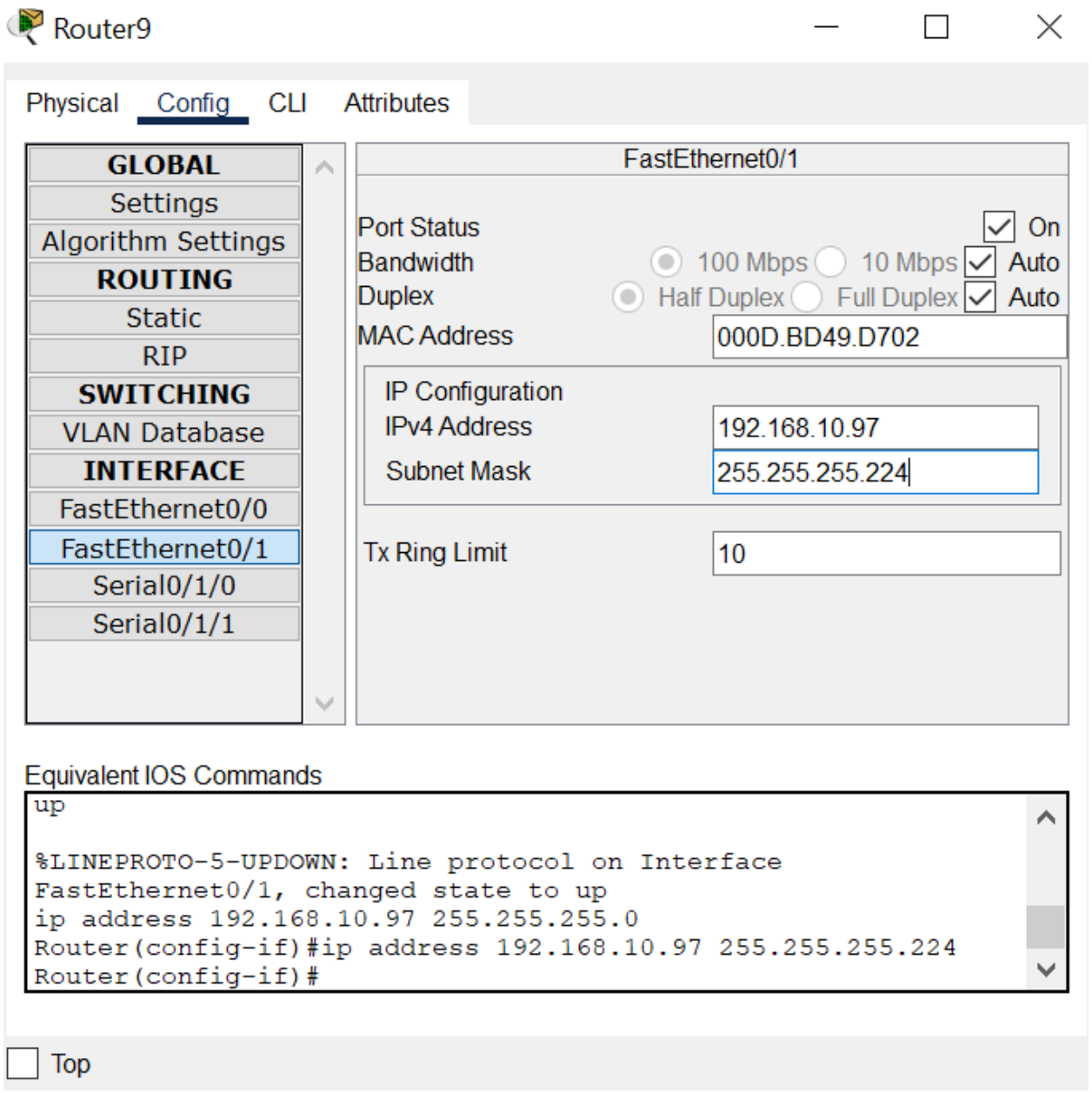
Step 2: Assign IP Address & Serial IP address on Router 11

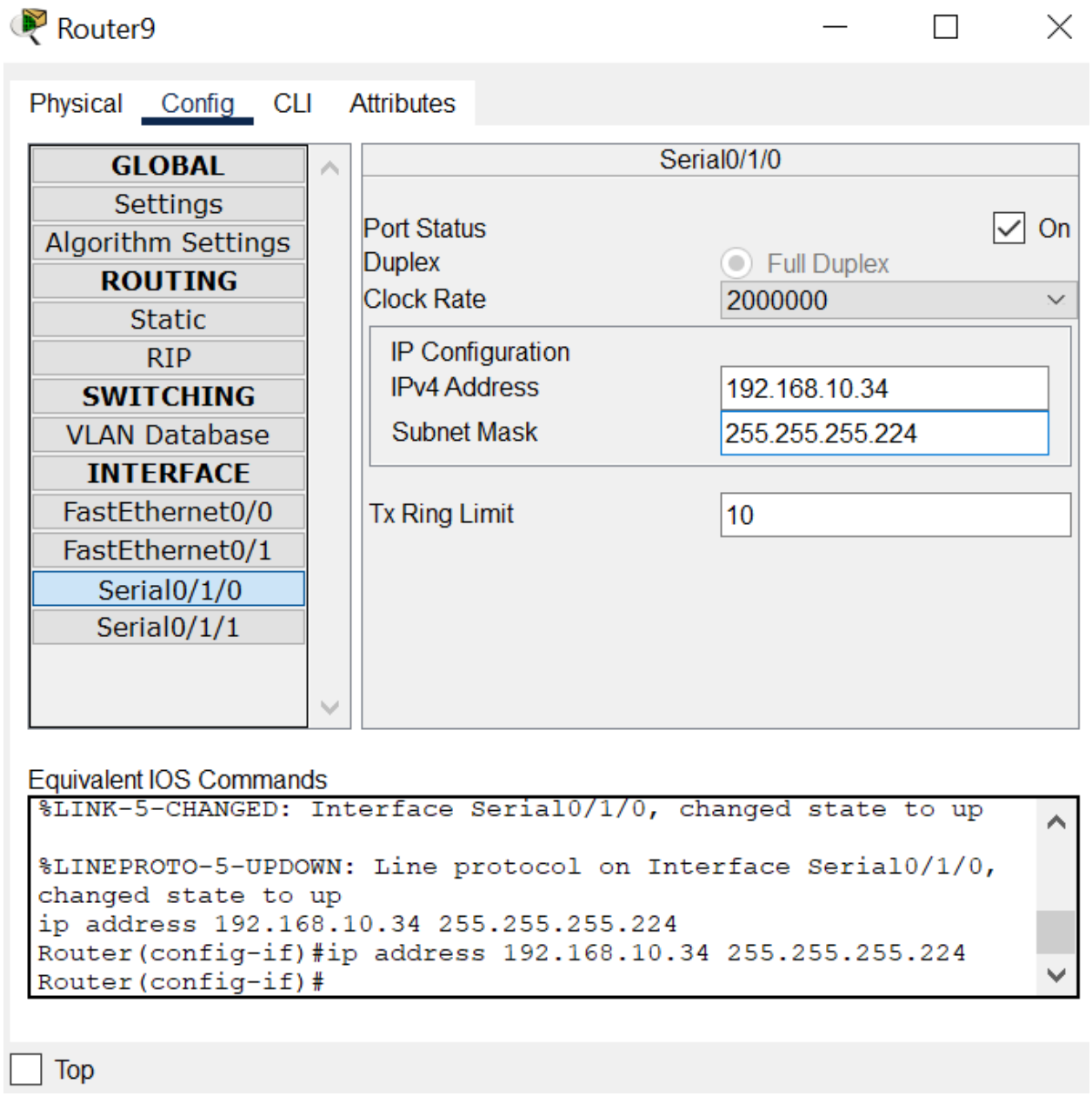


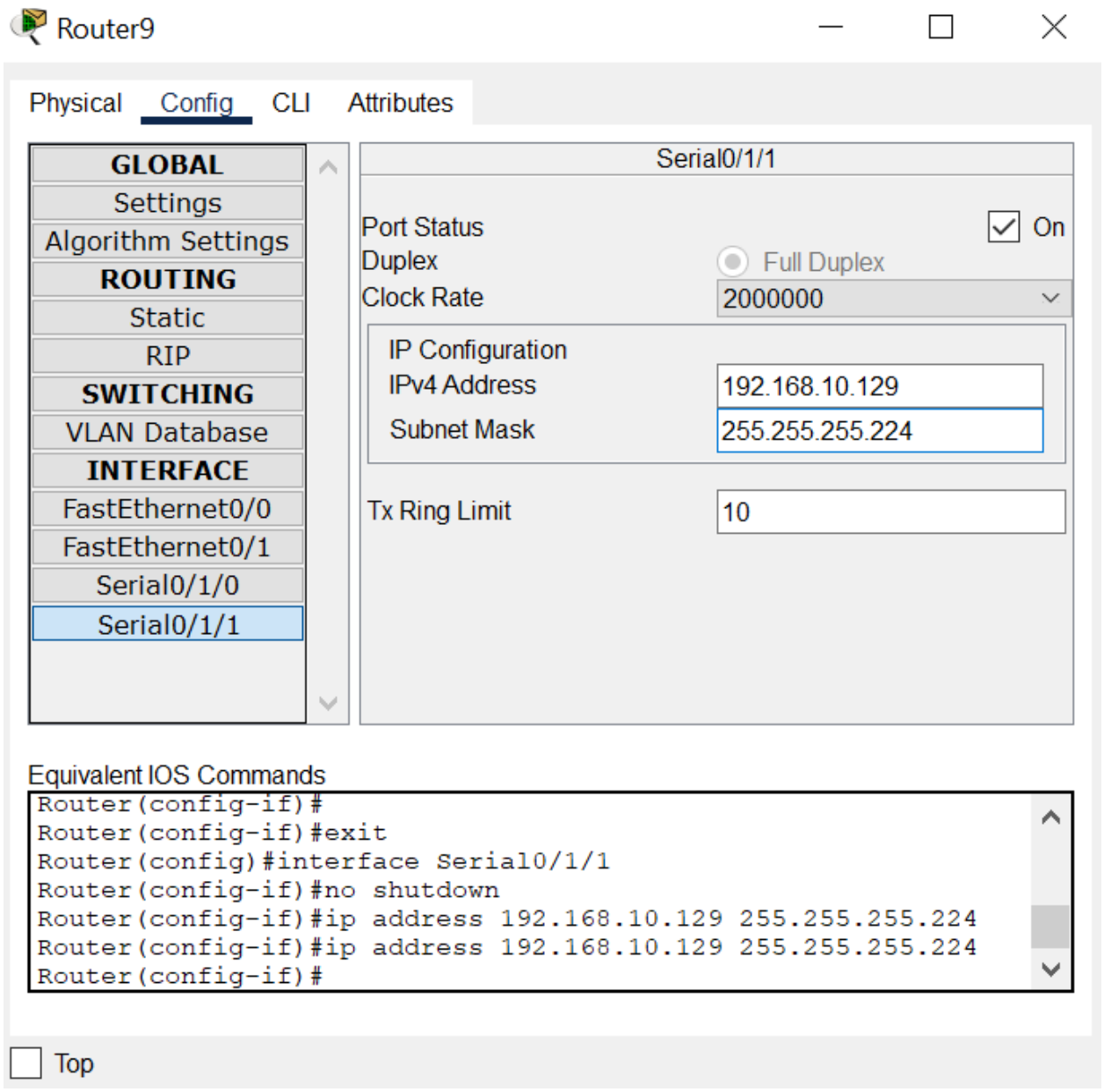

Router11
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
FastEthernet0/0
FastEthernet0/1
Serial0/1/0
Serial0/1/1
Serial0/1/0
Port Status
On
Duplex
Full Duplex
Clock Rate
2000000
IP Configuration
IPv4 Address
192.168.10.33
Subnet Mask
255.255.255.224
Tx Ring Limit
10
Equivalent IOS Commands
Router(config-if)#ip address 192.168.10.1 255.255.255.224
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/1/0
Router(config-if)#no shutdown
Router(config-if)#ip address 192.168.10.33 255.255.255.224
Router(config-if)#
Top


Router11
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
FastEthernet0/0
FastEthernet0/1
Serial0/1/0
Serial0/1/1
Serial0/1/1
Port Status
On
Duplex
Full Duplex
Clock Rate
2000000
IP Configuration
IPv4 Address
192.168.10.65
Subnet Mask
255.255.255.224
Tx Ring Limit
10
Equivalent IOS Commands
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/1/1
Router(config-if)#no shutdown
Router(config-if)#ip address 192.168.10.65 255.255.255.224
Router(config-if)#ip address 192.168.10.65 255.255.255.224
Router(config-if)#
Top

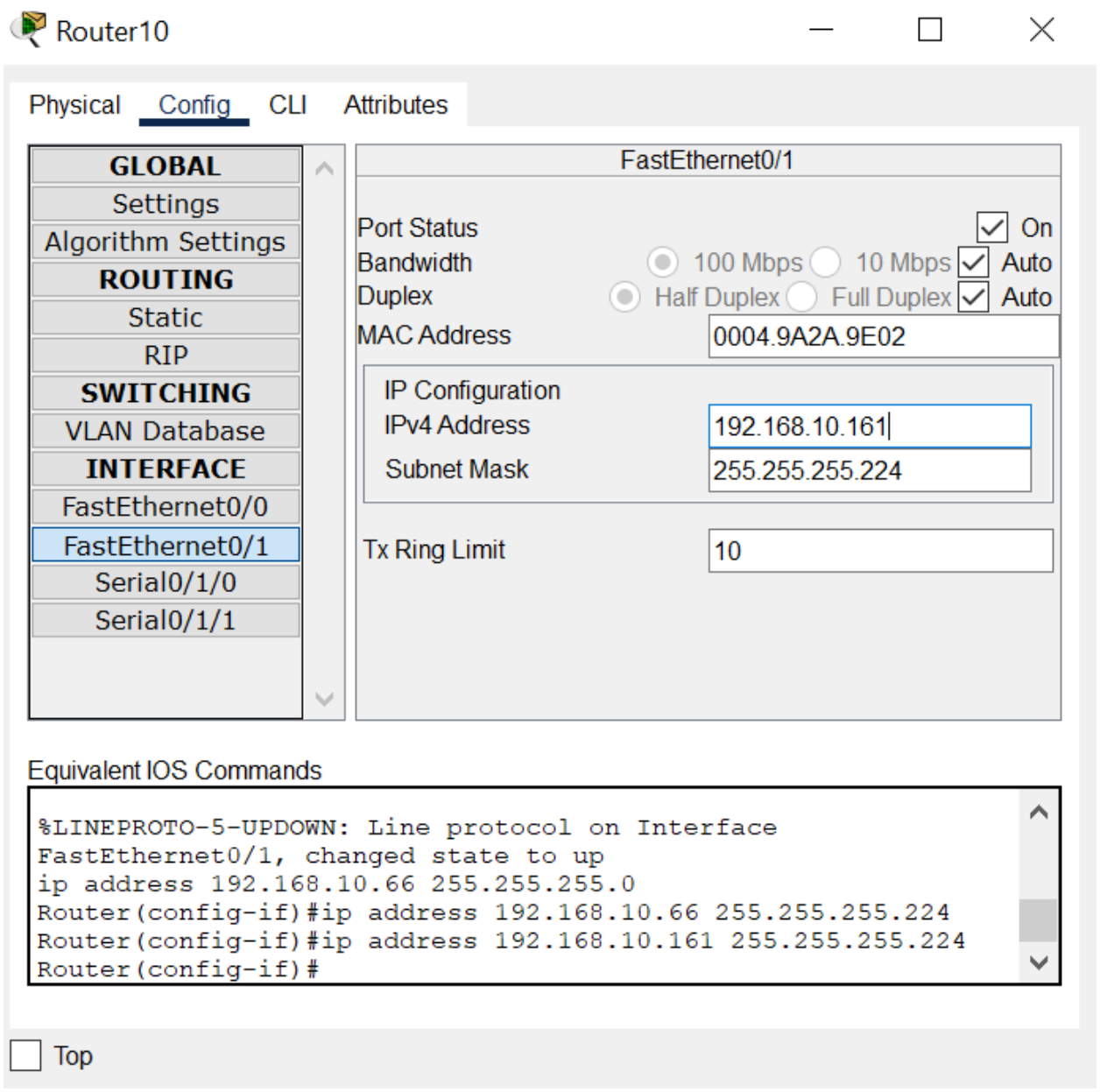
Step 3: Assign IP Address & Serial IP address on Router 9

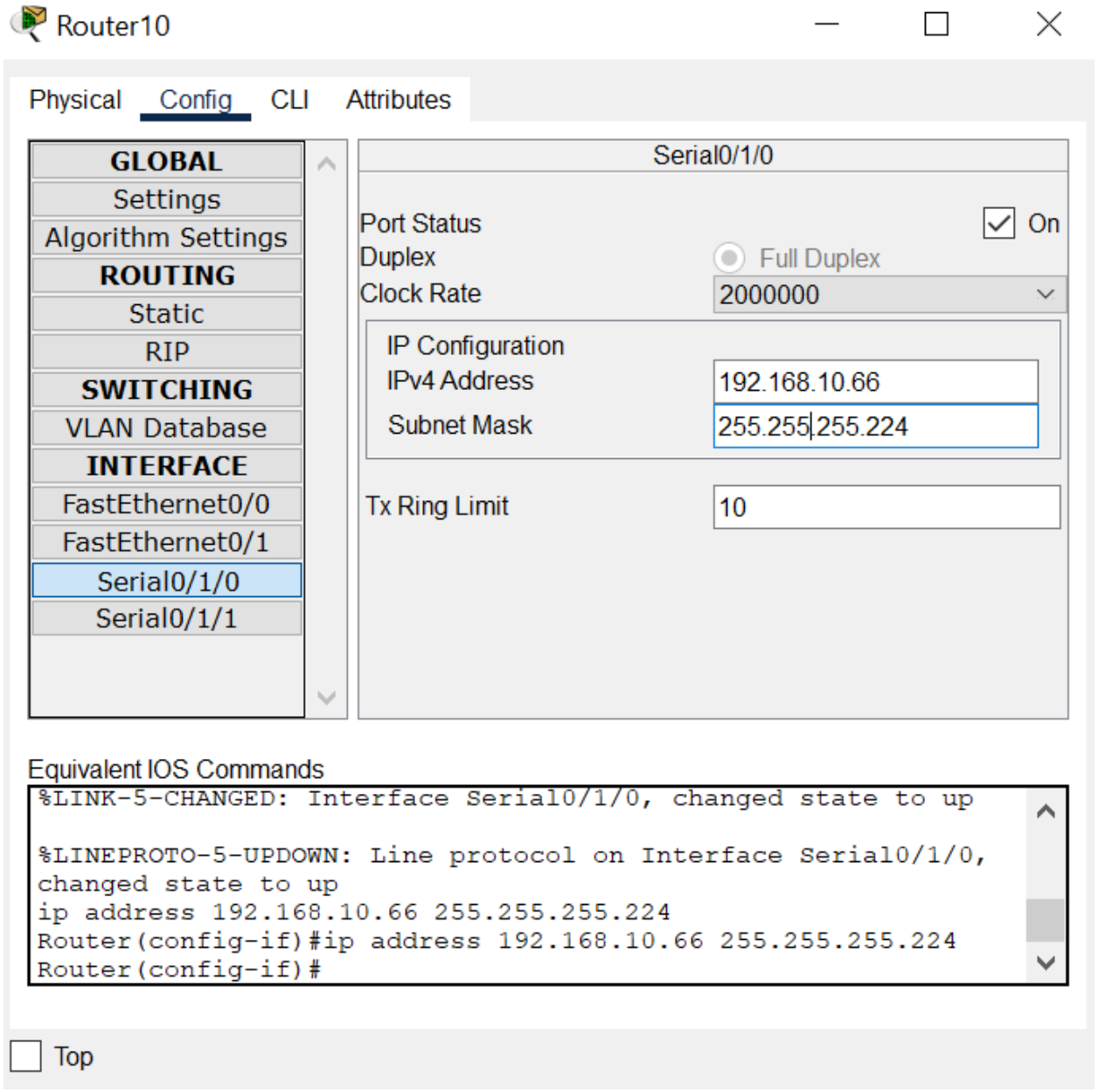


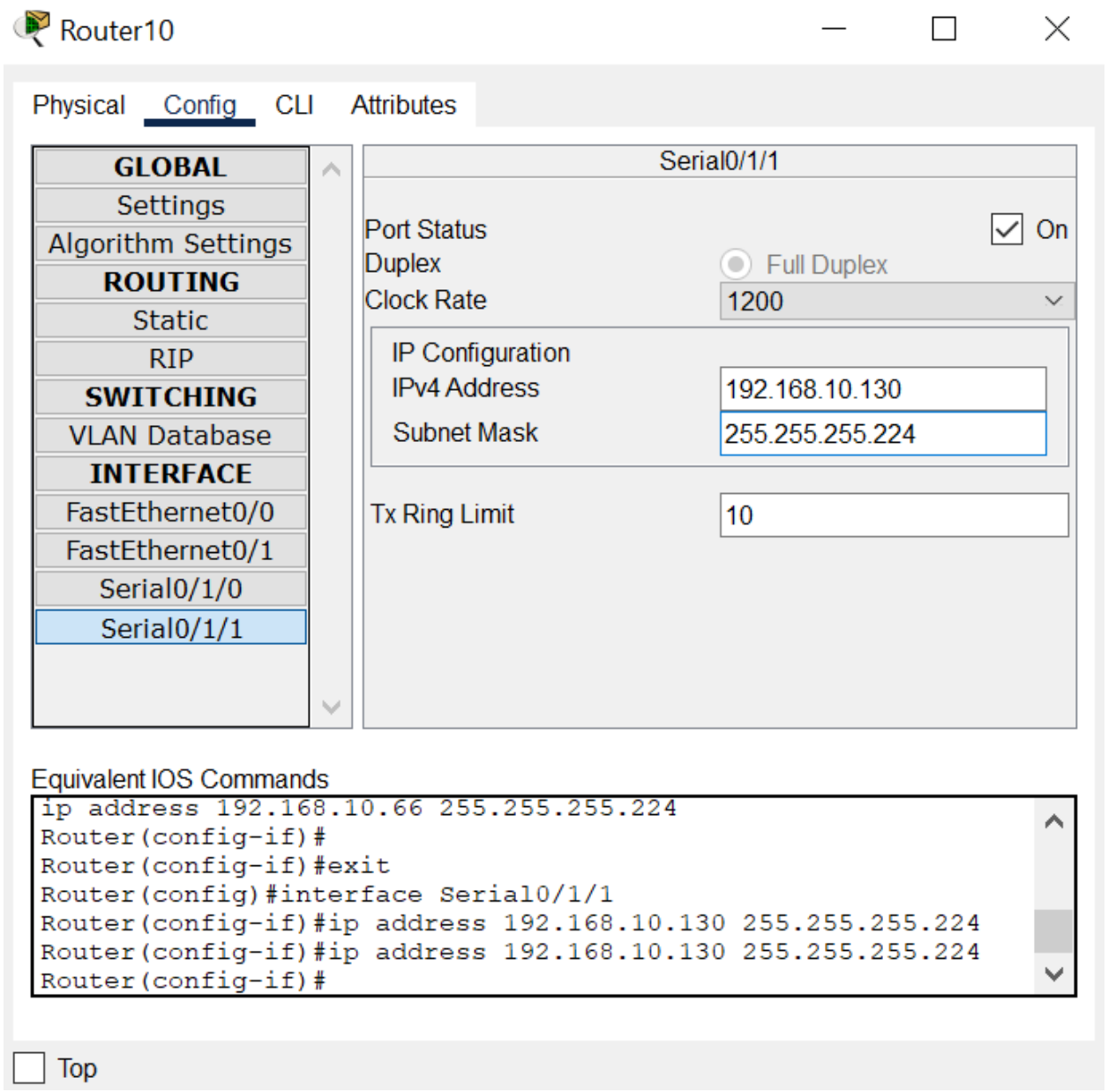

Router9
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
FastEthernet0/0
FastEthernet0/1
Serial0/1/0
Serial0/1/1
Serial0/1/0
Port Status
On
Duplex
Full Duplex
Clock Rate
2000000
IP Configuration
IPv4 Address
192.168.10.34
Subnet Mask
255.255.255.224
Tx Ring Limit
10
Equivalent IOS Commands
%LINK-5-CHANGED: Interface Serial0/1/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/0, changed state to up
ip address 192.168.10.34 255.255.255.224
Router(config-if)#ip address 192.168.10.34 255.255.255.224
Router(config-if)#
Top


Router9
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
FastEthernet0/0
FastEthernet0/1
Serial0/1/0
Serial0/1/1
Serial0/1/1
Port Status
On
Duplex
Full Duplex
Clock Rate
2000000
IP Configuration
IPv4 Address
192.168.10.129
Subnet Mask
255.255.255.224
Tx Ring Limit
10
Equivalent IOS Commands
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/1/1
Router(config-if)#no shutdown
Router(config-if)#ip address 192.168.10.129 255.255.255.224
Router(config-if)#ip address 192.168.10.129 255.255.255.224
Router(config-if)#
Top

Step 4: Assign IP Address & Serial IP address on Router 10




Router10
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
FastEthernet0/0
FastEthernet0/1
Serial0/1/0
Serial0/1/1
Serial0/1/0
Port Status
On
Duplex
Full Duplex
Clock Rate
2000000
IP Configuration
IPv4 Address
192.168.10.66
Subnet Mask
255.255.255.224
Tx Ring Limit
10
Equivalent IOS Commands
%LINK-5-CHANGED: Interface Serial0/1/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/0, changed state to up
ip address 192.168.10.66 255.255.255.224
Router(config-if)#ip address 192.168.10.66 255.255.255.224
Router(config-if)#
Top



Step 5 : Verify Connectivity by passing packets between routers