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Assignment Submission II

Static Routing Simulation using Cisco Packet Tracer

Key Ideas

1) What is Static Routing ?

Static Routing is a kind of routing schema where the router is configured manually mainly. Meaning the routing information and IP configuration is done manually by the network engineer or network administrator.

2) What is Dynamic Routing ?

Dynamic Routing is the type of routing where the router can send and receive data based on the current circumstances of the network. It is also called adaptive routing since this schema can adapt to different situations of network flow.

3) Static and Dynamic Routing Difference

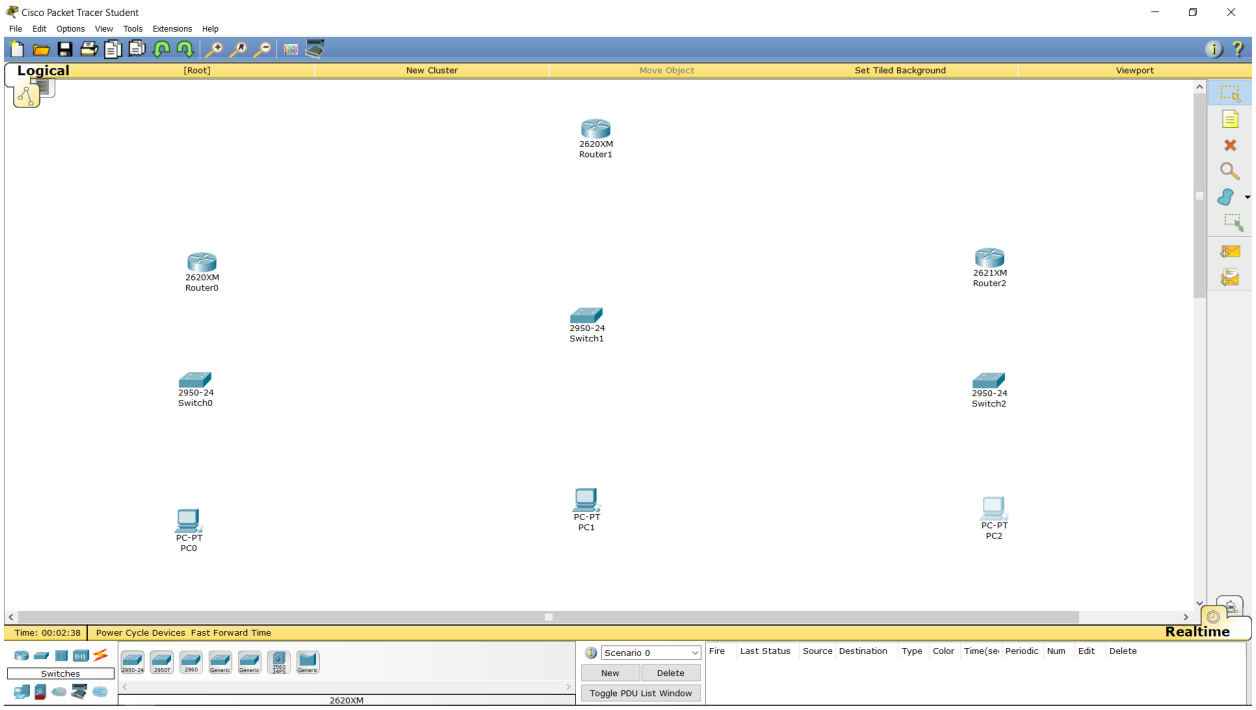
Static Routing	Dynamic Routing
Routing tables are updated manually.	Routing tables are updated automatically.
Good fit for small networks and star topologies.	Perfect fit for large networks.
Requires less bandwidth.	Requires large bandwidth.
Doesn’t use any protocols or algorithms.	Uses complex protocols and algorithms for calculating routing operations.
Routers won't change when the network changes.	Routers change when the network changes.

4) What is Clock Rate ?

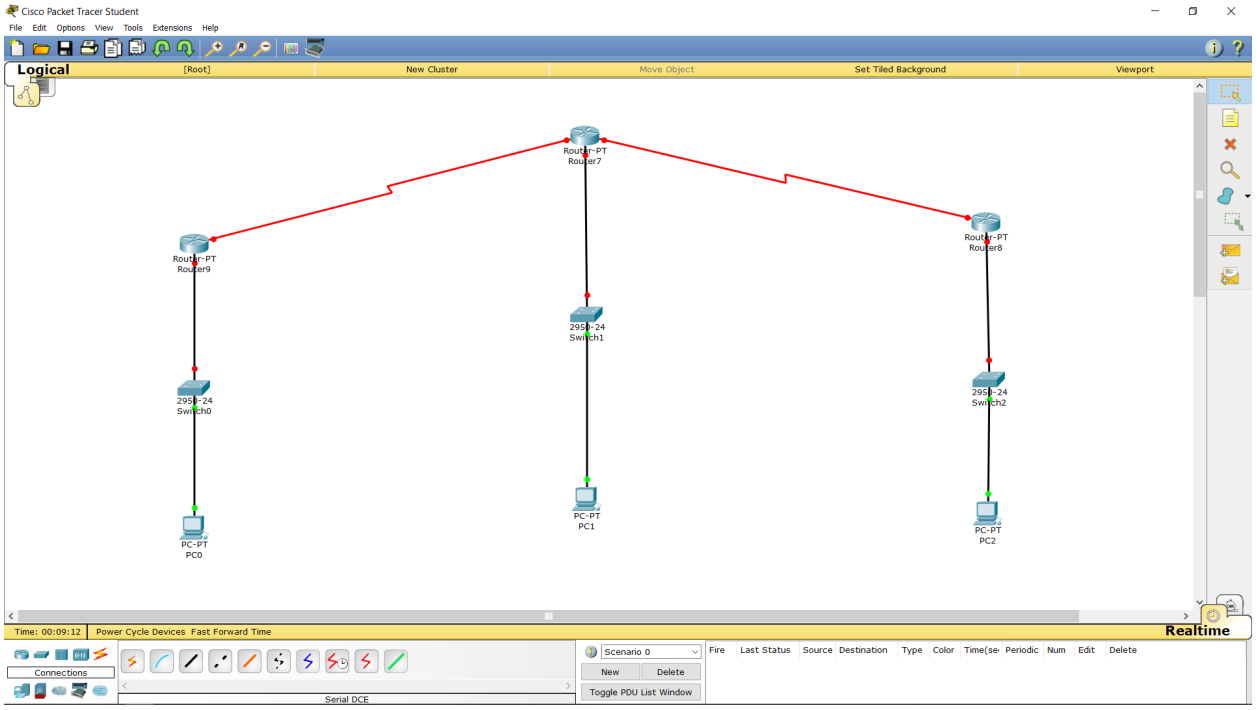
Used for synchronizing the receiver router on the other side of the network by generating transmission of signal in bits.

Simulating Static Routing using Cisco Packet Tracer

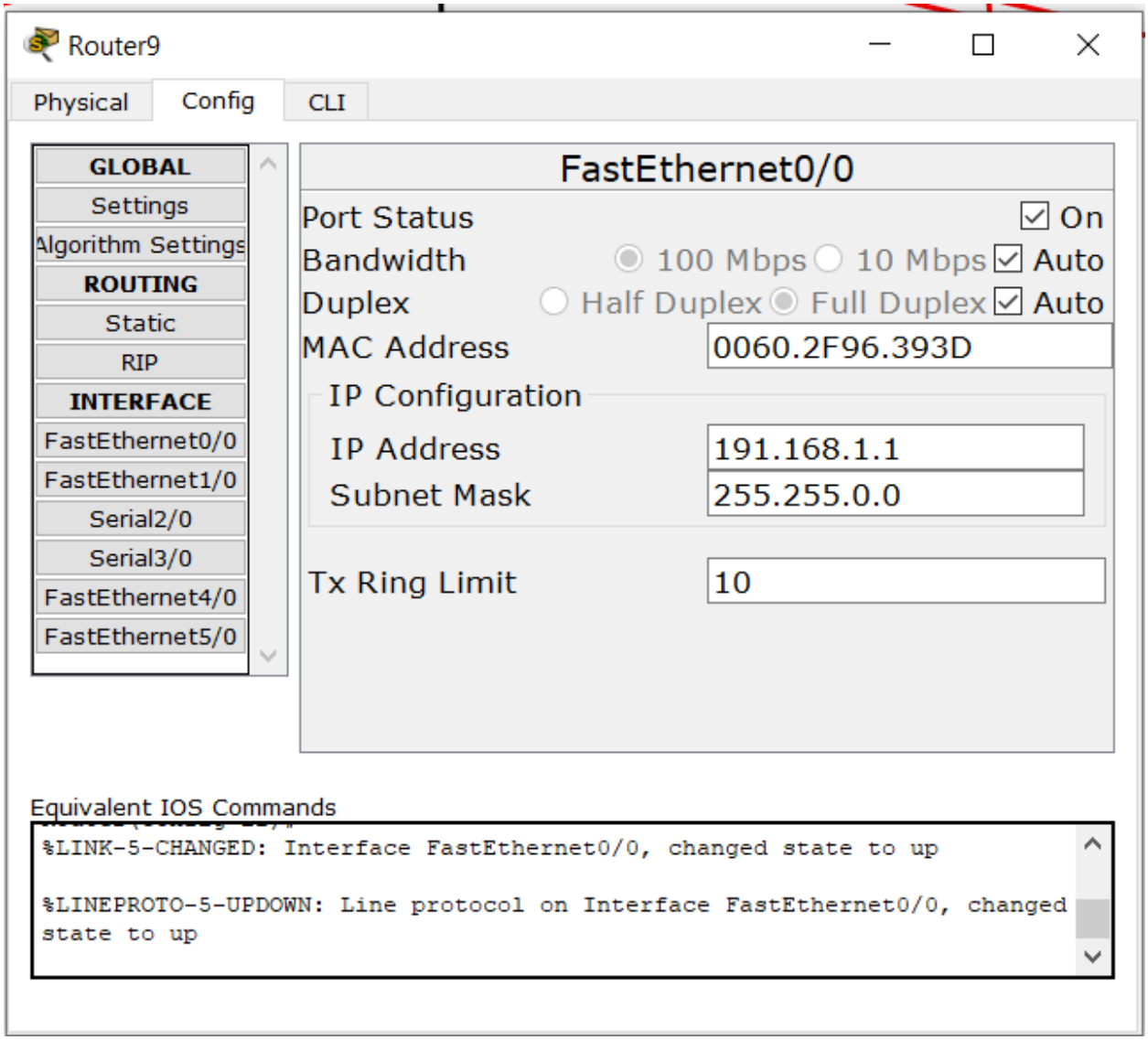
1) Place the network components on the workspace

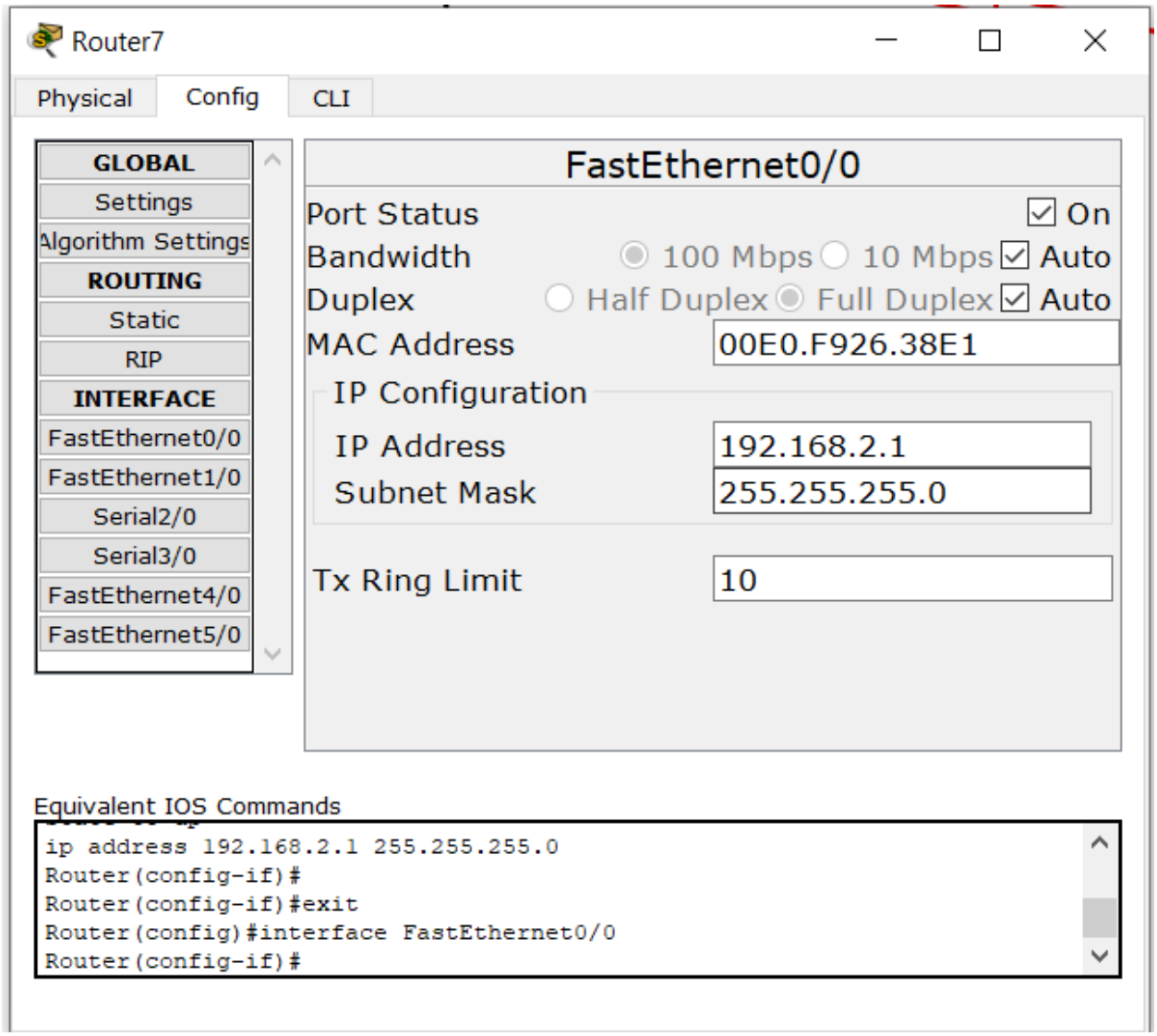


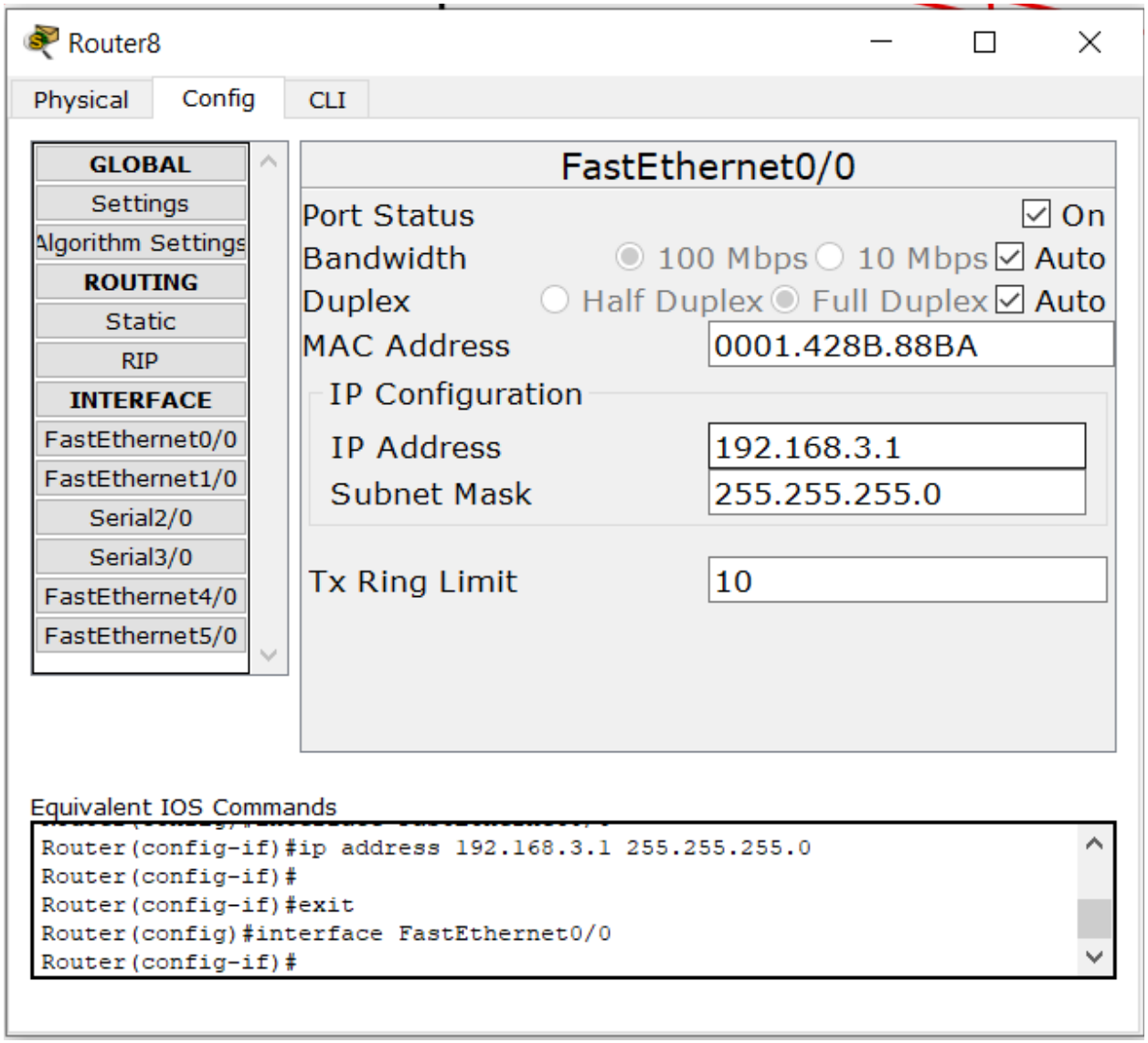
2) Connect the components using the appropriate cables



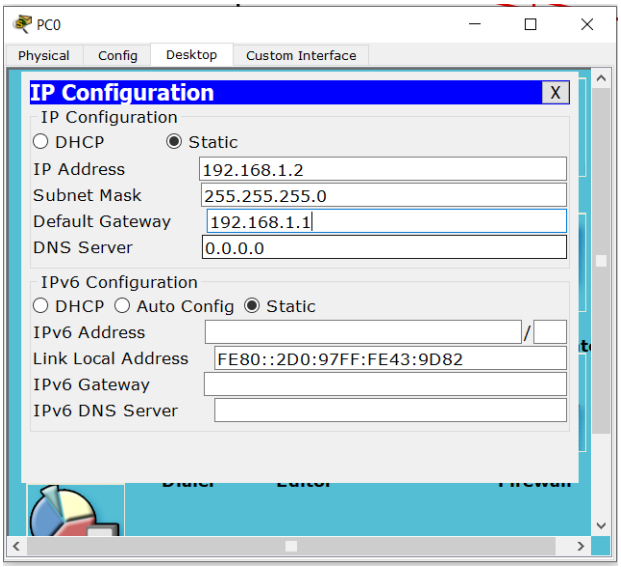
3) Configure the IP address for the routers which will be used as a default gateway for the computers connected under them.

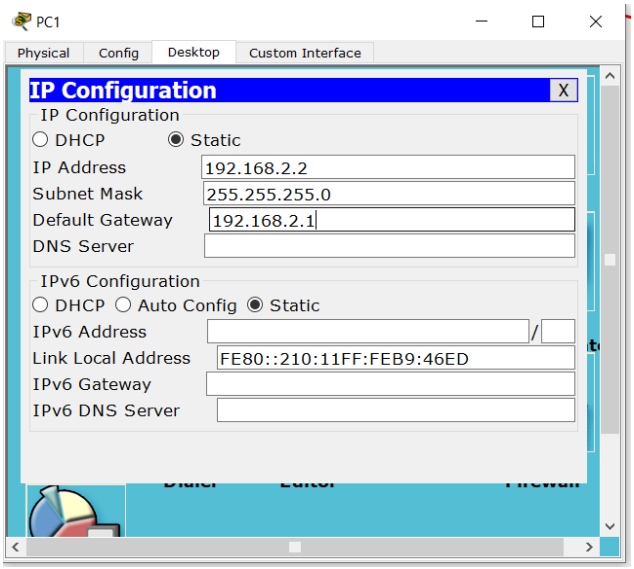


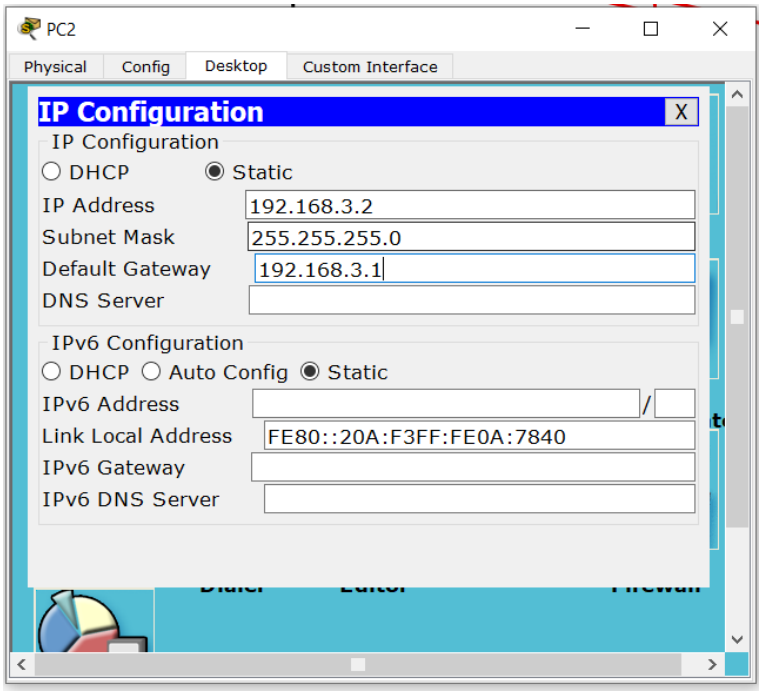

Router7
Physical
Config
CLI
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
INTERFACE
FastEthernet0/0
FastEthernet1/0
Serial2/0
Serial3/0
FastEthernet4/0
FastEthernet5/0
FastEthernet0/0
Port Status
On
Bandwidth
100 Mbps
10 Mbps
Auto
Duplex
Half Duplex
Full Duplex
Auto
MAC Address
00E0.F926.38E1
IP Configuration
IP Address
192.168.2.1
Subnet Mask
255.255.255.0
Tx Ring Limit
10
Equivalent IOS Commands
ip address 192.168.2.1 255.255.255.0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet0/0
Router(config-if)#

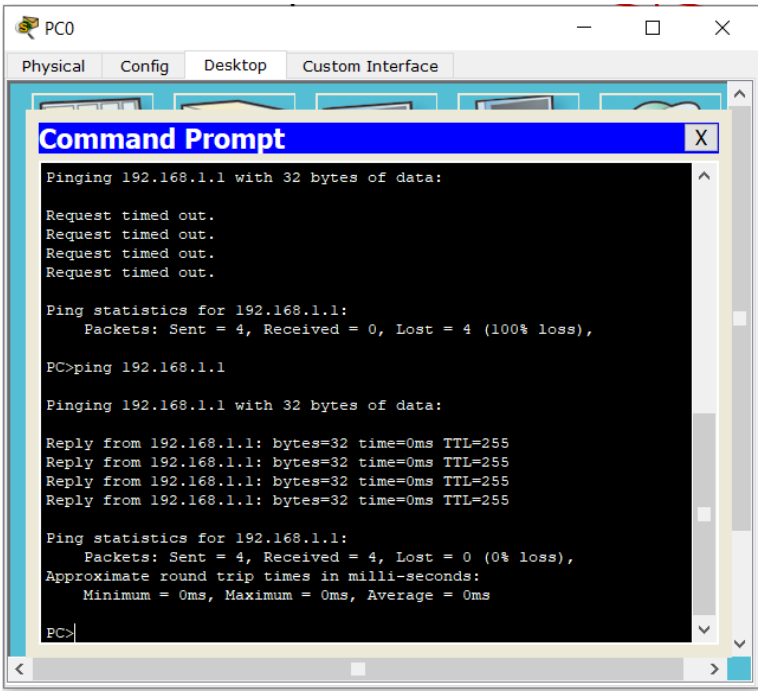


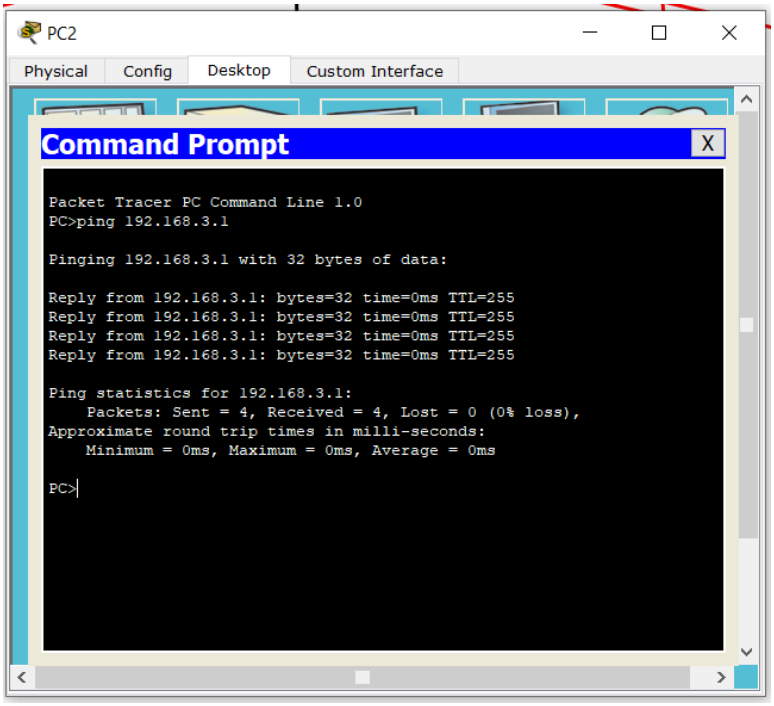
3) Configure the individual computers IP address and try ping command to their default router gateway.

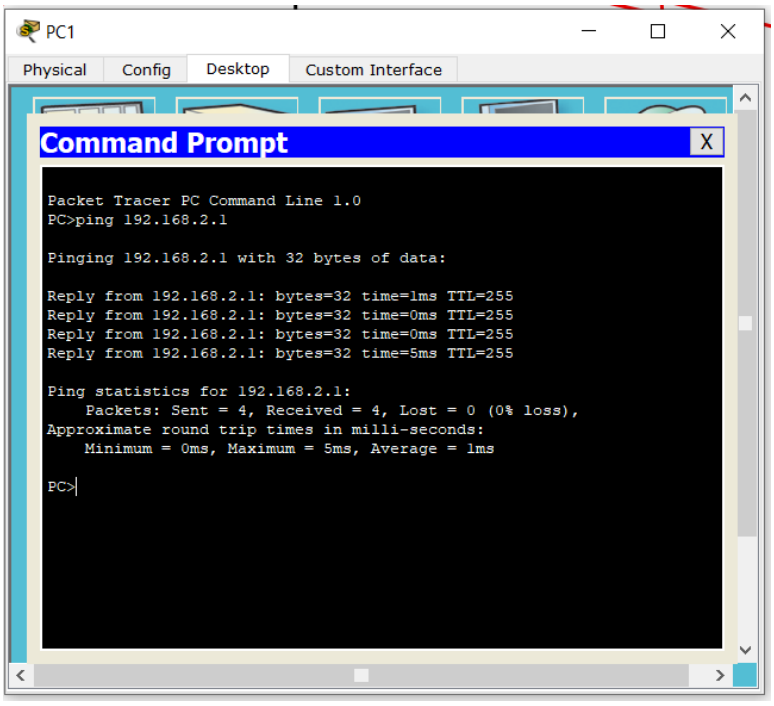

PC0
Physical
Config
Desktop
Custom Interface
IP Configuration
IP Configuration
DHCP
Static
IP Address
192.168.1.2
Subnet Mask
255.255.255.0
Default Gateway
192.168.1.1
DNS Server
0.0.0.0
IPv6 Configuration
DHCP
Auto Config
Static
IPv6 Address
Link Local Address
FE80::2D0:97FF:FE43:9D82
IPv6 Gateway
IPv6 DNS Server


PC1
Physical
Config
Desktop
Custom Interface
IP Configuration
IP Configuration
DHCP
Static
IP Address
192.168.2.2
Subnet Mask
255.255.255.0
Default Gateway
192.168.2.1
DNS Server
IPv6 Configuration
DHCP
Auto Config
Static
IPv6 Address
Link Local Address
FE80::210:11FF:FEB9:46ED
IPv6 Gateway
IPv6 DNS Server

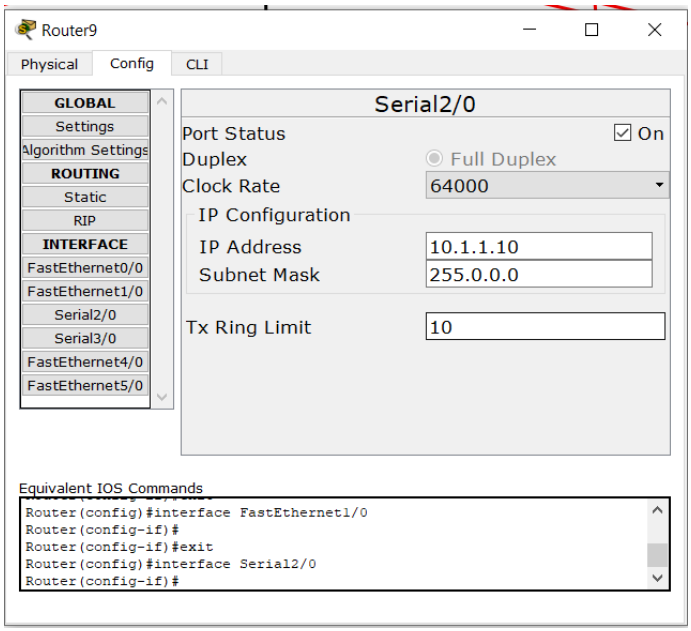

PC2
Physical
Config
Desktop
Custom Interface
IP Configuration
IP Configuration
DHCP
Static
IP Address
192.168.3.2
Subnet Mask
255.255.255.0
Default Gateway
192.168.3.1
DNS Server
IPv6 Configuration
DHCP
Auto Config
Static
IPv6 Address
Link Local Address
FE80::20A:F3FF:FE0A:7840
IPv6 Gateway
IPv6 DNS Server

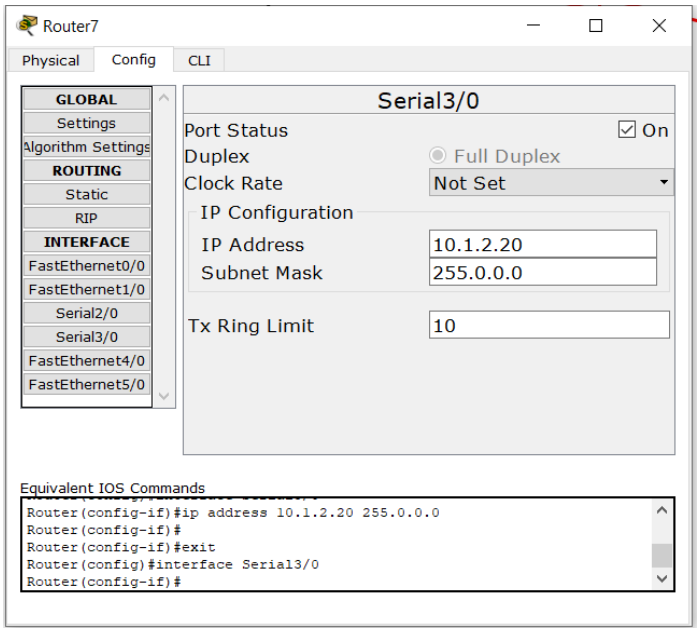

PC0
Physical
Config
Desktop
Custom Interface
Command Prompt
Pinging 192.168.1.1 with 32 bytes of data:
Request timed out.
Request timed out.
Request timed out.
Request timed out.
Ping statistics for 192.168.1.1:
Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
PC>ping 192.168.1.1
Pinging 192.168.1.1 with 32 bytes of data:
Reply from 192.168.1.1: bytes=32 time=0ms TTL=255
Reply from 192.168.1.1: bytes=32 time=0ms TTL=255
Reply from 192.168.1.1: bytes=32 time=0ms TTL=255
Reply from 192.168.1.1: bytes=32 time=0ms TTL=255
Ping statistics for 192.168.1.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms
PC>



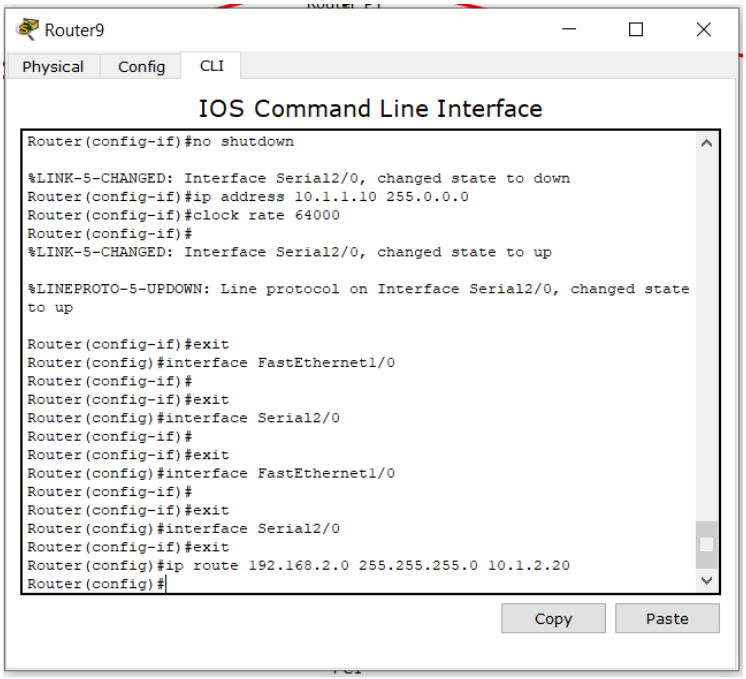


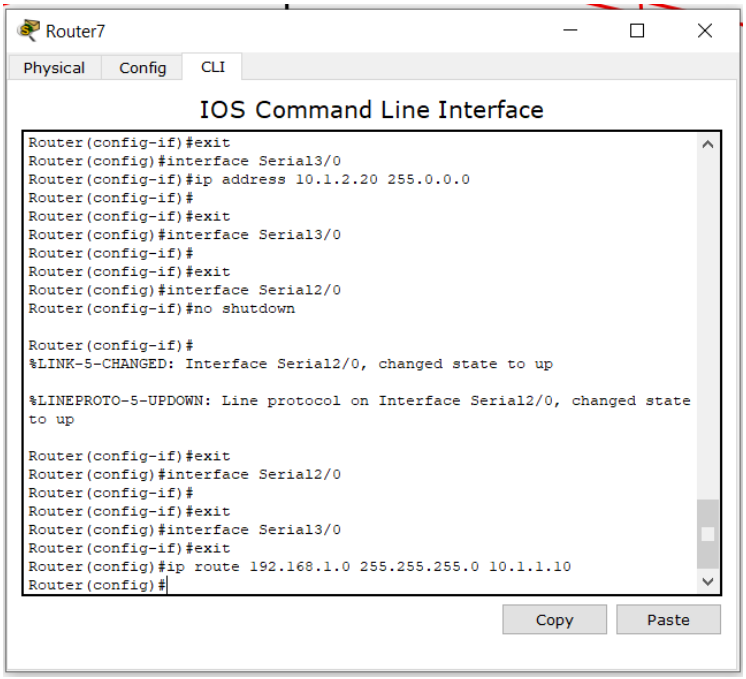
4) Configure the routers and prepare them for static routing.



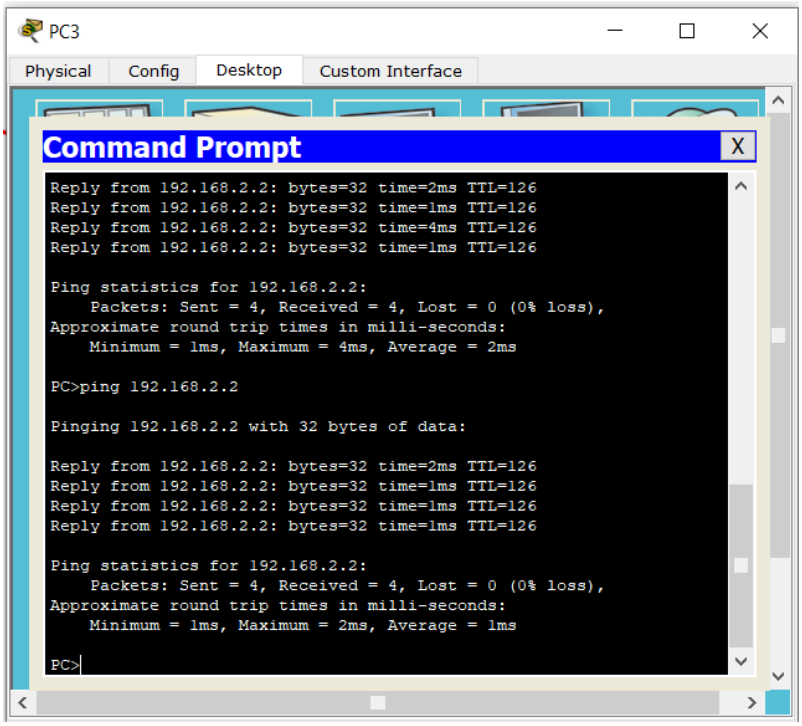


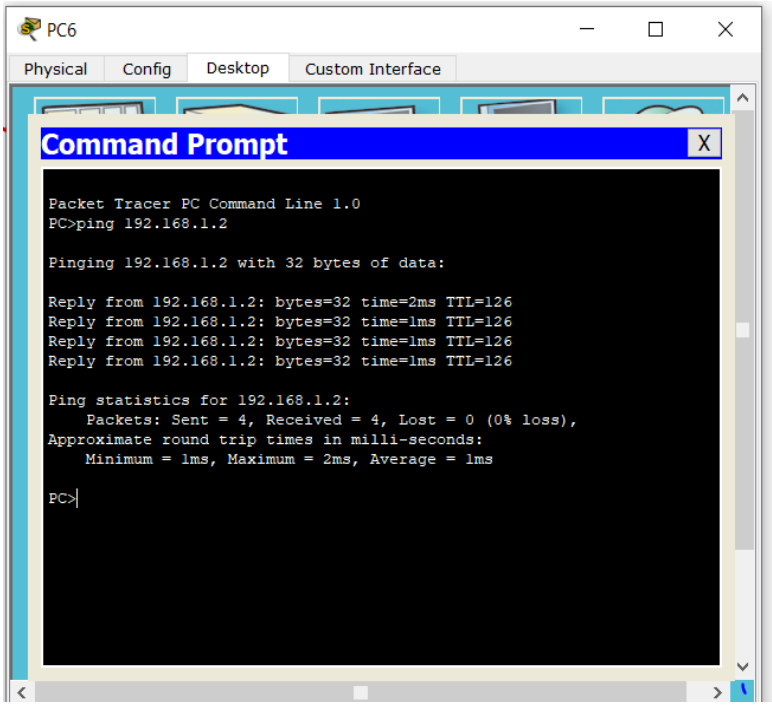
4) Use static routing to configure the routers. Basic command for static routing is
ip route <destination network id> <destination subnet mask> <destination public ip>





4) Using the ping command will show us the connection success





The final network structure will look something like below