Institute of Computer Technology

B. Tech Computer Science and Engineering

Sub: Computer Network

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Branch: CSE

Batch: 53

Class: B

Practical-8

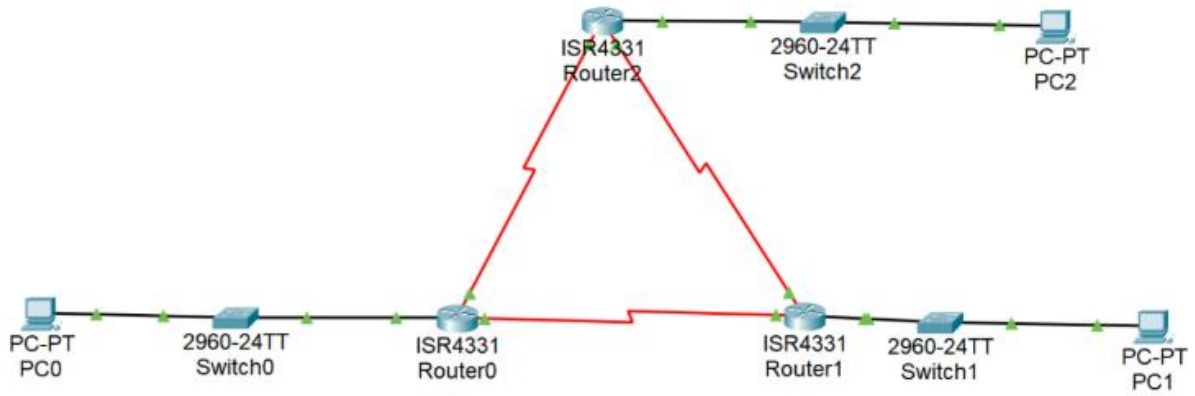
Aim: To design a network using Open Shortest Path First (OSPF) Protocol.

Scenario:

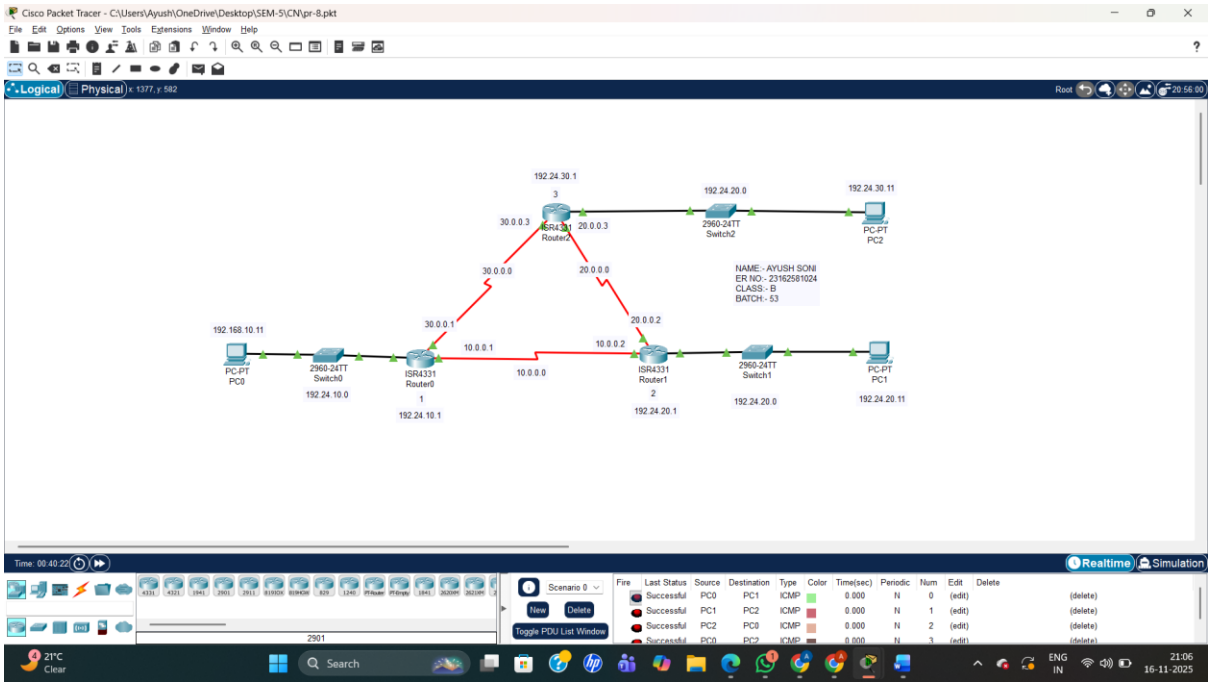
Consider that the organization has three departments and a routing protocol Open Shortest Path First (OSPF) protocol is implemented. Configure network as shown in figure below and implement Open Shortest Path First (OSPF) routing protocol.

Procedure:

1) Create network as given below

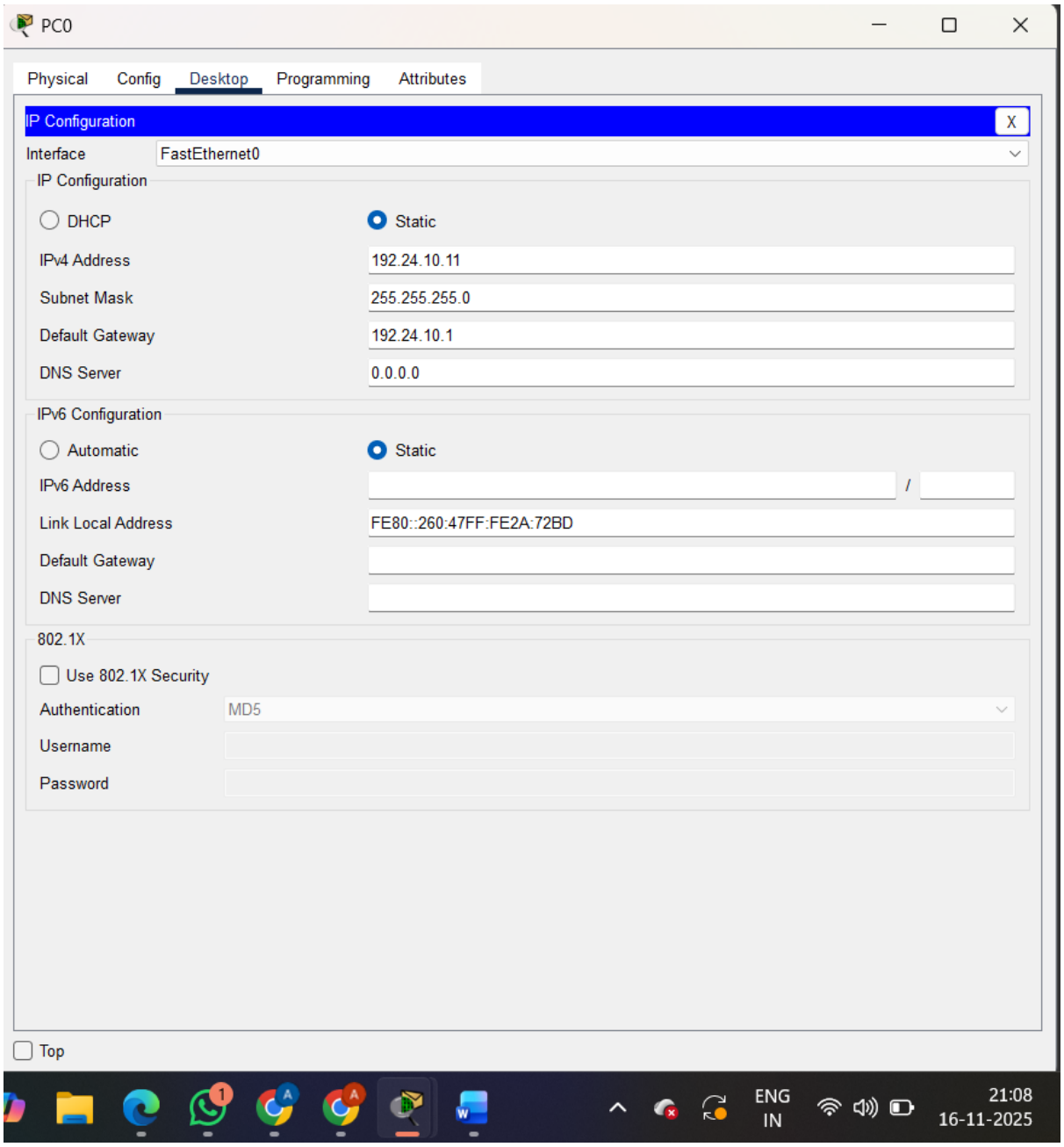


NETWORK DESIGN:

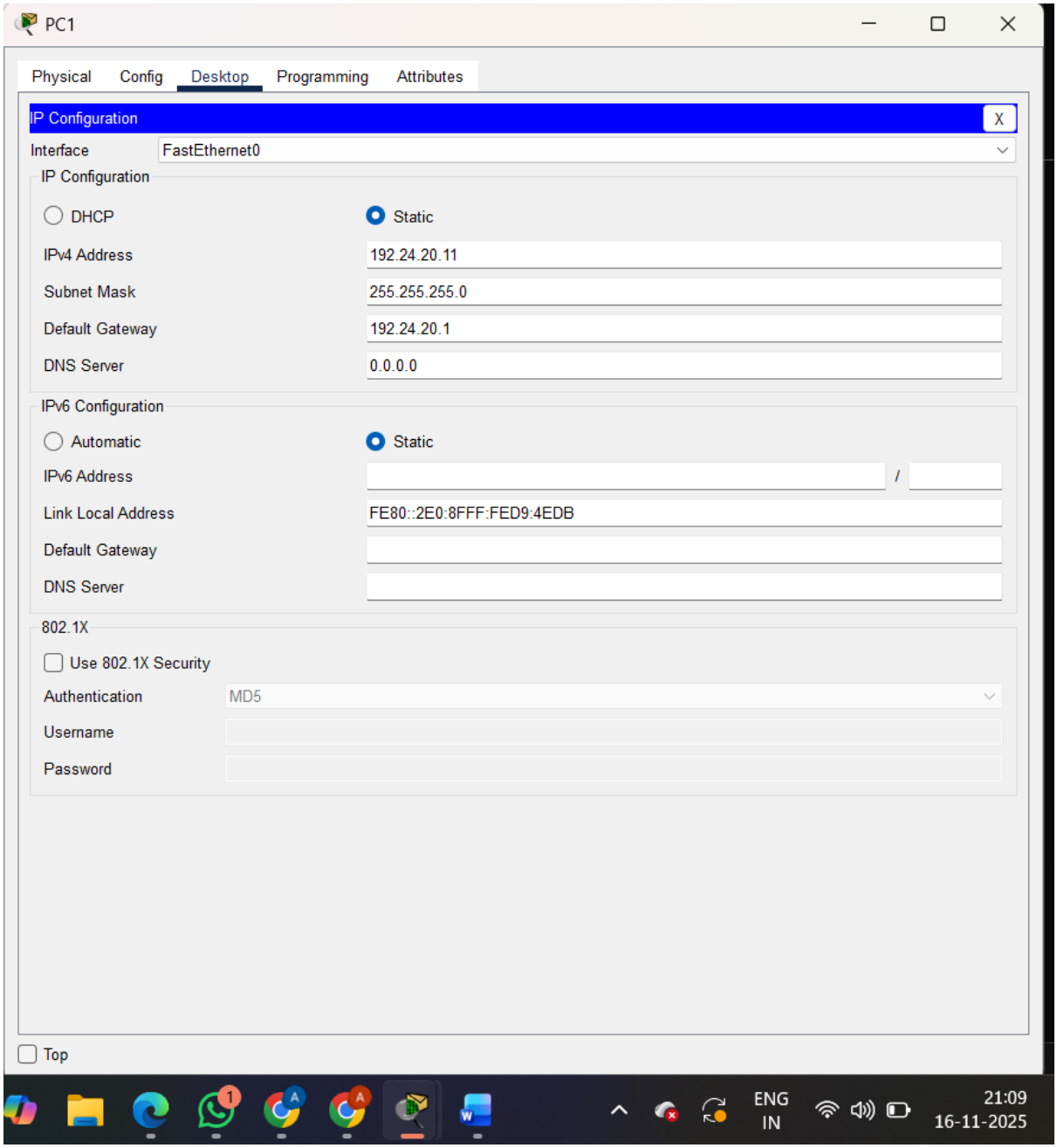


2) Configure IP address (All Devices, Routers)

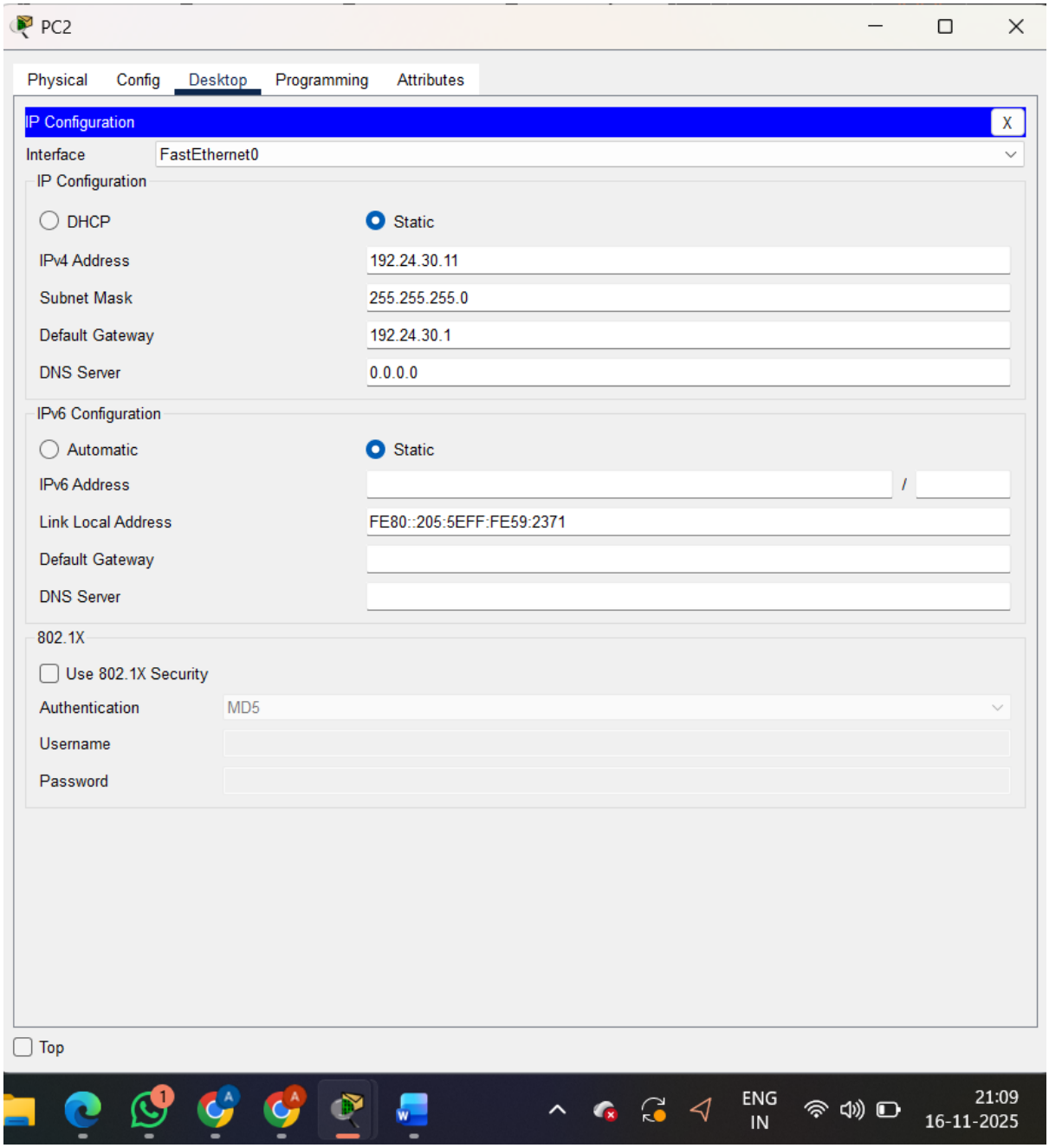
PC 0:



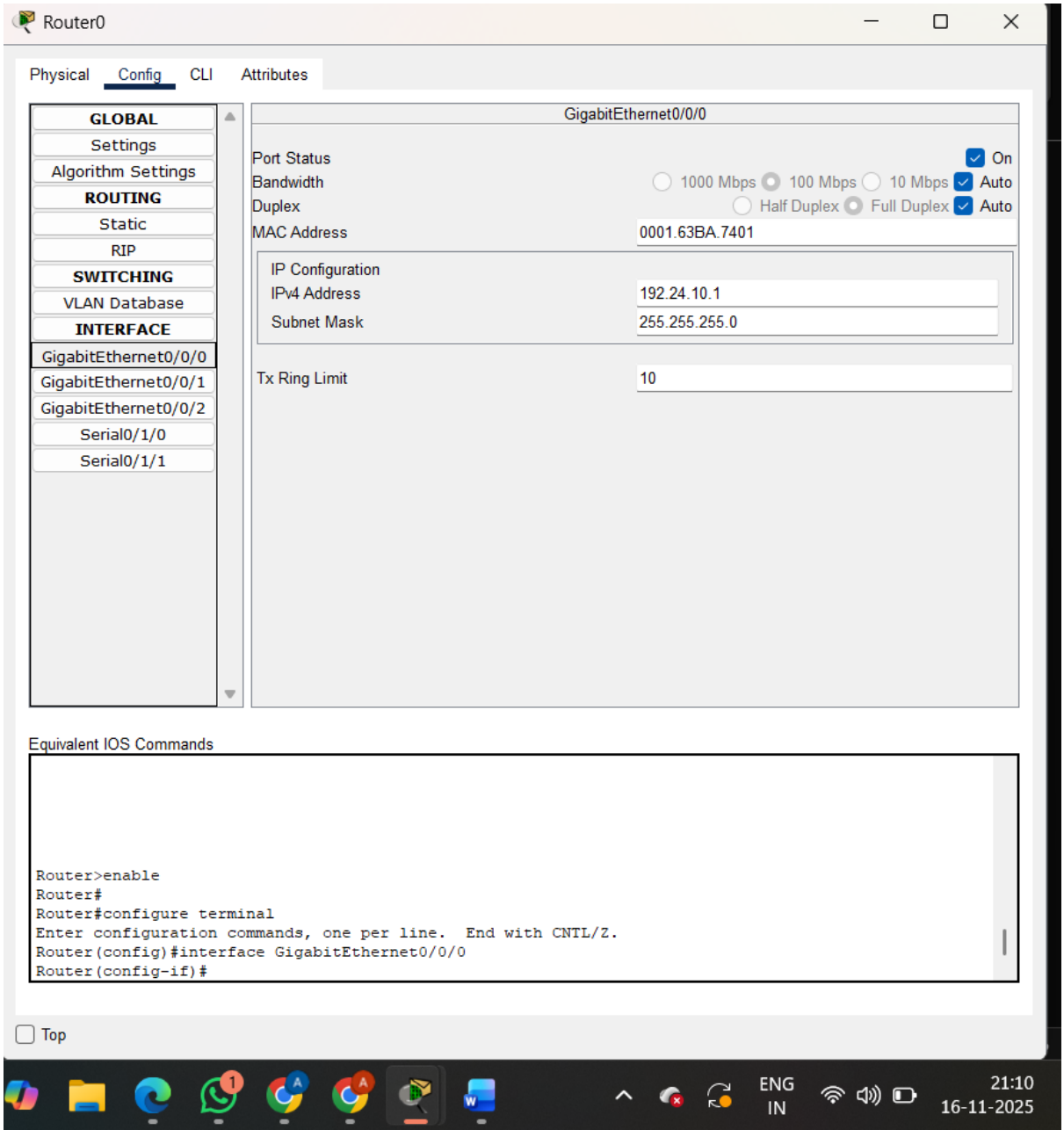
PC 1:

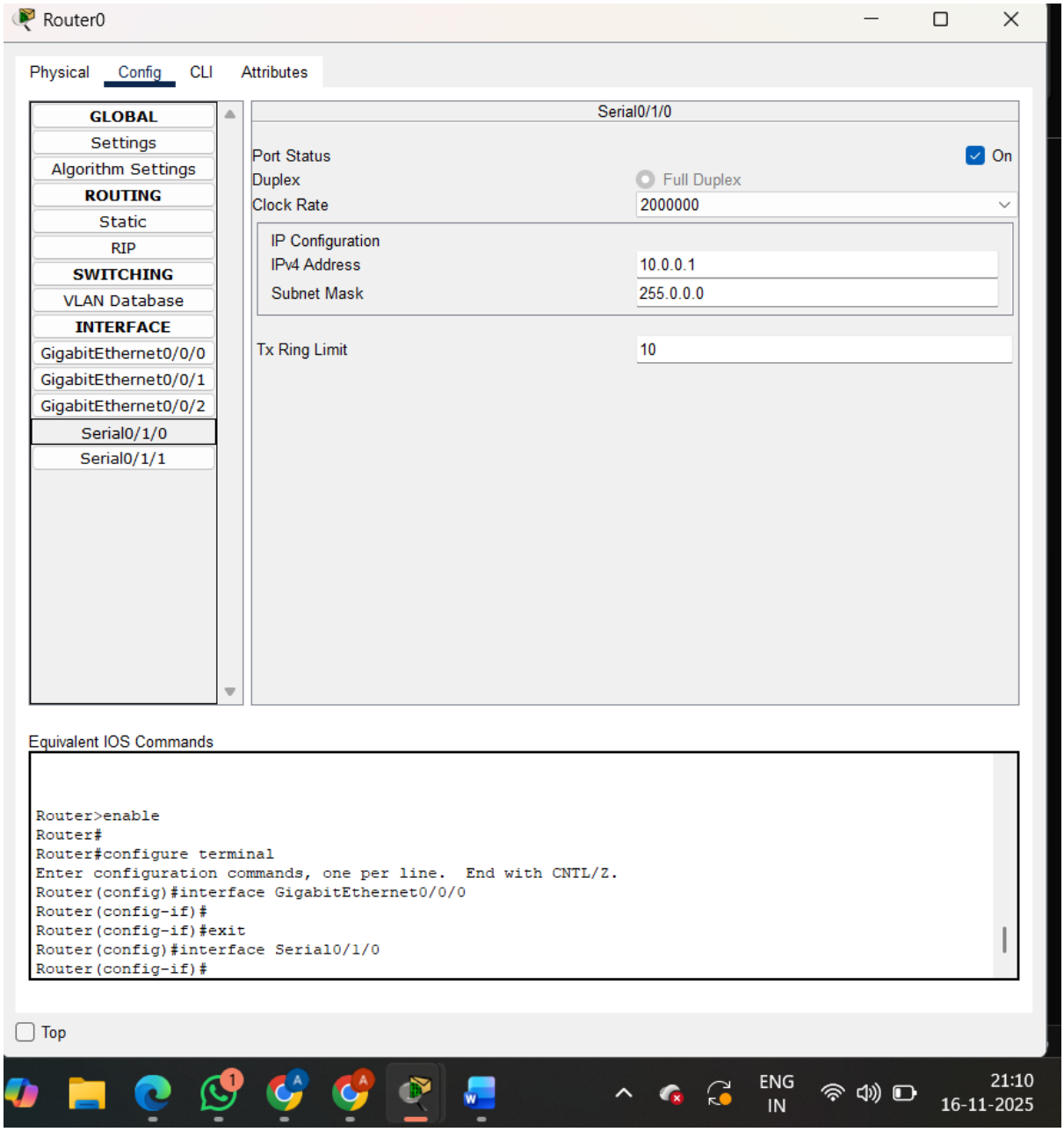

PC1
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
IPv4 Address
192.24.20.11
Subnet Mask
255.255.255.0
Default Gateway
192.24.20.1
DNS Server
0.0.0.0
IPv6 Configuration
Automatic
Static
IPv6 Address
/
Link Local Address
FE80::2E0:8FFF:FED9:4EDB
Default Gateway
DNS Server
802.1X
Use 802.1X Security
Authentication
MD5
Username
Password
Top
ENG
IN
21:09
16-11-2025

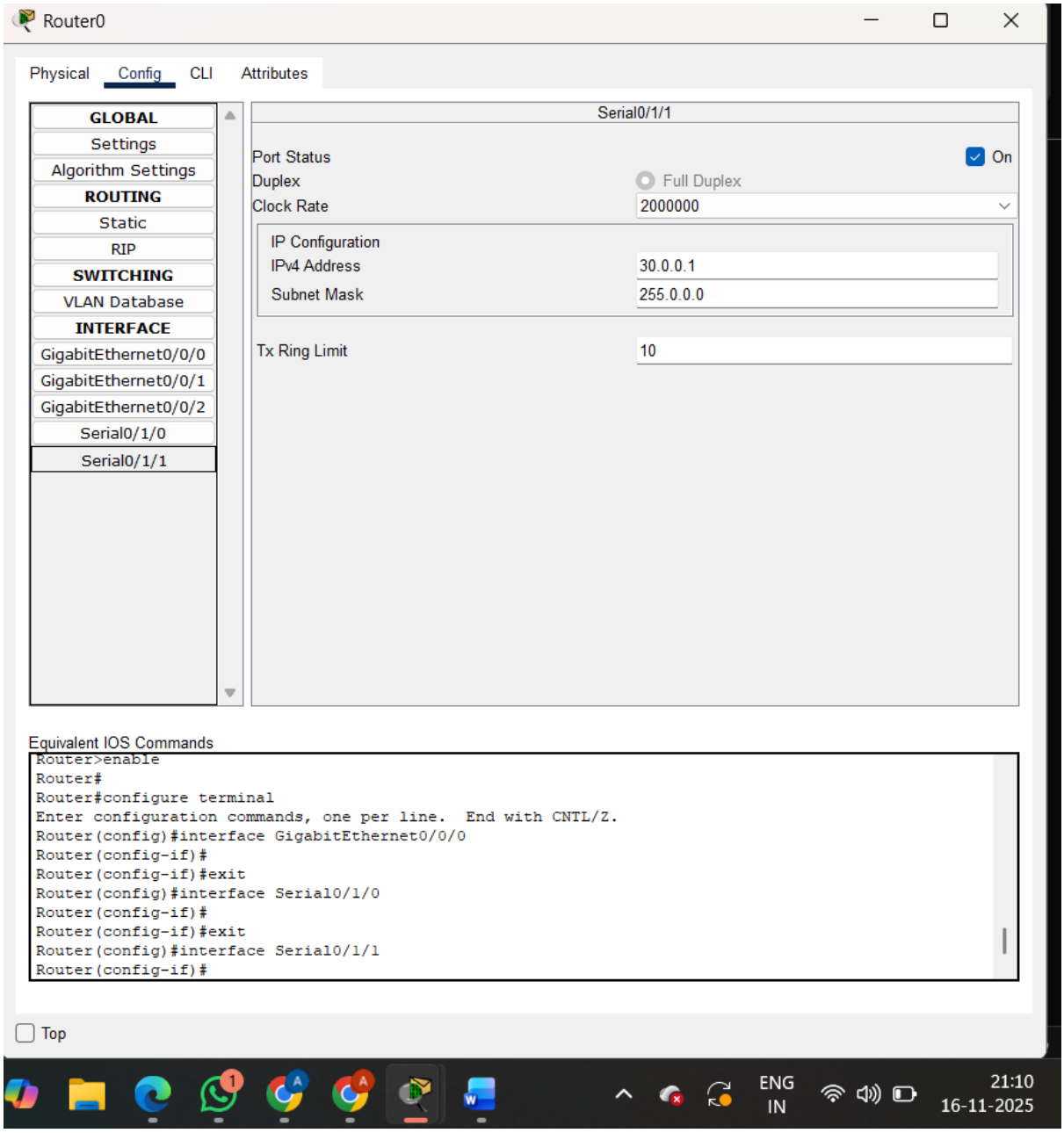
PC 2:

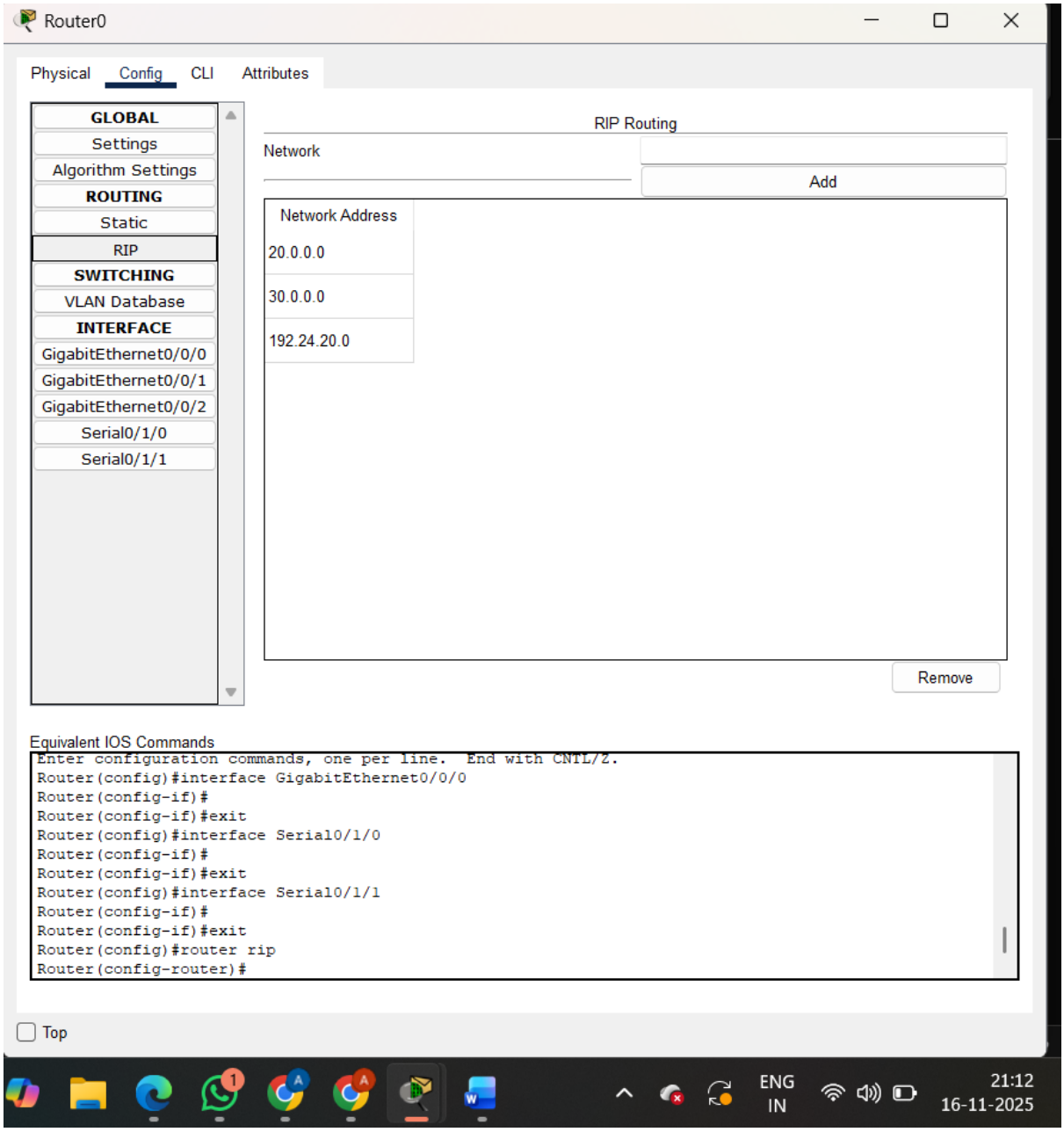

PC2
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
IPv4 Address
192.24.30.11
Subnet Mask
255.255.255.0
Default Gateway
192.24.30.1
DNS Server
0.0.0.0
IPv6 Configuration
Automatic
Static
IPv6 Address
Link Local Address
FE80::205:5EFF:FE59:2371
Default Gateway
DNS Server
802.1X
Use 802.1X Security
Authentication
MD5
Username
Password
Top
ENG
IN
21:09
16-11-2025

ROUTER 0:

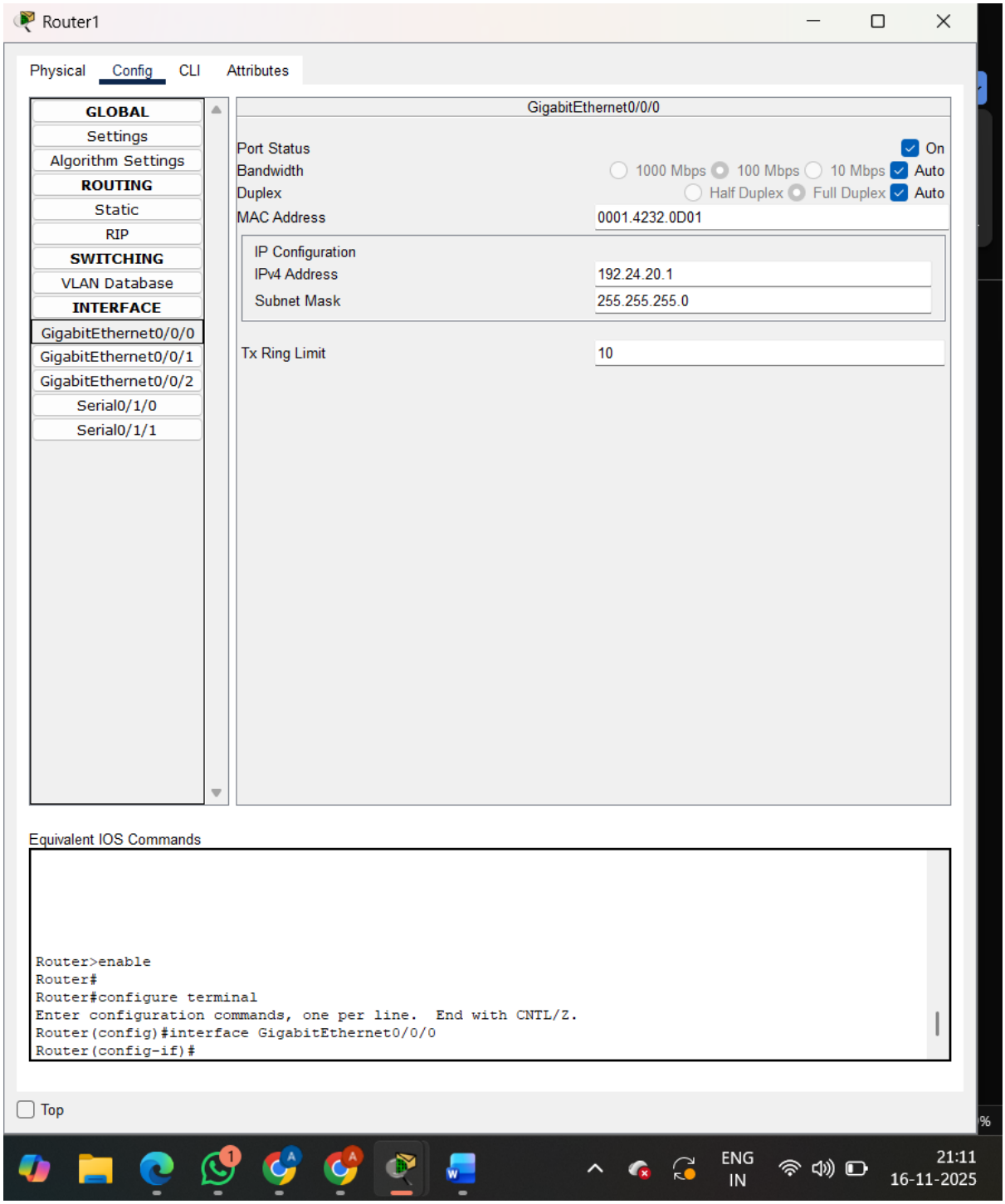

Router0
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
GigabitEthernet0/0/0
GigabitEthernet0/0/1
GigabitEthernet0/0/2
Serial0/1/0
Serial0/1/1
GigabitEthernet0/0/0
Port Status
On
Bandwidth
1000 Mbps
100 Mbps
10 Mbps
Auto
Duplex
Half Duplex
Full Duplex
Auto
MAC Address
0001.63BA.7401
IP Configuration
IPv4 Address
192.24.10.1
Subnet Mask
255.255.255.0
Tx Ring Limit
10
Equivalent IOS Commands
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface GigabitEthernet0/0/0
Router(config-if)#
Top
ENG
IN
21:10
16-11-2025

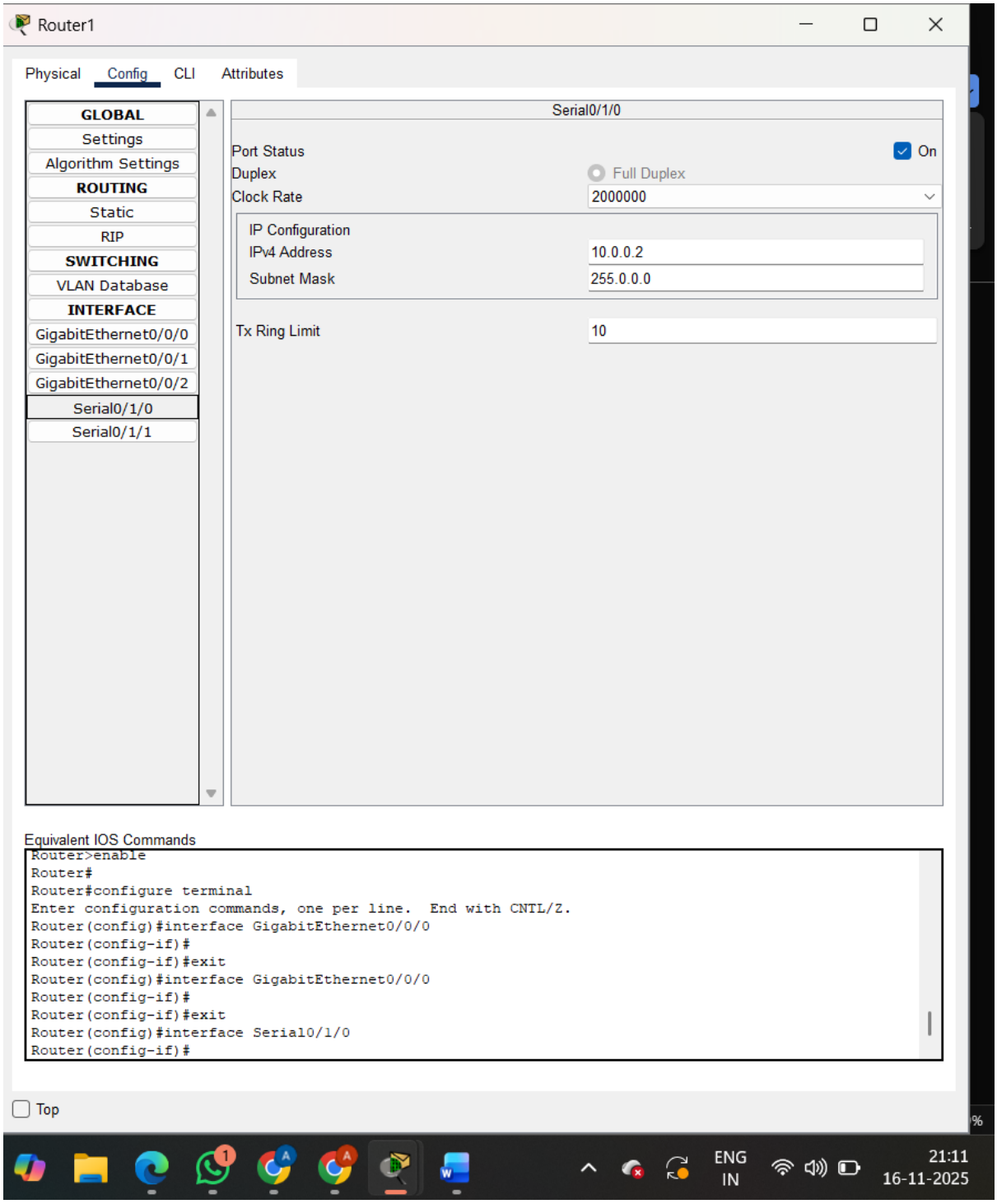

Router0
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
GigabitEthernet0/0/0
GigabitEthernet0/0/1
GigabitEthernet0/0/2
Serial0/1/0
Serial0/1/1
Serial0/1/0
Port Status
On
Duplex
Full Duplex
Clock Rate
2000000
IP Configuration
IPv4 Address
10.0.0.1
Subnet Mask
255.0.0.0
Tx Ring Limit
10
Equivalent IOS Commands
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface GigabitEthernet0/0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/1/0
Router(config-if)#
Top
ENG
IN
21:10
16-11-2025

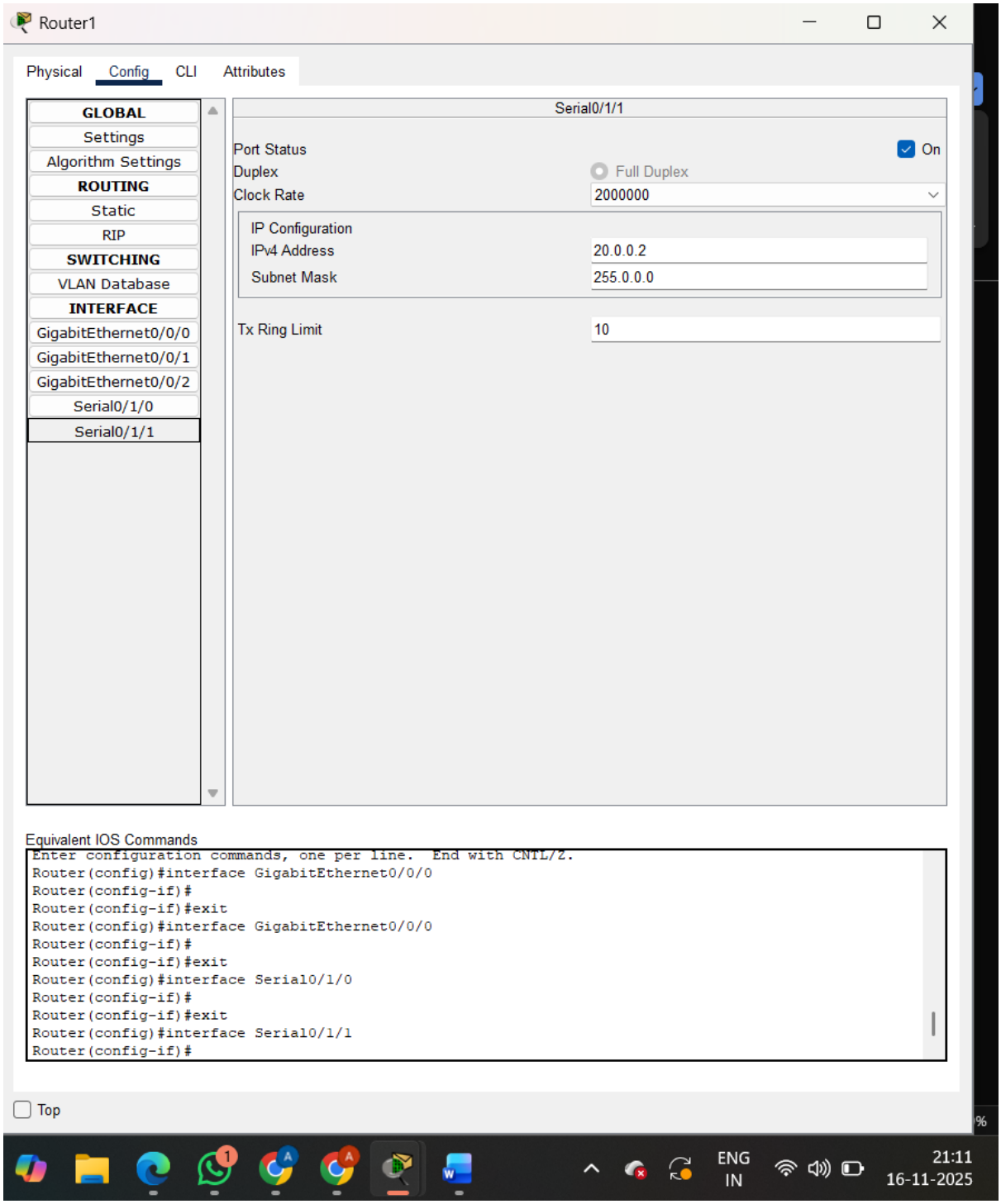

Router0
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
GigabitEthernet0/0/0
GigabitEthernet0/0/1
GigabitEthernet0/0/2
Serial0/1/0
Serial0/1/1
Serial0/1/1
Port Status
On
Duplex
Full Duplex
Clock Rate
2000000
IP Configuration
IPv4 Address
30.0.0.1
Subnet Mask
255.0.0.0
Tx Ring Limit
10
Equivalent IOS Commands
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface GigabitEthernet0/0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/1/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/1/1
Router(config-if)#
Top
ENG
IN
21:10
16-11-2025

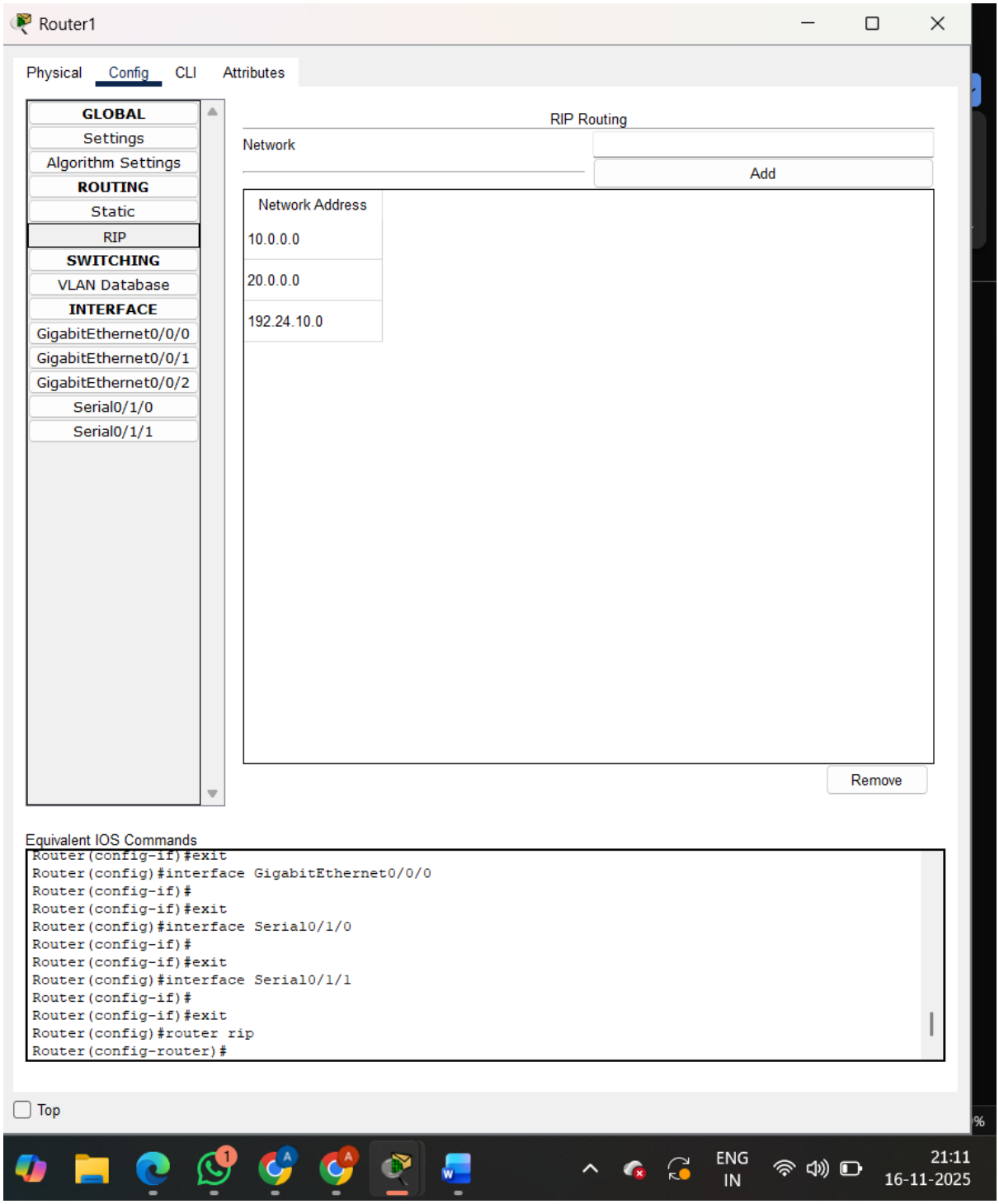

Router0
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
GigabitEthernet0/0/0
GigabitEthernet0/0/1
GigabitEthernet0/0/2
Serial0/1/0
Serial0/1/1
RIP Routing
Network
Add
Network Address
20.0.0.0
30.0.0.0
192.24.20.0
Remove
Equivalent IOS Commands
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface GigabitEthernet0/0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/1/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/1/1
Router(config-if)#
Router(config-if)#exit
Router(config)#router rip
Router(config-router)#
Top
ENG
IN
21:12
16-11-2025

ROUTER 1

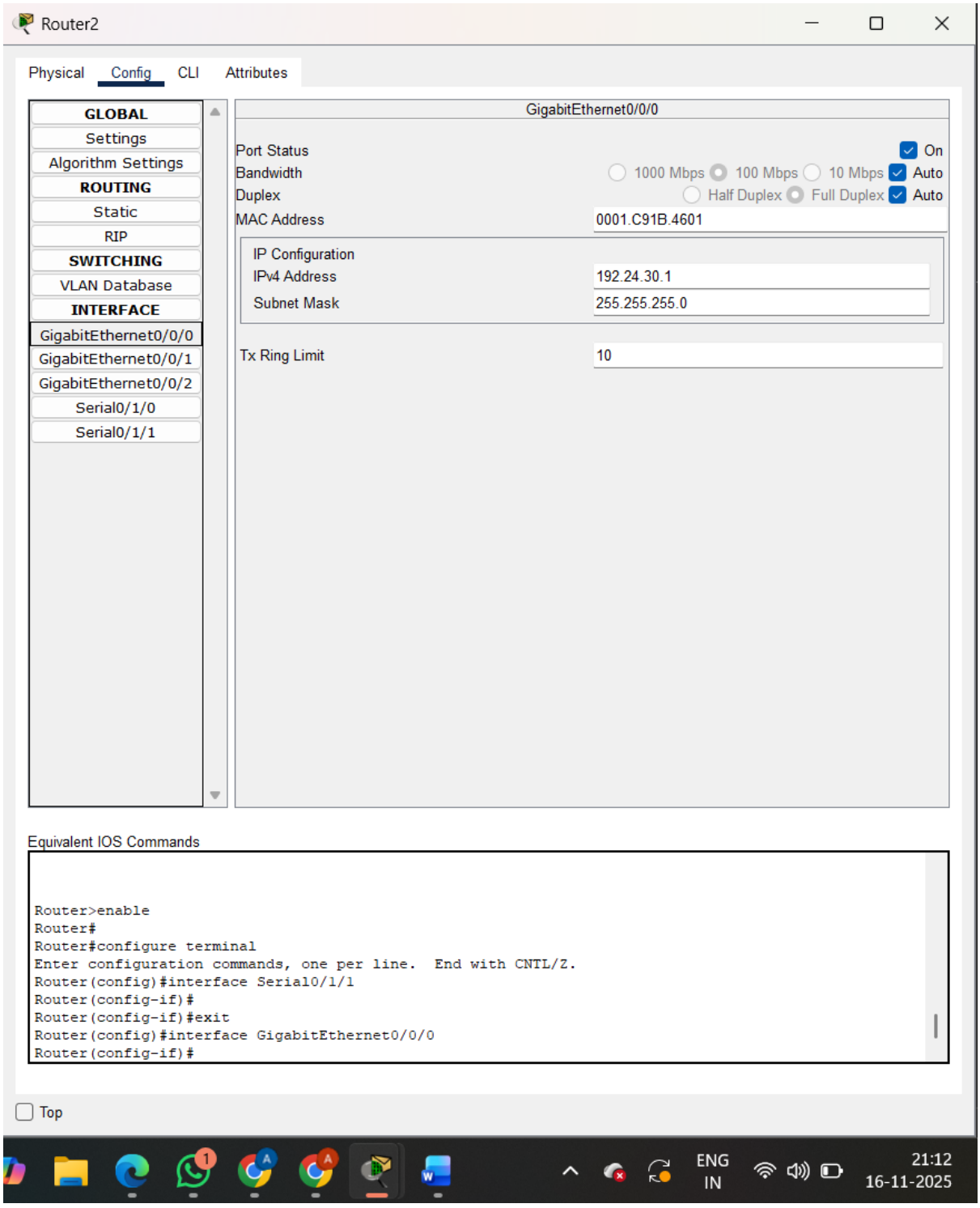

Router1
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
GigabitEthernet0/0/0
GigabitEthernet0/0/1
GigabitEthernet0/0/2
Serial0/1/0
Serial0/1/1
GigabitEthernet0/0/0
Port Status
On
Bandwidth
1000 Mbps
100 Mbps
10 Mbps
Auto
Duplex
Half Duplex
Full Duplex
Auto
MAC Address
0001.4232.0D01
IP Configuration
IPv4 Address
192.24.20.1
Subnet Mask
255.255.255.0
Tx Ring Limit
10
Equivalent IOS Commands
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface GigabitEthernet0/0/0
Router(config-if)#
Top
ENG
IN
21:11
16-11-2025

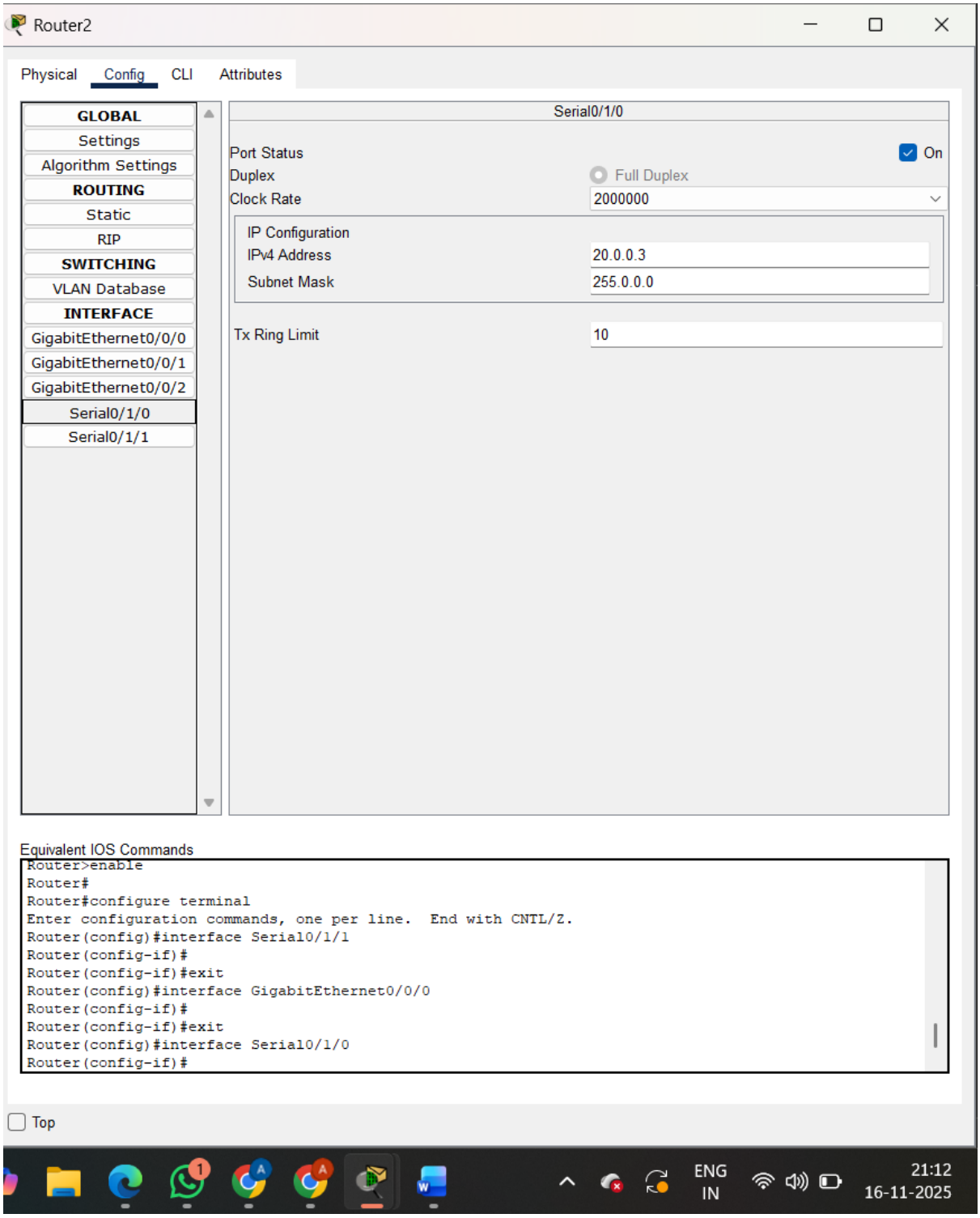

Router1
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
GigabitEthernet0/0/0
GigabitEthernet0/0/1
GigabitEthernet0/0/2
Serial0/1/0
Serial0/1/1
Serial0/1/0
Port Status
On
Duplex
Full Duplex
Clock Rate
2000000
IP Configuration
IPv4 Address
10.0.0.2
Subnet Mask
255.0.0.0
Tx Ring Limit
10
Equivalent IOS Commands
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface GigabitEthernet0/0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/1/0
Router(config-if)#
Top
ENG
IN
21:11
16-11-2025

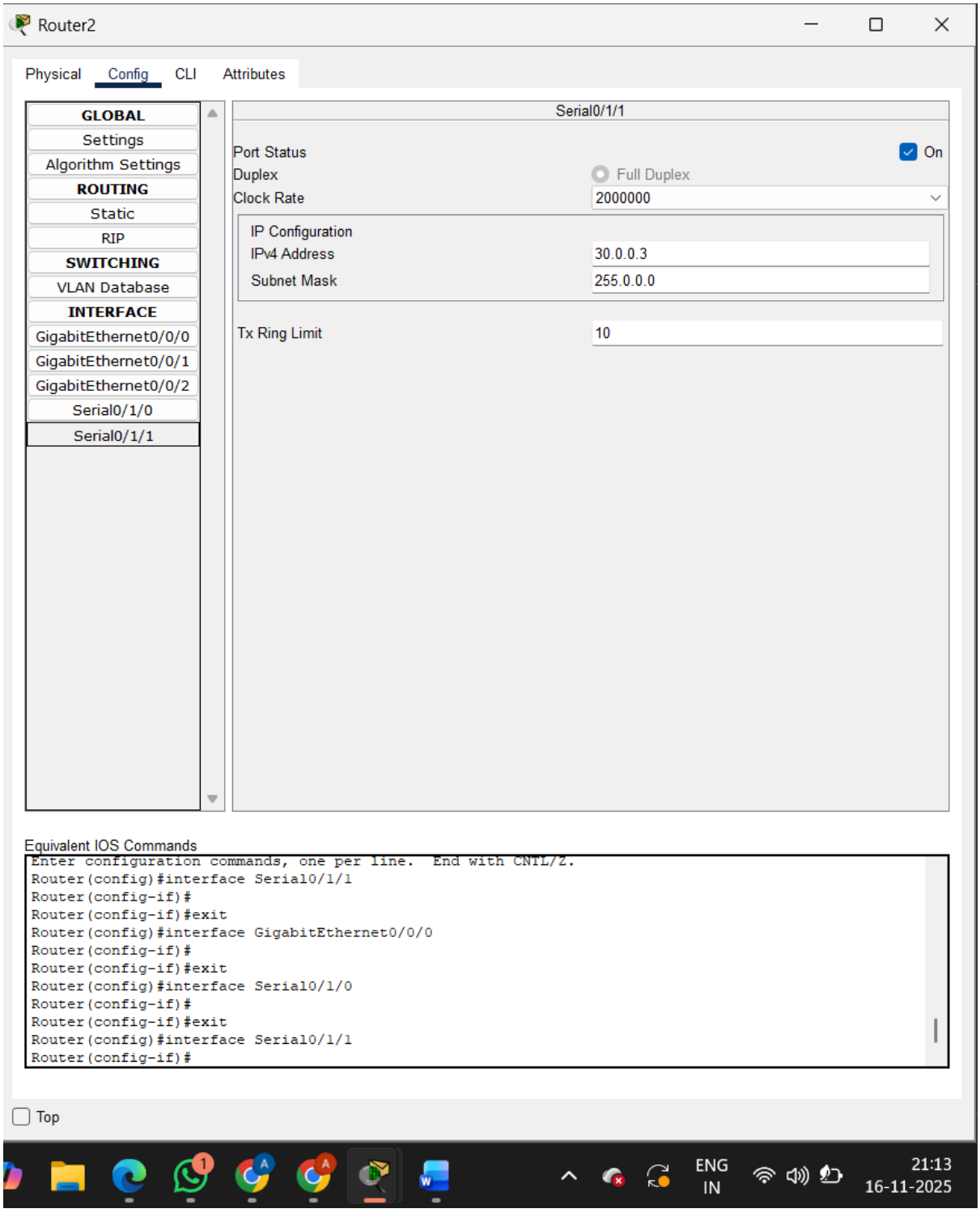

Router1
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
GigabitEthernet0/0/0
GigabitEthernet0/0/1
GigabitEthernet0/0/2
Serial0/1/0
Serial0/1/1
Serial0/1/1
Port Status
On
Duplex
Full Duplex
Clock Rate
2000000
IP Configuration
IPv4 Address
20.0.0.2
Subnet Mask
255.0.0.0
Tx Ring Limit
10
Equivalent IOS Commands
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface GigabitEthernet0/0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/1/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/1/1
Router(config-if)#
Top
ENG
IN
21:11
16-11-2025

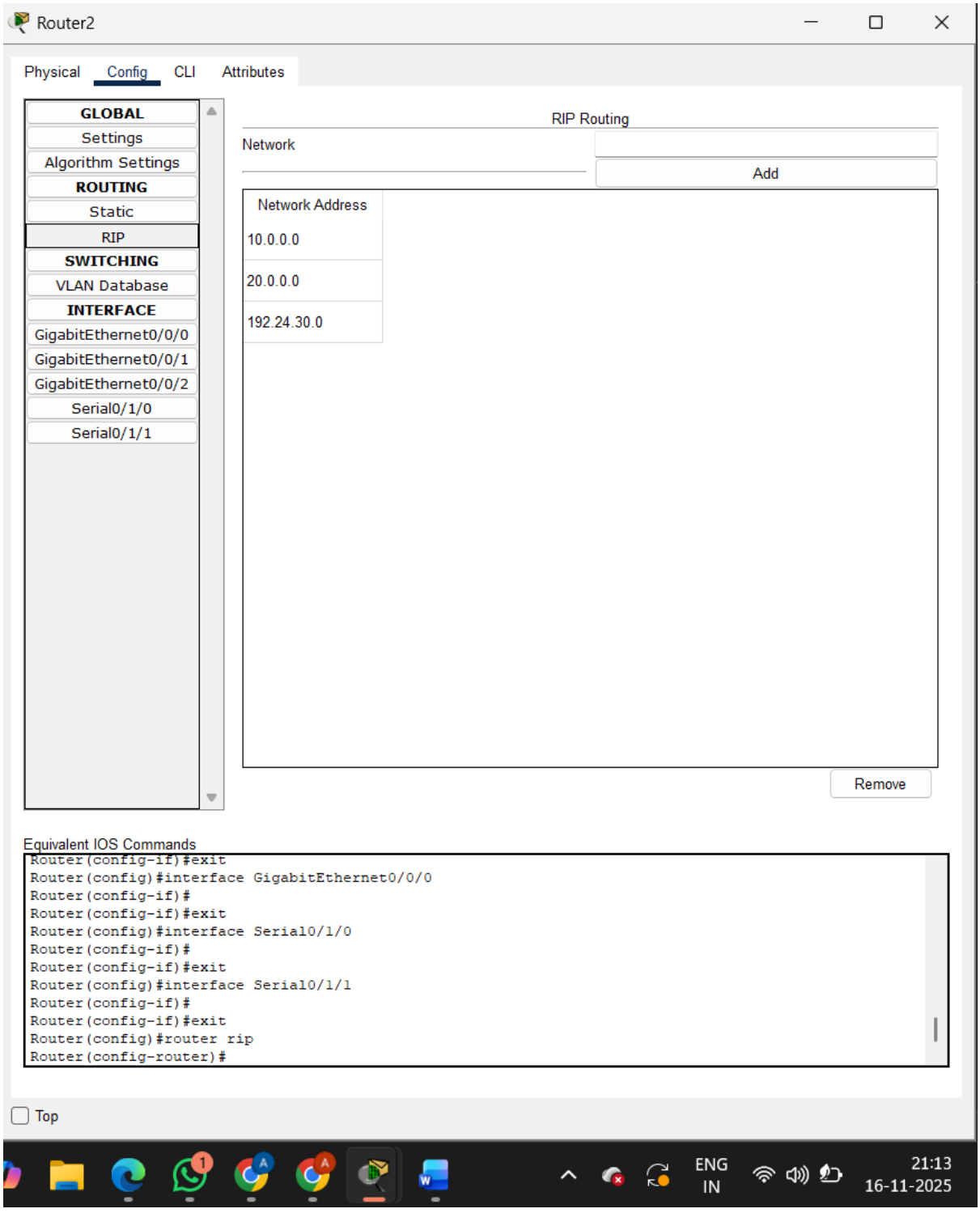

Router1
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
GigabitEthernet0/0/0
GigabitEthernet0/0/1
GigabitEthernet0/0/2
Serial0/1/0
Serial0/1/1
RIP Routing
Network
Add
Network Address
10.0.0.0
20.0.0.0
192.24.10.0
Remove
Equivalent IOS Commands
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/1/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/1/1
Router(config-if)#
Router(config-if)#exit
Router(config)#router rip
Router(config-router)#
Top
ENG
IN
21:11
16-11-2025

ROUTER 2:


Router2
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
GigabitEthernet0/0/0
GigabitEthernet0/0/1
GigabitEthernet0/0/2
Serial0/1/0
Serial0/1/1
GigabitEthernet0/0/0
Port Status
On
Bandwidth
1000 Mbps
100 Mbps
10 Mbps
Auto
Duplex
Half Duplex
Full Duplex
Auto
MAC Address
0001.C91B.4601
IP Configuration
IPv4 Address
192.24.30.1
Subnet Mask
255.255.255.0
Tx Ring Limit
10
Equivalent IOS Commands
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface Serial0/1/1
Router(config-if)#
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/0/0
Router(config-if)#
Top
ENG
IN
21:12
16-11-2025

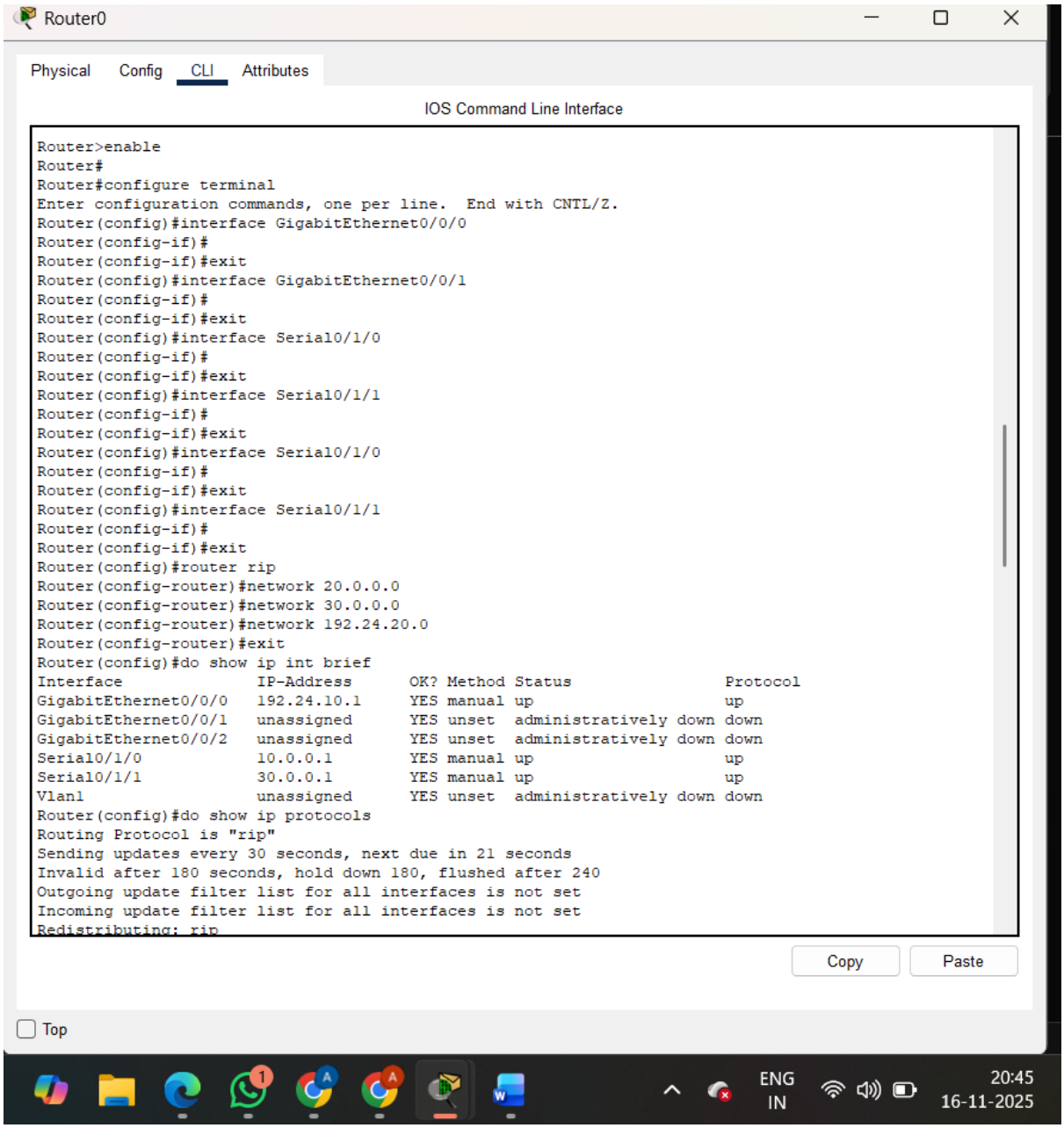

Router2
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
GigabitEthernet0/0/0
GigabitEthernet0/0/1
GigabitEthernet0/0/2
Serial0/1/0
Serial0/1/1
Serial0/1/0
Port Status
On
Duplex
Full Duplex
Clock Rate
2000000
IP Configuration
IPv4 Address
20.0.0.3
Subnet Mask
255.0.0.0
Tx Ring Limit
10
Equivalent IOS Commands
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface Serial0/1/1
Router(config-if)#
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/1/0
Router(config-if)#
Top
ENG
IN
21:12
16-11-2025

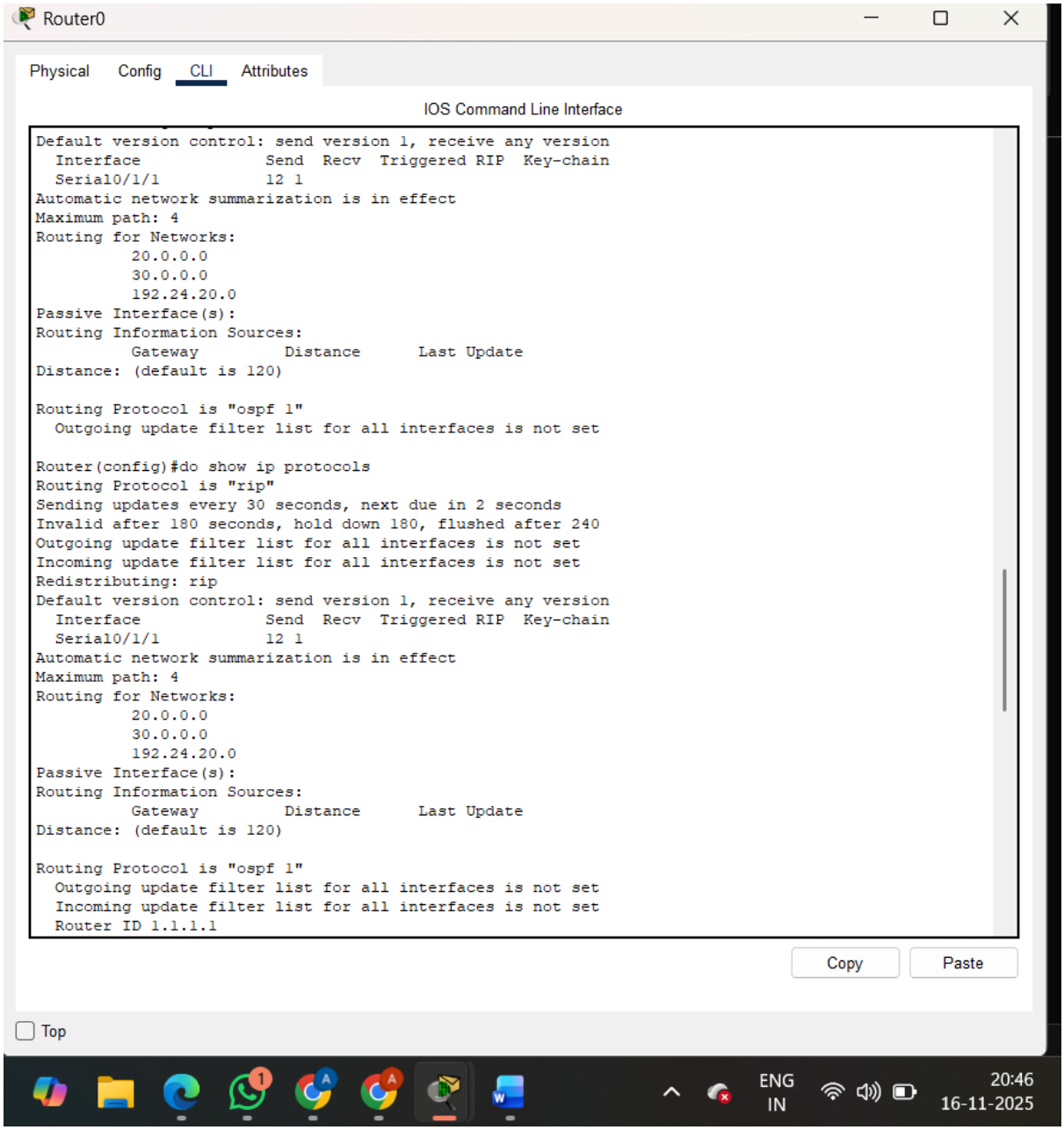

Router2
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
GigabitEthernet0/0/0
GigabitEthernet0/0/1
GigabitEthernet0/0/2
Serial0/1/0
Serial0/1/1
Serial0/1/1
Port Status
On
Duplex
Full Duplex
Clock Rate
2000000
IP Configuration
IPv4 Address
30.0.0.3
Subnet Mask
255.0.0.0
Tx Ring Limit
10
Equivalent IOS Commands
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface Serial0/1/1
Router(config-if)#
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/1/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/1/1
Router(config-if)#
Top
ENG
IN
21:13
16-11-2025


Router2
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
GigabitEthernet0/0/0
GigabitEthernet0/0/1
GigabitEthernet0/0/2
Serial0/1/0
Serial0/1/1
RIP Routing
Network
Add
Network Address
10.0.0.0
20.0.0.0
192.24.30.0
Remove
Equivalent IOS Commands
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/1/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/1/1
Router(config-if)#
Router(config-if)#exit
Router(config)#router rip
Router(config-router)#
Top
ENG
IN
21:13
16-11-2025

3) Configure open short path first routing table (OSPF in routers)

Router 0:




Router0
Physical
Config
CLI
Attributes
IOS Command Line Interface
Default version control: send version 1, receive any version
Interface Send Recv Triggered RIP Key-chain
Serial0/1/1 12 1
Automatic network summarization is in effect
Maximum path: 4
Routing for Networks:
20.0.0.0
30.0.0.0
192.24.20.0
Passive Interface(s):
Routing Information Sources:
Gateway Distance Last Update
Distance: (default is 120)
Routing Protocol is "ospf 1"
Outgoing update filter list for all interfaces is not set
Router(config)#do show ip protocols
Routing Protocol is "rip"
Sending updates every 30 seconds, next due in 2 seconds
Invalid after 180 seconds, hold down 180, flushed after 240
Outgoing update filter list for all interfaces is not set
Incoming update filter list for all interfaces is not set
Redistributing: rip
Default version control: send version 1, receive any version
Interface Send Recv Triggered RIP Key-chain
Serial0/1/1 12 1
Automatic network summarization is in effect
Maximum path: 4
Routing for Networks:
20.0.0.0
30.0.0.0
192.24.20.0
Passive Interface(s):
Routing Information Sources:
Gateway Distance Last Update
Distance: (default is 120)
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 1.1.1.1
Copy
Paste
Top
ENG
IN
20:46
16-11-2025


Router0
Physical
Config
CLI
Attributes
IOS Command Line Interface
Number of areas in this router is 1. 1 normal 0 stub 0 nssa
Maximum path: 4
Routing for Networks:
192.24.10.0 0.0.0.255 area 0
10.0.0.0 0.0.0.3 area 0
30.0.0.0 0.0.0.3 area 0
Routing Information Sources:
Gateway Distance Last Update
1.1.1.1 110 00:13:28
2.2.2.2 110 00:13:28
3.3.3.3 110 00:13:28
Distance: (default is 110)
Router(config)#
Router(config)#
Router(config)#router ospf ?
<1-65535> Process ID
Router(config)#router ospf 1
Router(config-router)#network 192.24.10.0 0.0.255 area 0
^
% Invalid input detected at '^' marker.
Router(config-router)#network 192.24.10.00.0.255 area 0
^
% Invalid input detected at '^' marker.
Router(config-router)#network 192.24.10.0 0.0.0.255 area 0
Router(config-router)#network 10.0.0.0 0.255.255.255 area 0
Router(config-router)#network 30.0.0.0 0.255.255.255 area 0
Router(config-router)#do sh ip ospf neighbor
Neighbor ID Pri State Dead Time Address Interface
2.2.2.2 0 FULL/ - 00:00:38 10.0.0.2 Serial0/1/0
3.3.3.3 0 FULL/ - 00:00:38 30.0.0.3 Serial0/1/1
Router(config-router)#do sh 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
Copy
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Top
ENG
IN
20:46
16-11-2025


Router0
Physical
Config
CLI
Attributes
IOS Command Line Interface
Router(config)#router ospf 1
Router(config-router)#network 192.24.10.0 0.0.255 area 0
% Invalid input detected at '^' marker.
Router(config-router)#network 192.24.10.00.0.255 area 0
% Invalid input detected at '^' marker.
Router(config-router)#network 192.24.10.0 0.0.0.255 area 0
Router(config-router)#network 10.0.0.0 0.255.255.255 area 0
Router(config-router)#network 30.0.0.0 0.255.255.255 area 0
Router(config-router)#do sh ip ospf neighbor
Neighbor ID Pri State Dead Time Address Interface
2.2.2.2 0 FULL/ - 00:00:38 10.0.0.2 Serial0/1/0
3.3.3.3 0 FULL/ - 00:00:38 30.0.0.3 Serial0/1/1
Router(config-router)#do sh 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
10.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C 10.0.0.0/8 is directly connected, Serial0/1/0
L 10.0.0.1/32 is directly connected, Serial0/1/0
O 20.0.0.0/8 [110/128] via 10.0.0.2, 00:19:43, Serial0/1/0
[110/128] via 30.0.0.3, 00:19:43, Serial0/1/1
30.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C 30.0.0.0/8 is directly connected, Serial0/1/1
L 30.0.0.1/32 is directly connected, Serial0/1/1
192.24.10.0/24 is variably subnetted, 2 subnets, 2 masks
C 192.24.10.0/24 is directly connected, GigabitEthernet0/0/0
L 192.24.10.1/32 is directly connected, GigabitEthernet0/0/0
O 192.24.30.0/24 [110/65] via 30.0.0.3, 00:19:43, Serial0/1/1
--More--
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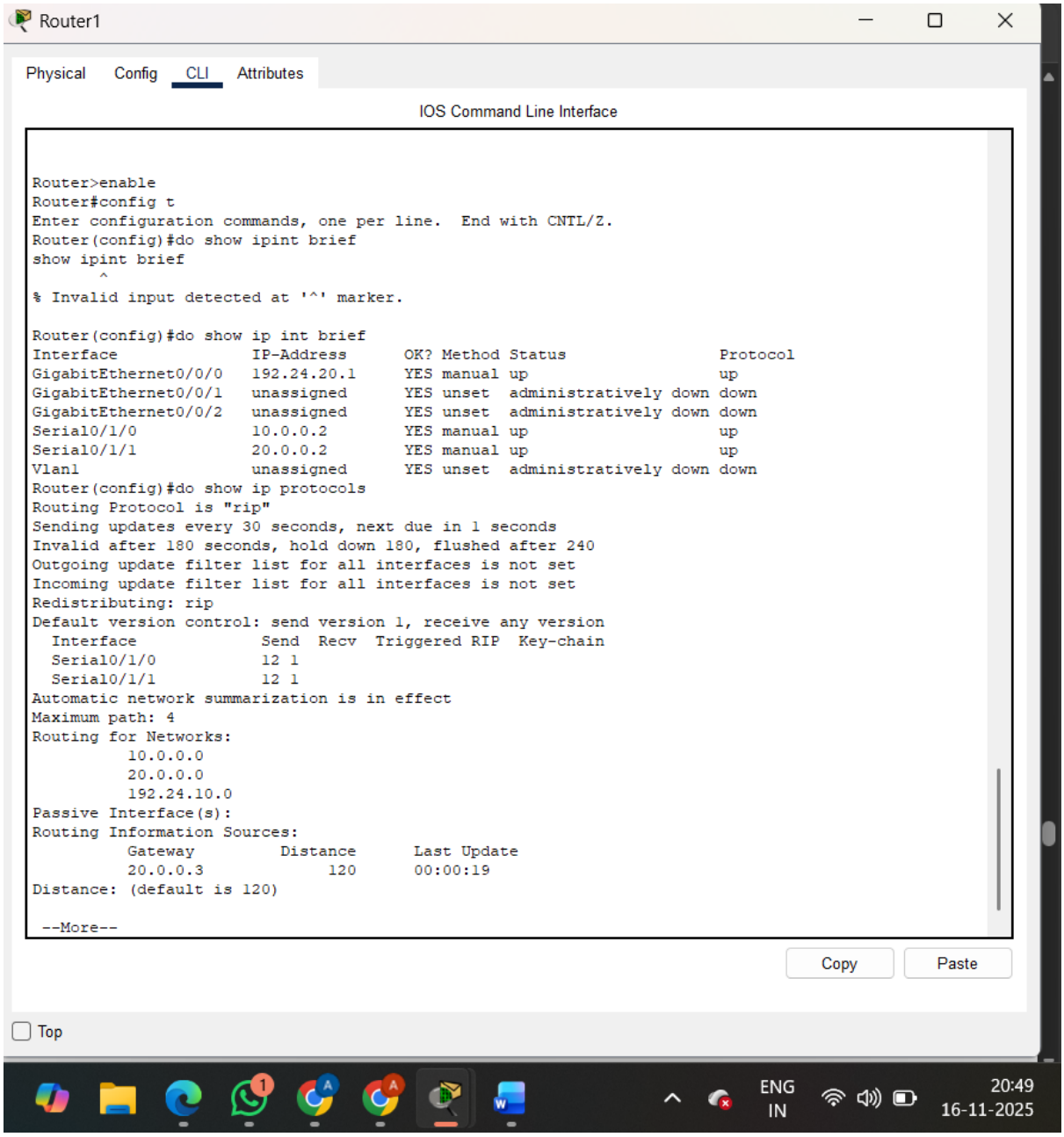
ENG
IN
20:46
16-11-2025

ROUTER 1:


Router1
Physical
Config
CLI
Attributes
IOS Command Line Interface
Router>enable
Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#do show ipint brief
show ipint brief
^
% Invalid input detected at '^' marker.
Router(config)#do show ip int brief
Interface IP-Address OK? Method Status Protocol
GigabitEthernet0/0/0 192.24.20.1 YES manual up up
GigabitEthernet0/0/1 unassigned YES unset administratively down down
GigabitEthernet0/0/2 unassigned YES unset administratively down down
Serial0/1/0 10.0.0.2 YES manual up up
Serial0/1/1 20.0.0.2 YES manual up up
Vlan1 unassigned YES unset administratively down down
Router(config)#do show ip protocols
Routing Protocol is "rip"
Sending updates every 30 seconds, next due in 1 seconds
Invalid after 180 seconds, hold down 180, flushed after 240
Outgoing update filter list for all interfaces is not set
Incoming update filter list for all interfaces is not set
Redistributing: rip
Default version control: send version 1, receive any version
Interface Send Recv Triggered RIP Key-chain
Serial0/1/0 12 1
Serial0/1/1 12 1
Automatic network summarization is in effect
Maximum path: 4
Routing for Networks:
10.0.0.0
20.0.0.0
192.24.10.0
Passive Interface(s):
Routing Information Sources:
Gateway Distance Last Update
20.0.0.3 120 00:00:19
Distance: (default is 120)
--More--
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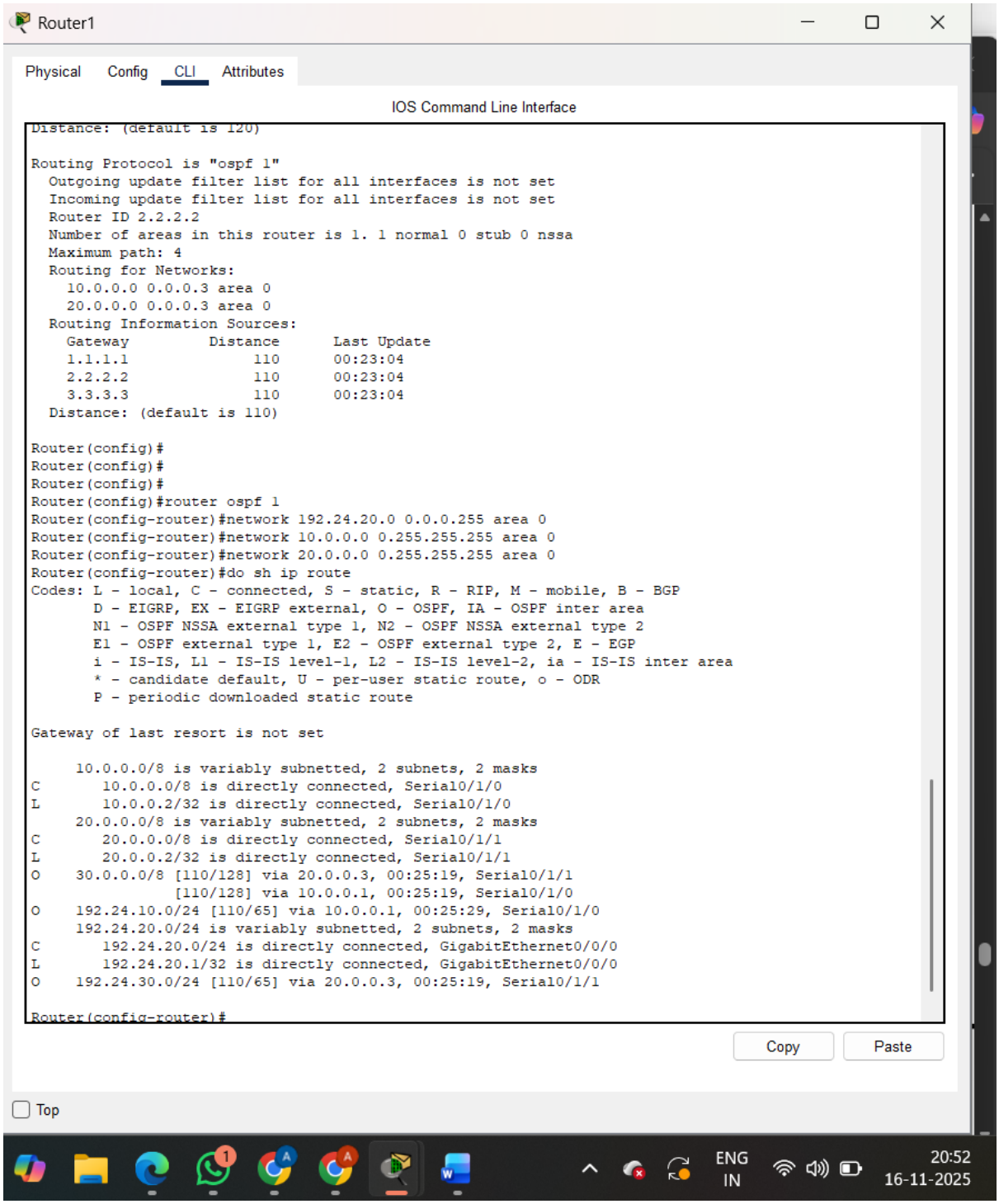
Top
ENG
IN
20:49
16-11-2025


Router1
Physical
Config
CLI
Attributes
IOS Command Line Interface
Distance: (default is 120)
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 2.2.2.2
Number of areas in this router is 1. 1 normal 0 stub 0 nssa
Maximum path: 4
Routing for Networks:
10.0.0.0 0.0.0.3 area 0
20.0.0.0 0.0.0.3 area 0
Routing Information Sources:
Gateway Distance Last Update
1.1.1.1 110 00:23:04
2.2.2.2 110 00:23:04
3.3.3.3 110 00:23:04
Distance: (default is 110)
Router(config)#
Router(config)#
Router(config)#
Router(config)#router ospf 1
Router(config-router)#network 192.24.20.0 0.0.0.255 area 0
Router(config-router)#network 10.0.0.0 0.255.255.255 area 0
Router(config-router)#network 20.0.0.0 0.255.255.255 area 0
Router(config-router)#do sh 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
10.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C 10.0.0.0/8 is directly connected, Serial0/1/0
L 10.0.0.2/32 is directly connected, Serial0/1/0
20.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C 20.0.0.0/8 is directly connected, Serial0/1/1
L 20.0.0.2/32 is directly connected, Serial0/1/1
O 30.0.0.0/8 [110/128] via 20.0.0.3, 00:25:19, Serial0/1/1
[110/128] via 10.0.0.1, 00:25:19, Serial0/1/0
O 192.24.10.0/24 [110/65] via 10.0.0.1, 00:25:29, Serial0/1/0
192.24.20.0/24 is variably subnetted, 2 subnets, 2 masks
C 192.24.20.0/24 is directly connected, GigabitEthernet0/0/0
L 192.24.20.1/32 is directly connected, GigabitEthernet0/0/0
O 192.24.30.0/24 [110/65] via 20.0.0.3, 00:25:19, Serial0/1/1
Router(config-router)#
Copy
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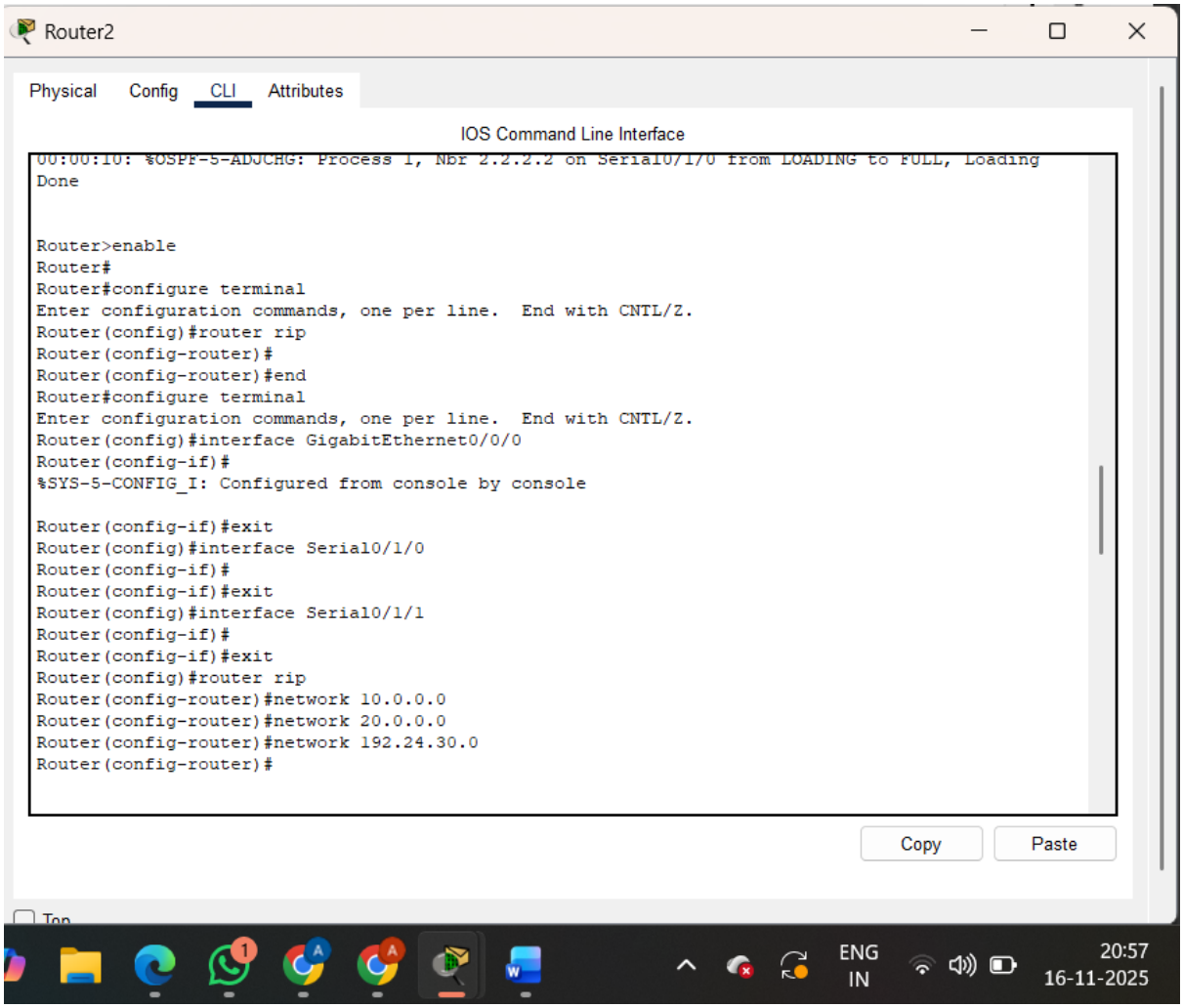
Top
ENG
IN
20:52
16-11-2025

ROUTER 2:


Router2
Physical
Config
CLI
Attributes
IOS Command Line Interface
00:00:10: %OSPF-5-ADJCHG: Process 1, Nbr 2.2.2.2 on Serial0/1/0 from LOADING to FULL, Loading
Done
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#router rip
Router(config-router)#
Router(config-router)#end
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface GigabitEthernet0/0/0
Router(config-if)#
%SYS-5-CONFIG_I: Configured from console by console
Router(config-if)#exit
Router(config)#interface Serial0/1/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/1/1
Router(config-if)#
Router(config-if)#exit
Router(config)#router rip
Router(config-router)#network 10.0.0.0
Router(config-router)#network 20.0.0.0
Router(config-router)#network 192.24.30.0
Router(config-router)#
Copy
Paste
Top
ENG
IN
20:57
16-11-2025


Router2
Physical
Config
CLI
Attributes
IOS Command Line Interface
Router>enable
Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#do show ip int brief
Interface IP-Address OK? Method Status Protocol
GigabitEthernet0/0/0 192.24.30.1 YES manual up up
GigabitEthernet0/0/1 unassigned YES unset administratively down down
GigabitEthernet0/0/2 unassigned YES unset administratively down down
Serial0/1/0 20.0.0.3 YES manual up up
Serial0/1/1 30.0.0.3 YES manual up up
Vlan1 unassigned YES unset administratively down down
Router(config)#router ospf 1
Router(config-router)#network 192.24.30.0 0.0.0.255 area 0
Router(config-router)#network 20.0.0.0 0.255.255.255 area 0
Router(config-router)#network
% Incomplete command.
Router(config-router)#network 30.0.0.0 0.255.255.255 area 0
Router(config-router)#do sh ip ospf neighbor
Neighbor ID Pri State Dead Time Address Interface
2.2.2.2 0 FULL/ - 00:00:32 20.0.0.2 Serial0/1/0
1.1.1.1 0 FULL/ - 00:00:39 30.0.0.1 Serial0/1/1
Router(config-router)#do sh 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
O 10.0.0.0/8 [110/128] via 30.0.0.1, 00:30:51, Serial0/1/1
[110/128] via 20.0.0.2, 00:30:51, Serial0/1/0
20.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C 20.0.0.0/8 is directly connected, Serial0/1/0
L 20.0.0.3/32 is directly connected, Serial0/1/0
30.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C 30.0.0.0/8 is directly connected, Serial0/1/1
L 30.0.0.3/32 is directly connected, Serial0/1/1
O 192.24.10.0/24 [110/65] via 30.0.0.1, 00:31:01, Serial0/1/1
O 192.24.20.0/24 [110/65] via 20.0.0.2, 00:06:29, Serial0/1/0
192.24.30.0/24 is variably subnetted, 2 subnets, 2 masks
C 192.24.30.0/24 is directly connected, GigabitEthernet0/0/0
L 192.24.30.1/32 is directly connected, GigabitEthernet0/0/0
Router(config-router)#
Router(config-router)#
Copy
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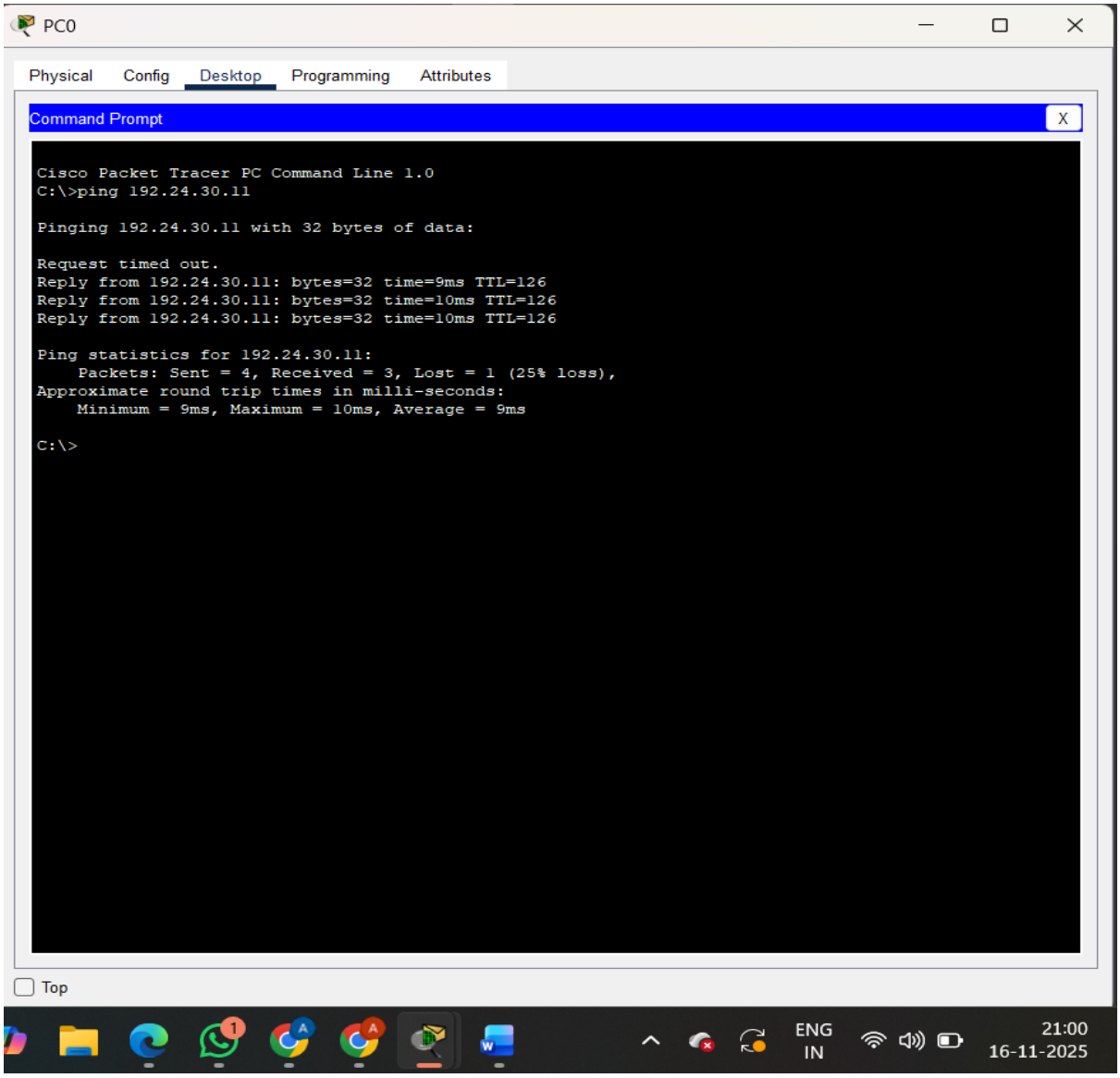
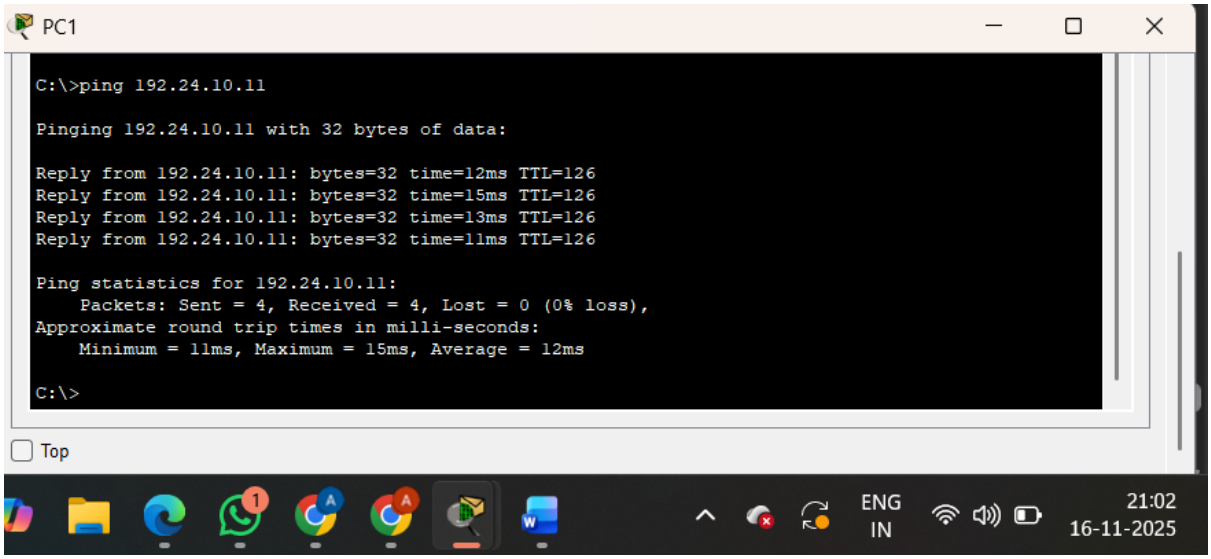
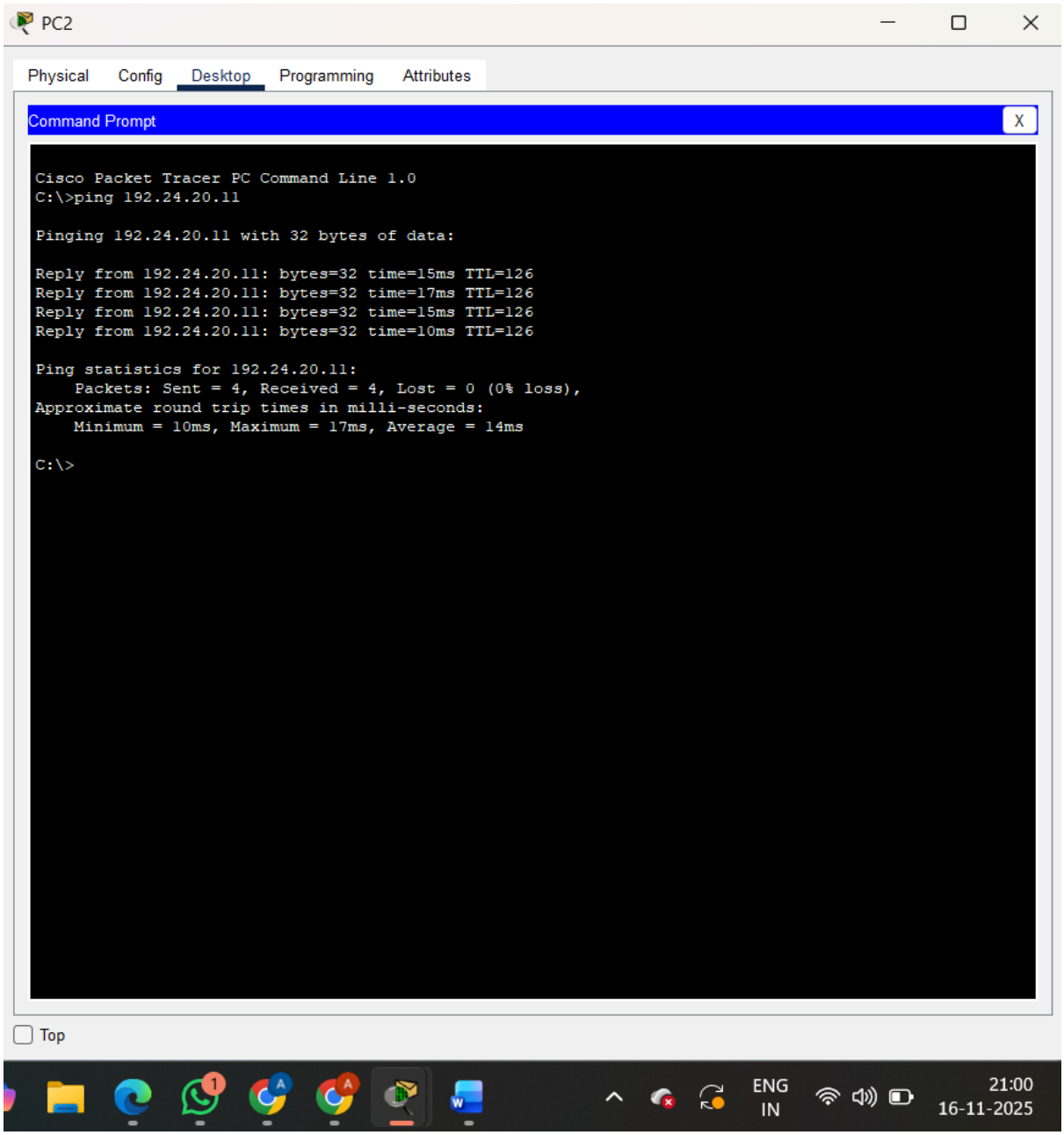
Top
ENG
IN
20:58
16-11-2025

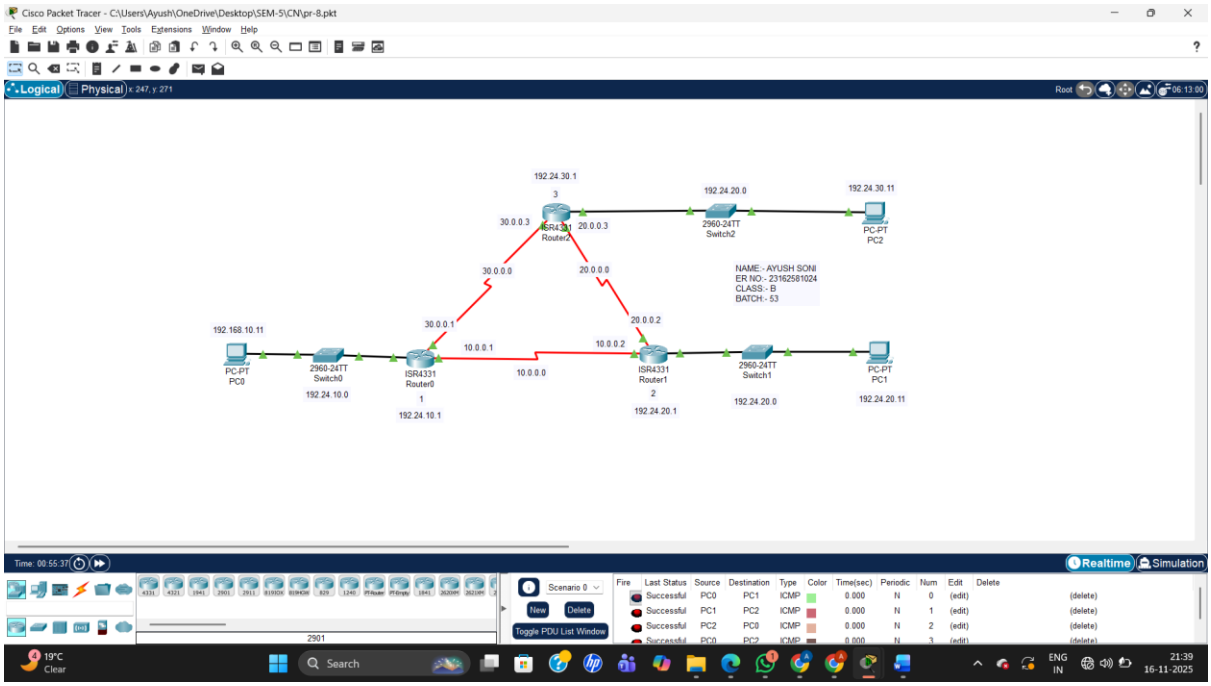
OUTPUT:

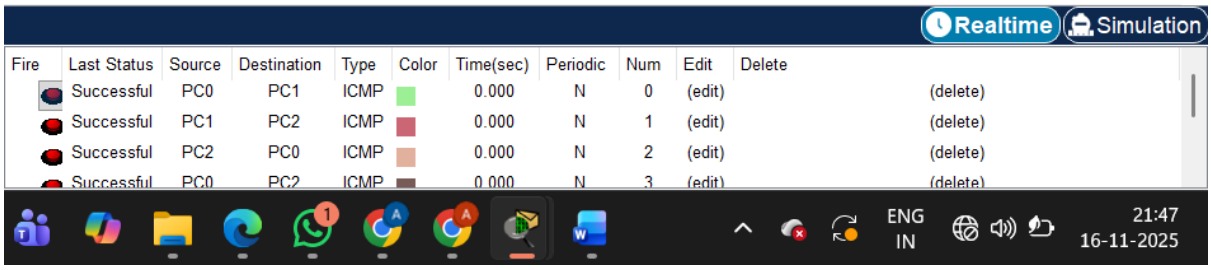

PC0
Physical
Config
Desktop
Programming
Attributes
Command Prompt
X
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.24.30.11
Pinging 192.24.30.11 with 32 bytes of data:
Request timed out.
Reply from 192.24.30.11: bytes=32 time=9ms TTL=126
Reply from 192.24.30.11: bytes=32 time=10ms TTL=126
Reply from 192.24.30.11: bytes=32 time=10ms TTL=126
Ping statistics for 192.24.30.11:
Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
Minimum = 9ms, Maximum = 10ms, Average = 9ms
C:\>
Top
ENG
IN
21:00
16-11-2025

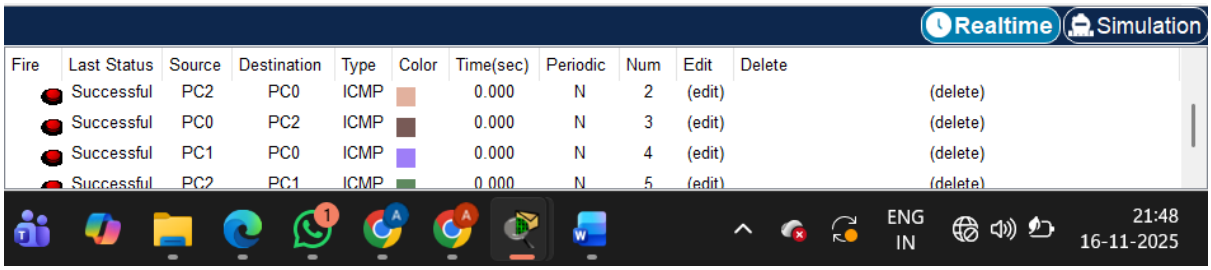

PC1
C:\>ping 192.24.10.11
Pinging 192.24.10.11 with 32 bytes of data:
Reply from 192.24.10.11: bytes=32 time=12ms TTL=126
Reply from 192.24.10.11: bytes=32 time=15ms TTL=126
Reply from 192.24.10.11: bytes=32 time=13ms TTL=126
Reply from 192.24.10.11: bytes=32 time=11ms TTL=126
Ping statistics for 192.24.10.11:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 11ms, Maximum = 15ms, Average = 12ms
C:\>
Top
ENG
IN
21:02
16-11-2025


PC2
Physical
Config
Desktop
Programming
Attributes
Command Prompt
X
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.24.20.11
Pinging 192.24.20.11 with 32 bytes of data:
Reply from 192.24.20.11: bytes=32 time=15ms TTL=126
Reply from 192.24.20.11: bytes=32 time=17ms TTL=126
Reply from 192.24.20.11: bytes=32 time=15ms TTL=126
Reply from 192.24.20.11: bytes=32 time=10ms TTL=126
Ping statistics for 192.24.20.11:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 10ms, Maximum = 17ms, Average = 14ms
C:\>
Top
ENG
IN
21:00
16-11-2025

FINAL OUTPUT OF PACKET TRANSFER







Conclusion:

The network was effectively designed and configured using the OSPF routing protocol. All routers successfully formed neighbor relationships and exchanged routing information accurately. Each department's network achieved complete connectivity with optimal path selection. OSPF provided rapid convergence, automatic route updates, and stable communication across all network segments, demonstrating a well-implemented OSPF setup for a multi-department organization.

Note: Make sure the last two digits of your enrollment numbers appear in the network IP address that must be visible in the snapshot of the cisco packet tracer. i.e. 192.XX.10.1 (XX indicates last two digits of your enrollment no.)