Institute of Computer Technology

B. Tech Computer Science and Engineering

Sub: Computer Network

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Enrollment Number: 23162581024

Branch: CSE

Batch: 53

Class: B

Practical-9

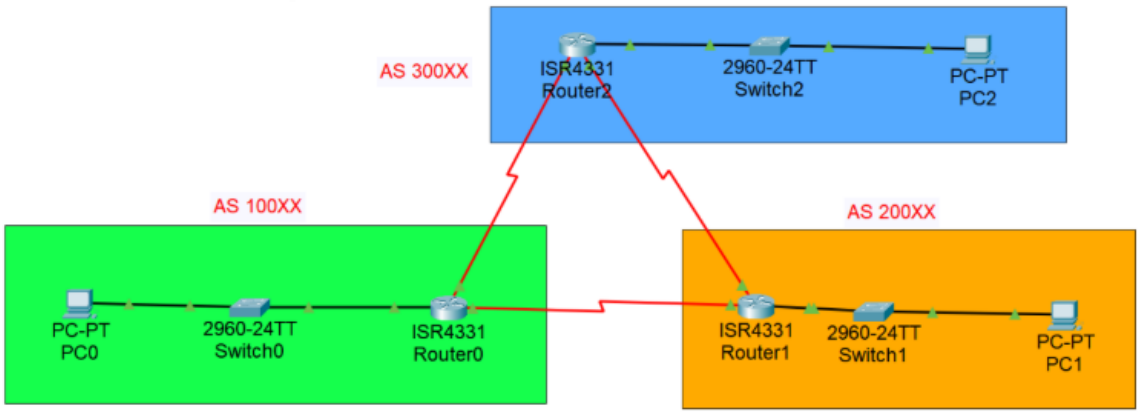
Aim: To design a network using Border Gateway Protocol (BGP).

Scenario:

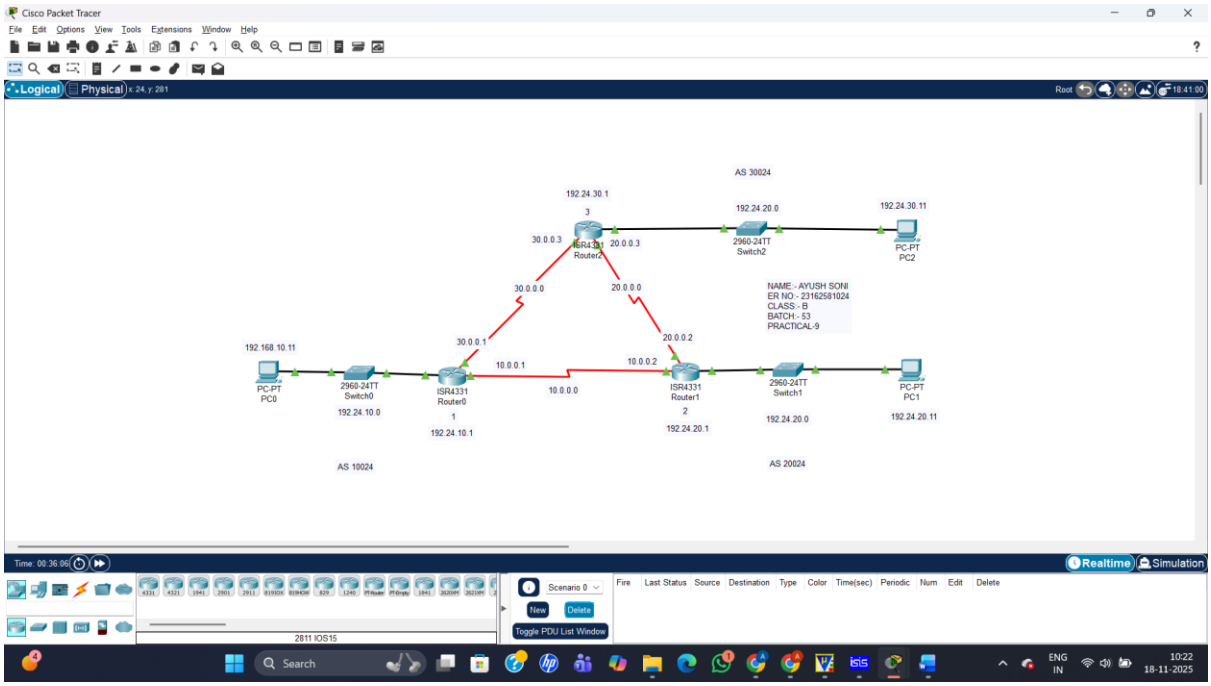
Consider that organization has three departments and as routing protocol Border Gateway Protocol (BGP) is to be implemented. Configure network as shown in figure below and implement Border Gateway Protocol (BGP).

Procedure:

1) Create network as given below. (XX indicates last two digits of your enrollment no.)

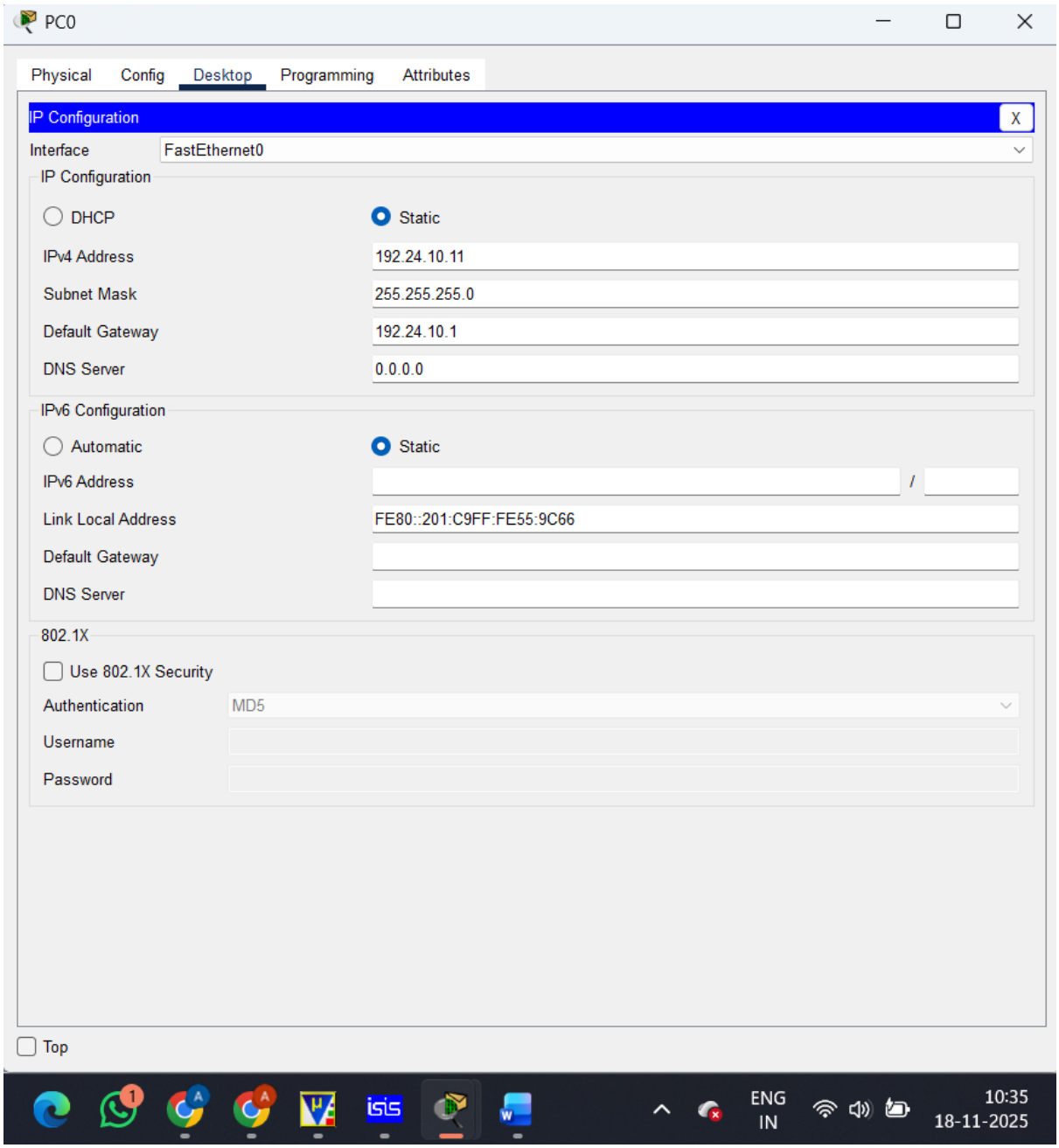


MAIN CONNECTION

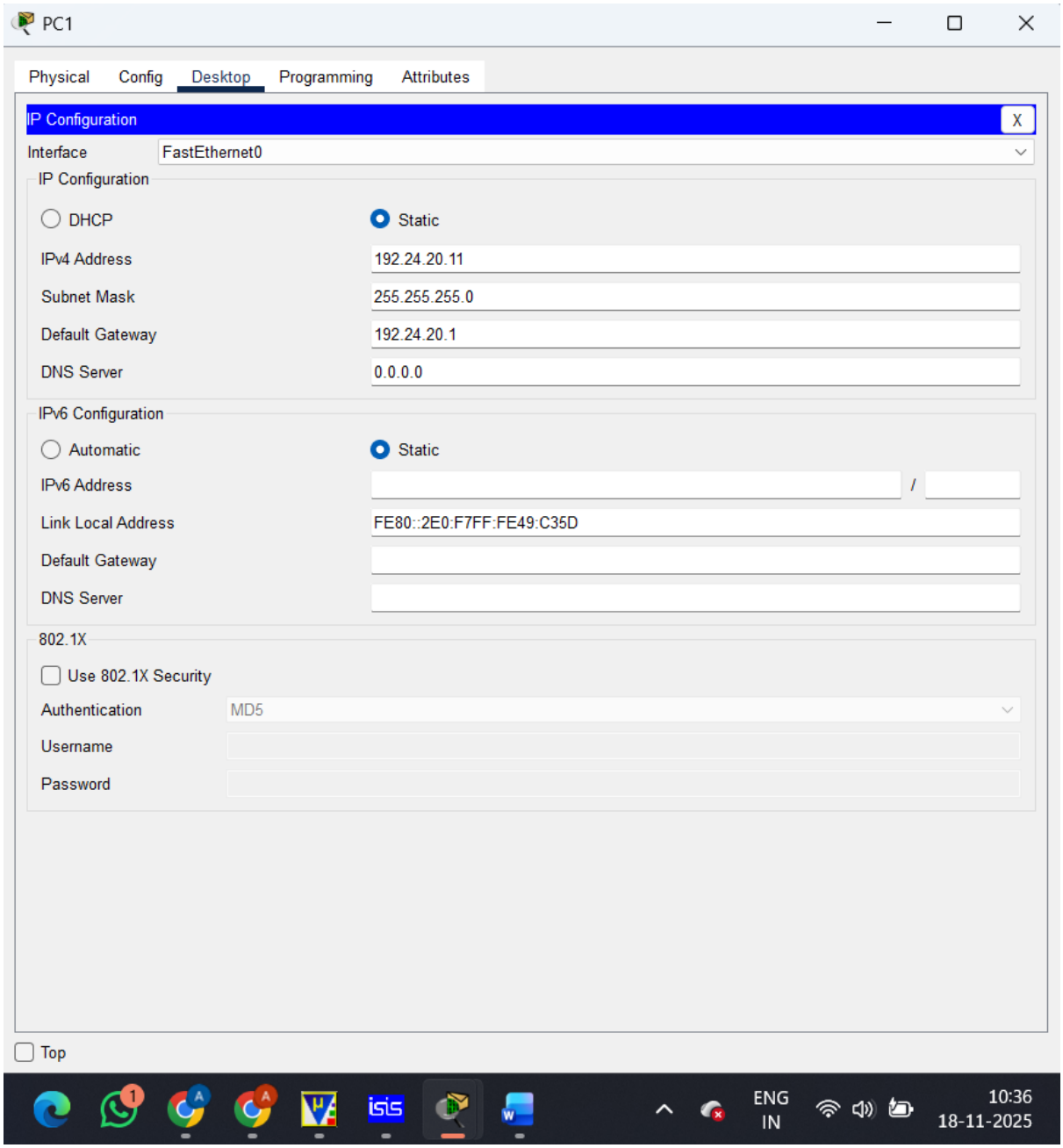


2) Configure IP address (All Devices, Routers)

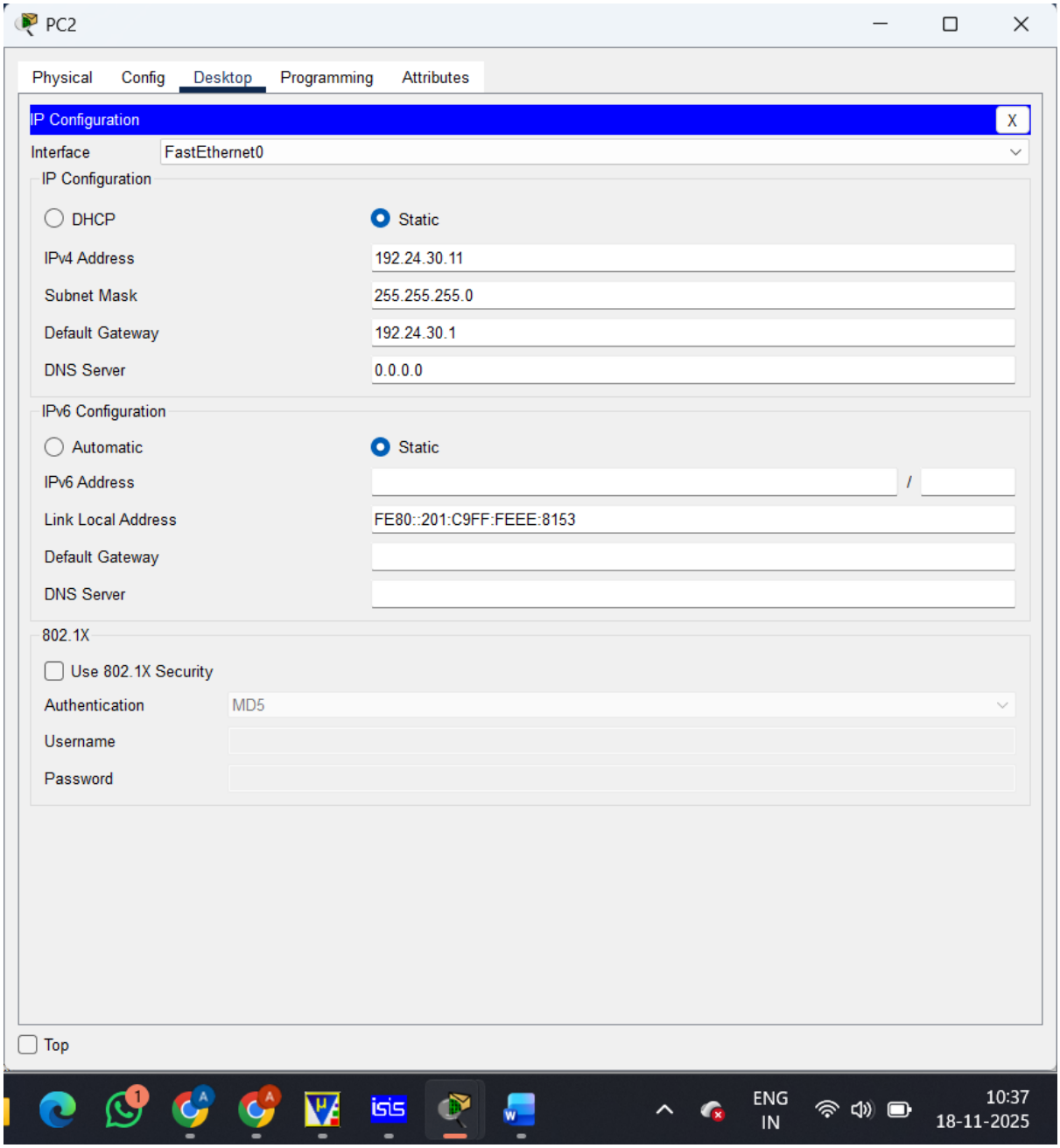
PC0:



PC1:

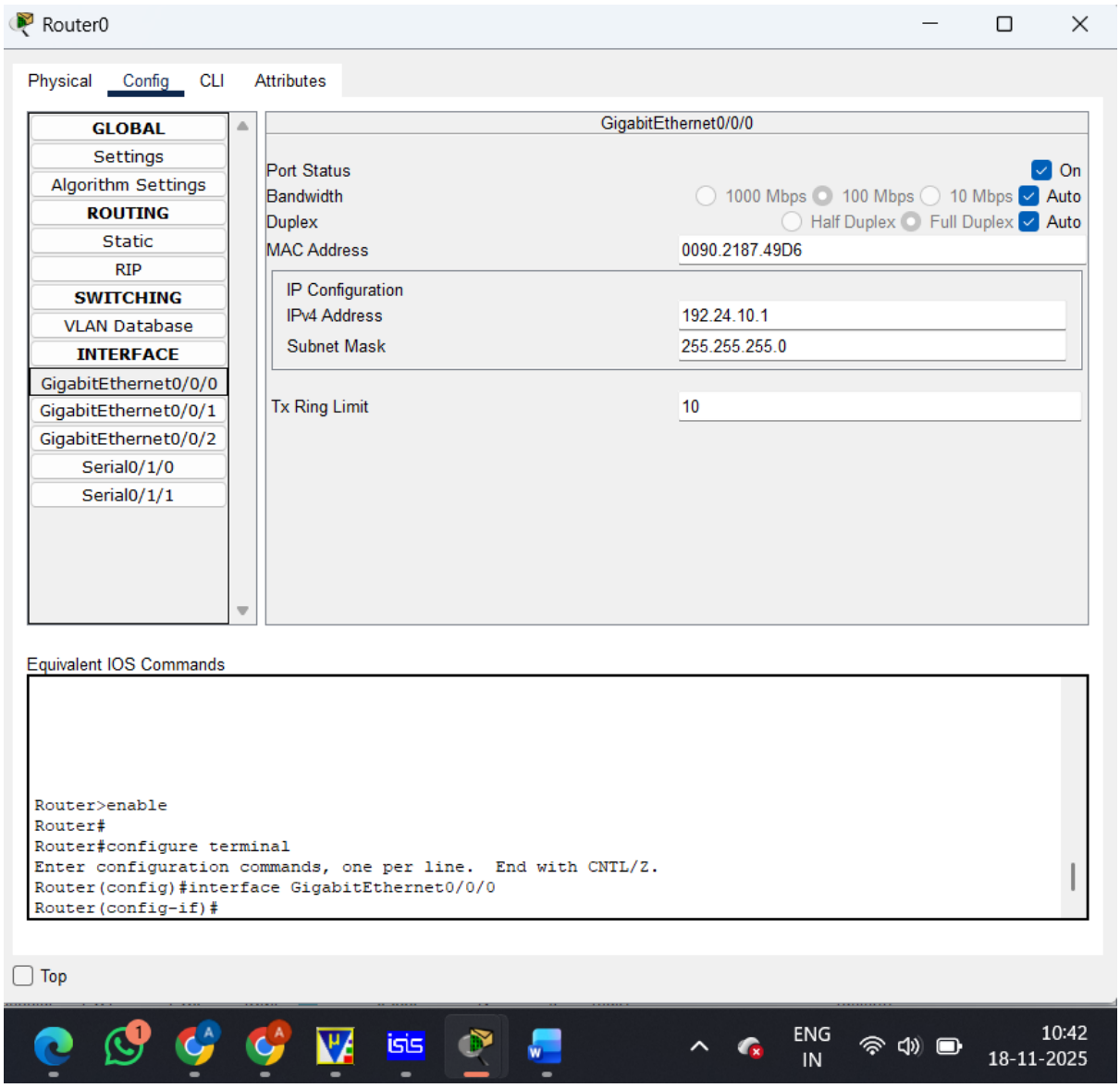

PC1
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
IPv4 Address
192.24.20.11
Subnet Mask
255.255.255.0
Default Gateway
192.24.20.1
DNS Server
0.0.0.0
IPv6 Configuration
Automatic
Static
IPv6 Address
Link Local Address
FE80::2E0:F7FF:FE49:C35D
Default Gateway
DNS Server
802.1X
Use 802.1X Security
Authentication
MD5
Username
Password
Top
ENG
IN
10:36
18-11-2025

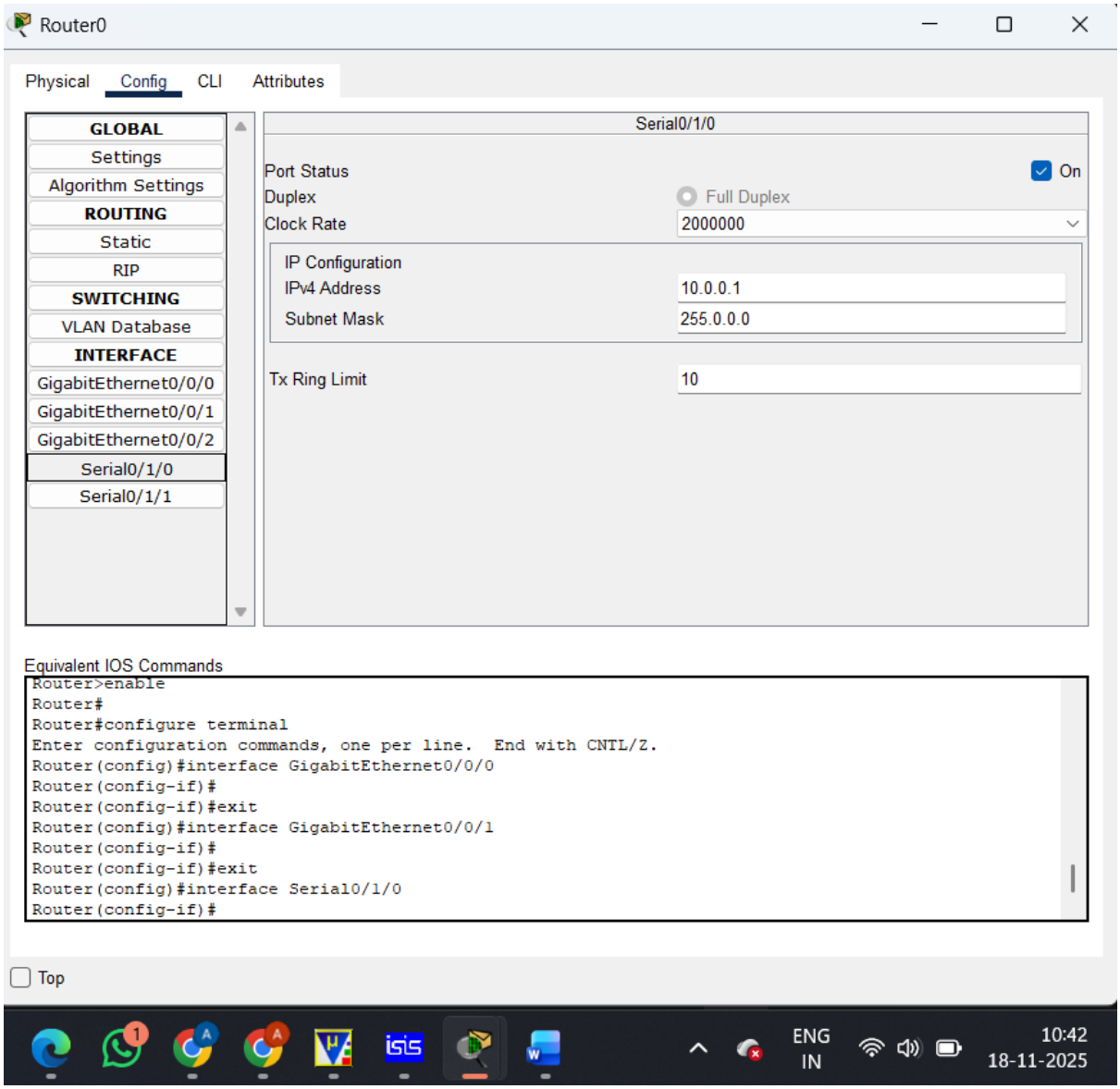
PC2:

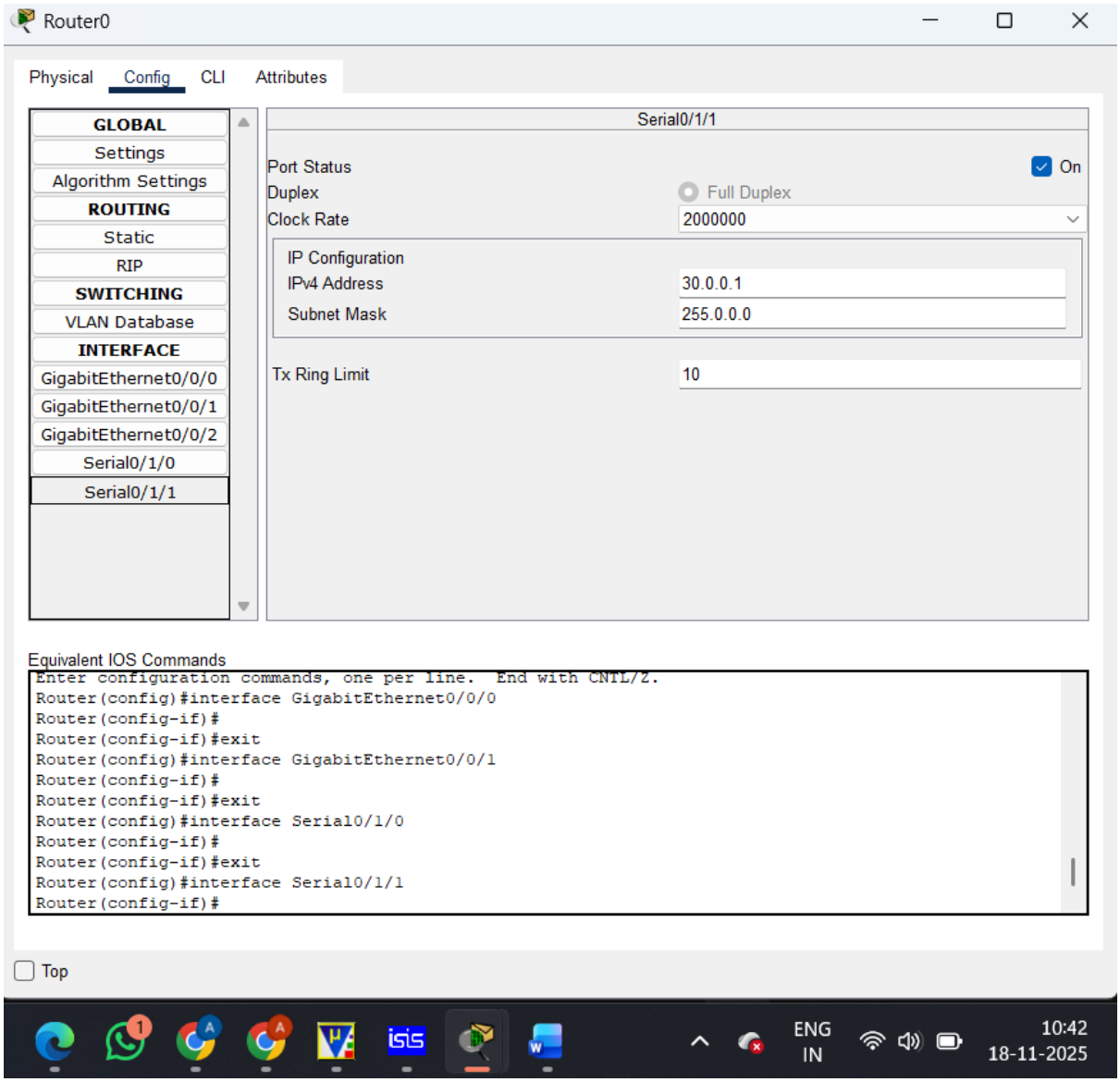

PC2
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
IPv4 Address
192.24.30.11
Subnet Mask
255.255.255.0
Default Gateway
192.24.30.1
DNS Server
0.0.0.0
IPv6 Configuration
Automatic
Static
IPv6 Address
Link Local Address
FE80::201:C9FF:FEEE:8153
Default Gateway
DNS Server
802.1X
Use 802.1X Security
Authentication
MD5
Username
Password
Top
ENG
IN
10:37
18-11-2025

ROUTER CONFIG

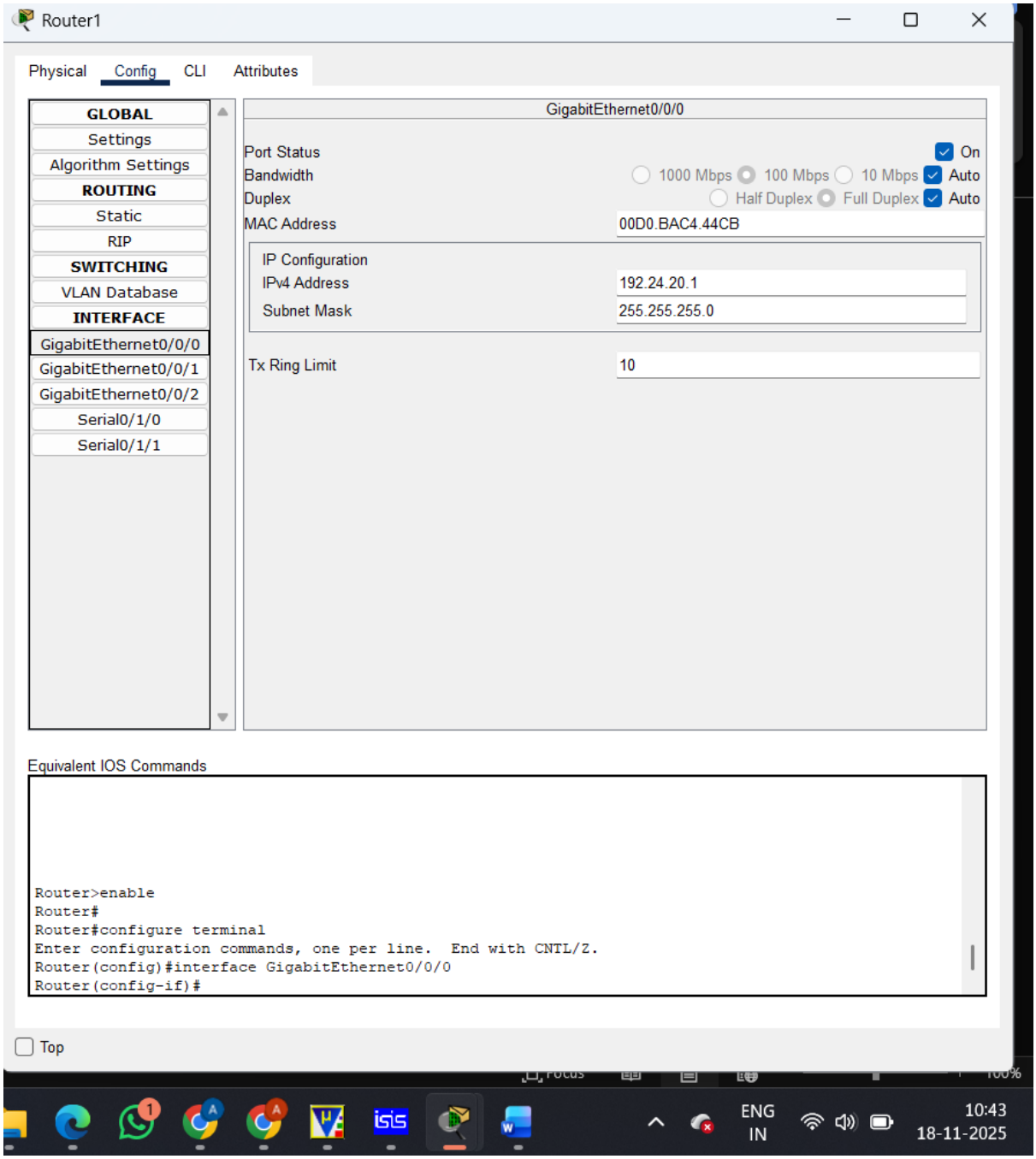
ROUTER 0:

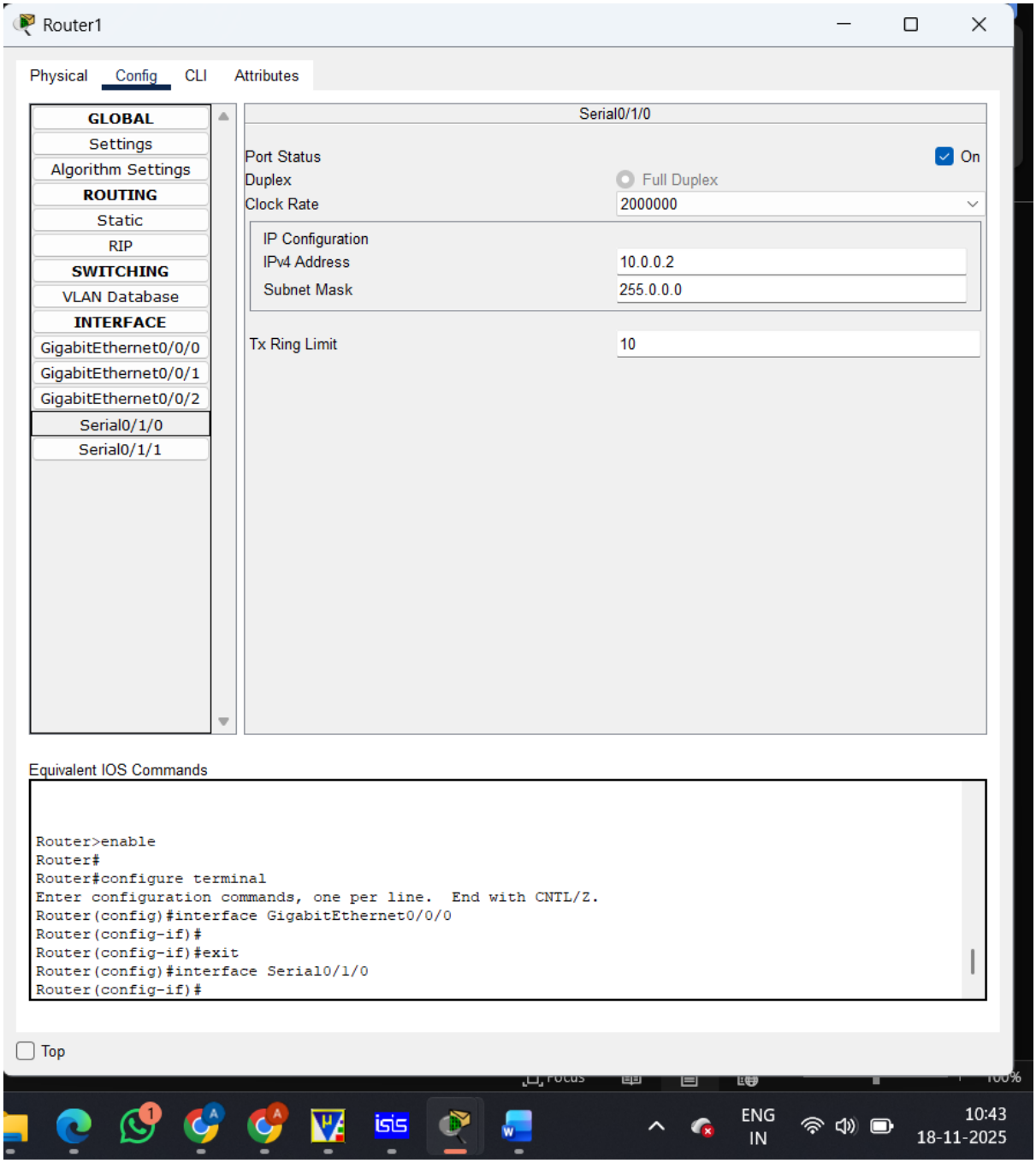


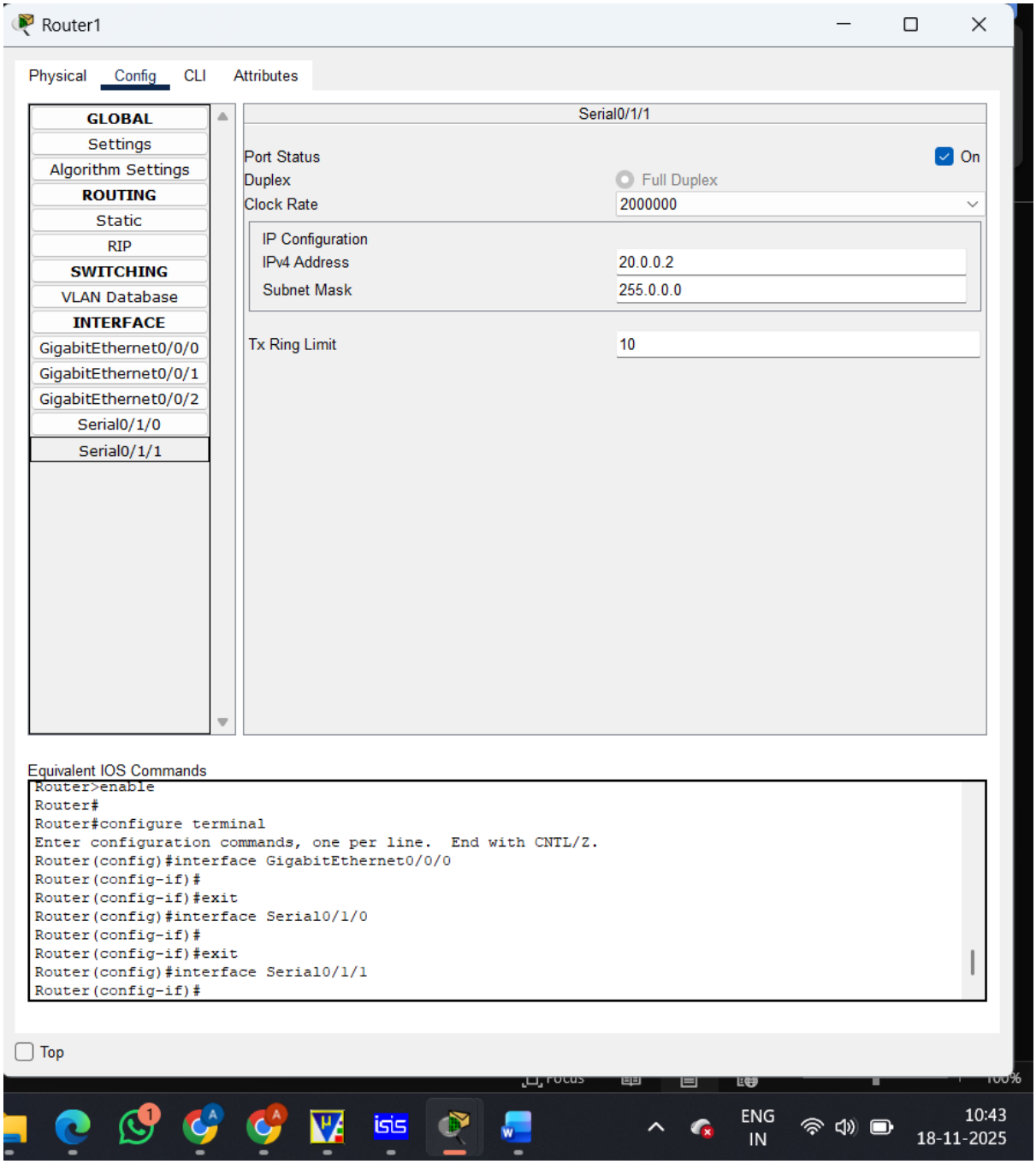

Router0
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
GigabitEthernet0/0/0
GigabitEthernet0/0/1
GigabitEthernet0/0/2
Serial0/1/0
Serial0/1/1
Serial0/1/0
Port Status
On
Duplex
Full Duplex
Clock Rate
2000000
IP Configuration
IPv4 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 GigabitEthernet0/0/1
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/1/0
Router(config-if)#
Top
ENG
IN
10:42
18-11-2025


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
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 GigabitEthernet0/0/1
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
10:42
18-11-2025

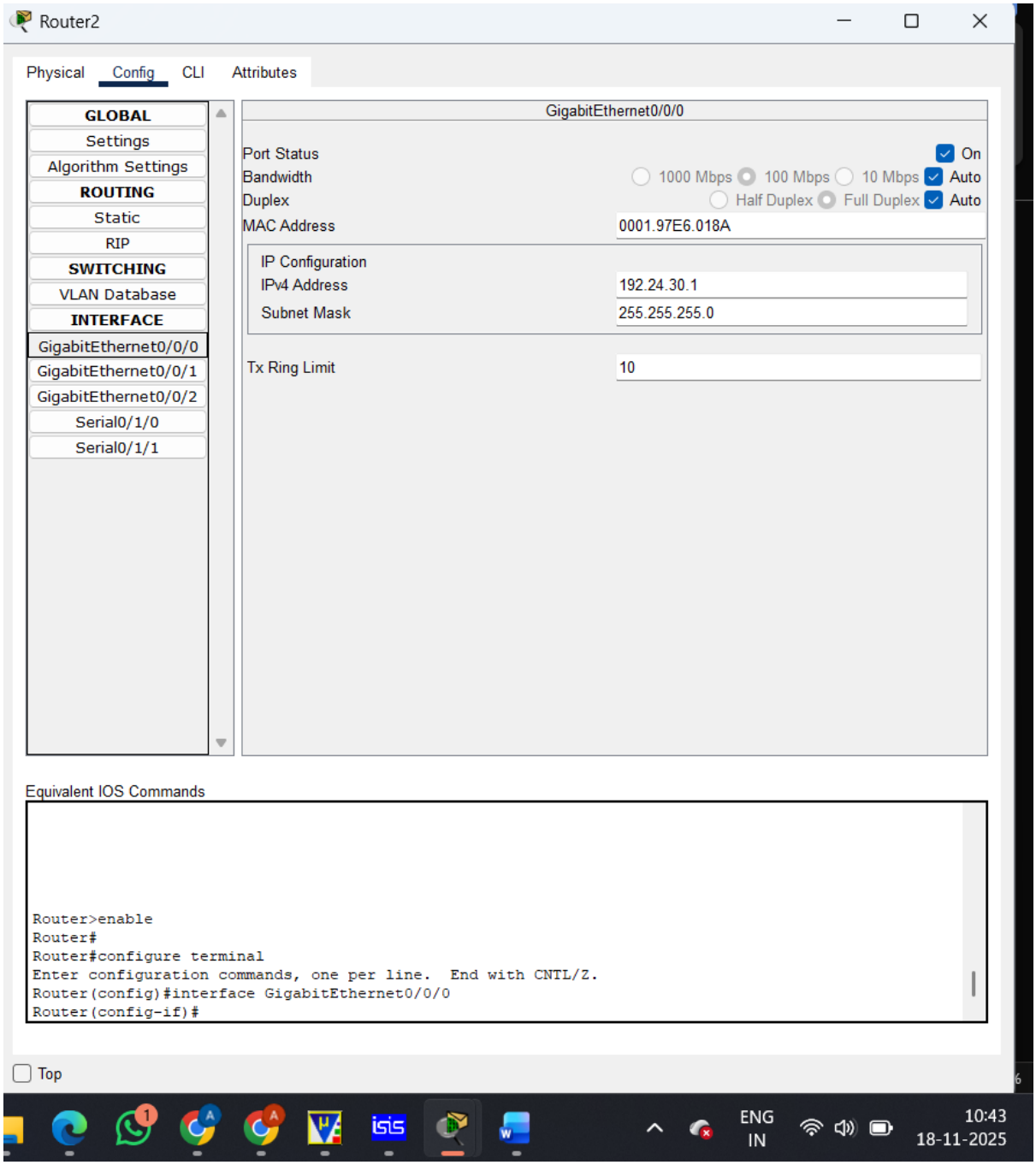
ROUTER-1:

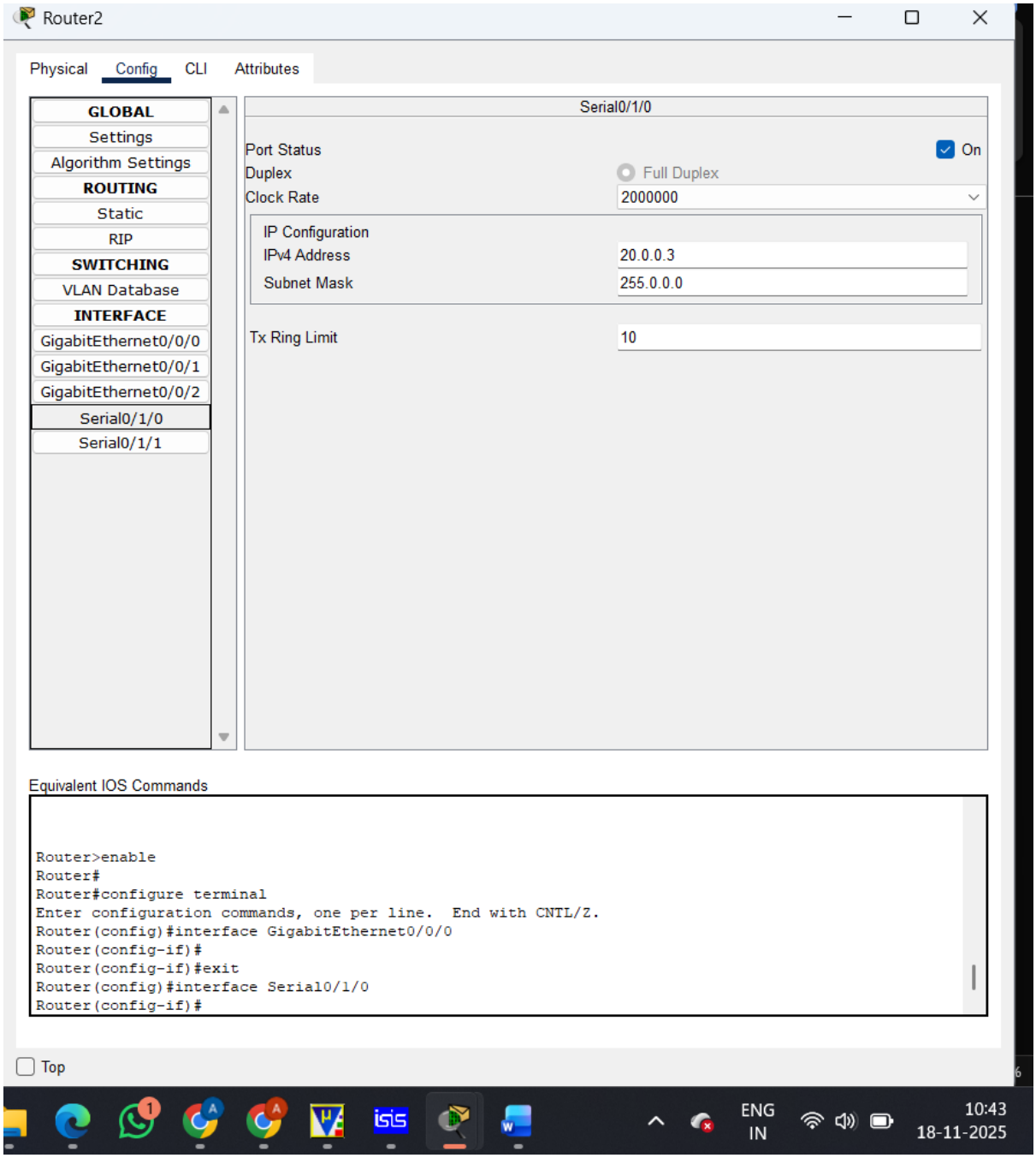

Router1
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
GigabitEthernet0/0/0
GigabitEthernet0/0/1
GigabitEthernet0/0/2
Serial0/1/0
Serial0/1/1
GigabitEthernet0/0/0
Port Status
On
Bandwidth
1000 Mbps
100 Mbps
10 Mbps
Auto
Duplex
Half Duplex
Full Duplex
Auto
MAC Address
00D0.BAC4.44CB
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
10:43
18-11-2025

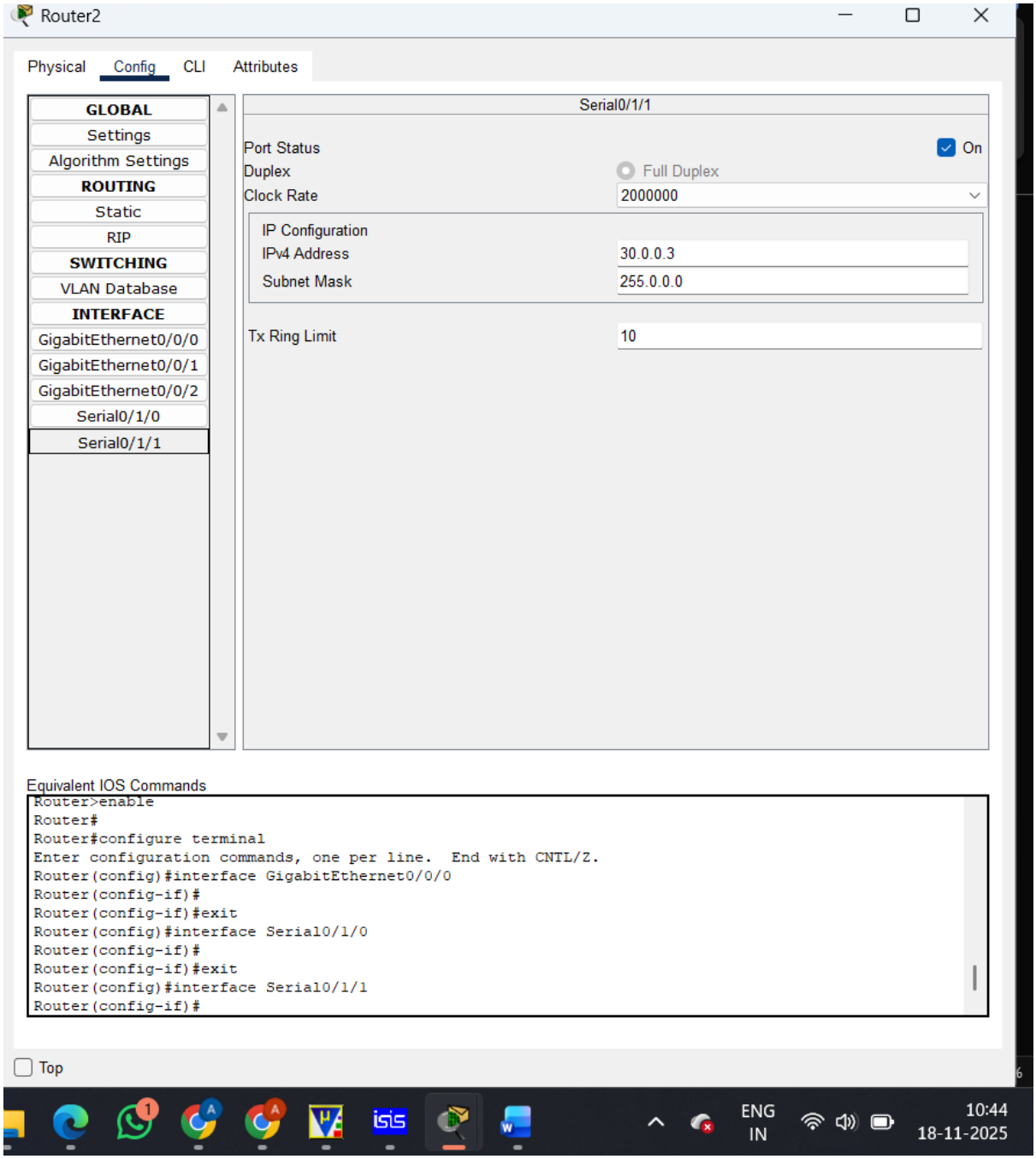

Router1
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
GigabitEthernet0/0/0
GigabitEthernet0/0/1
GigabitEthernet0/0/2
Serial0/1/0
Serial0/1/1
Serial0/1/0
Port Status
On
Duplex
Full Duplex
Clock Rate
2000000
IP Configuration
IPv4 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 Serial0/1/0
Router(config-if)#
Top
ENG
IN
10:43
18-11-2025


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
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
10:43
18-11-2025

ROUTER-2:

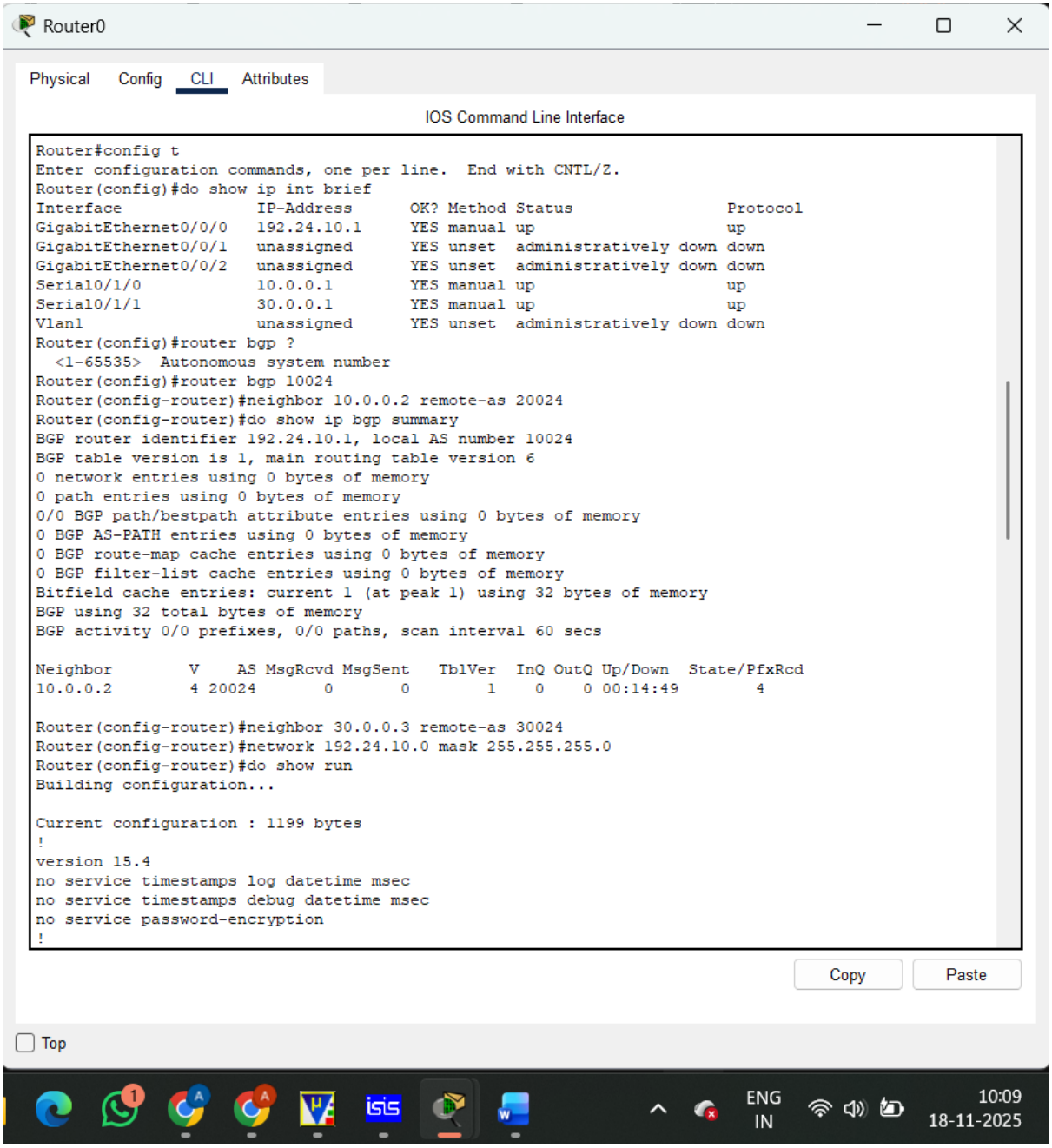

Router2
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
GigabitEthernet0/0/0
GigabitEthernet0/0/1
GigabitEthernet0/0/2
Serial0/1/0
Serial0/1/1
GigabitEthernet0/0/0
Port Status
On
Bandwidth
1000 Mbps
100 Mbps
10 Mbps
Auto
Duplex
Half Duplex
Full Duplex
Auto
MAC Address
0001.97E6.018A
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 GigabitEthernet0/0/0
Router(config-if)#
Top
ENG
IN
10:43
18-11-2025

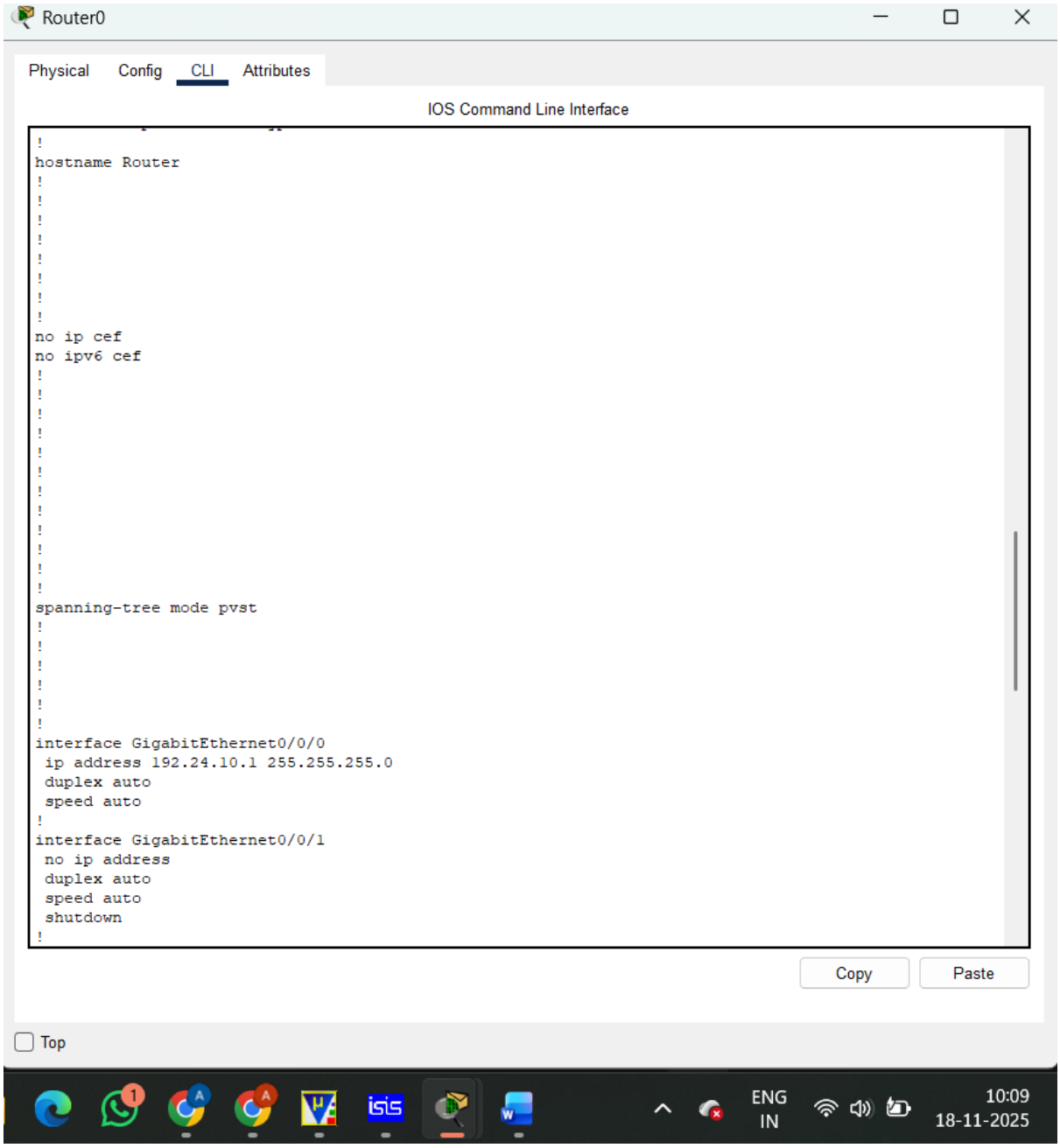

Router2
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
GigabitEthernet0/0/0
GigabitEthernet0/0/1
GigabitEthernet0/0/2
Serial0/1/0
Serial0/1/1
Serial0/1/0
Port Status
On
Duplex
Full Duplex
Clock Rate
2000000
IP Configuration
IPv4 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 GigabitEthernet0/0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/1/0
Router(config-if)#
Top
ENG
IN
10:43
18-11-2025

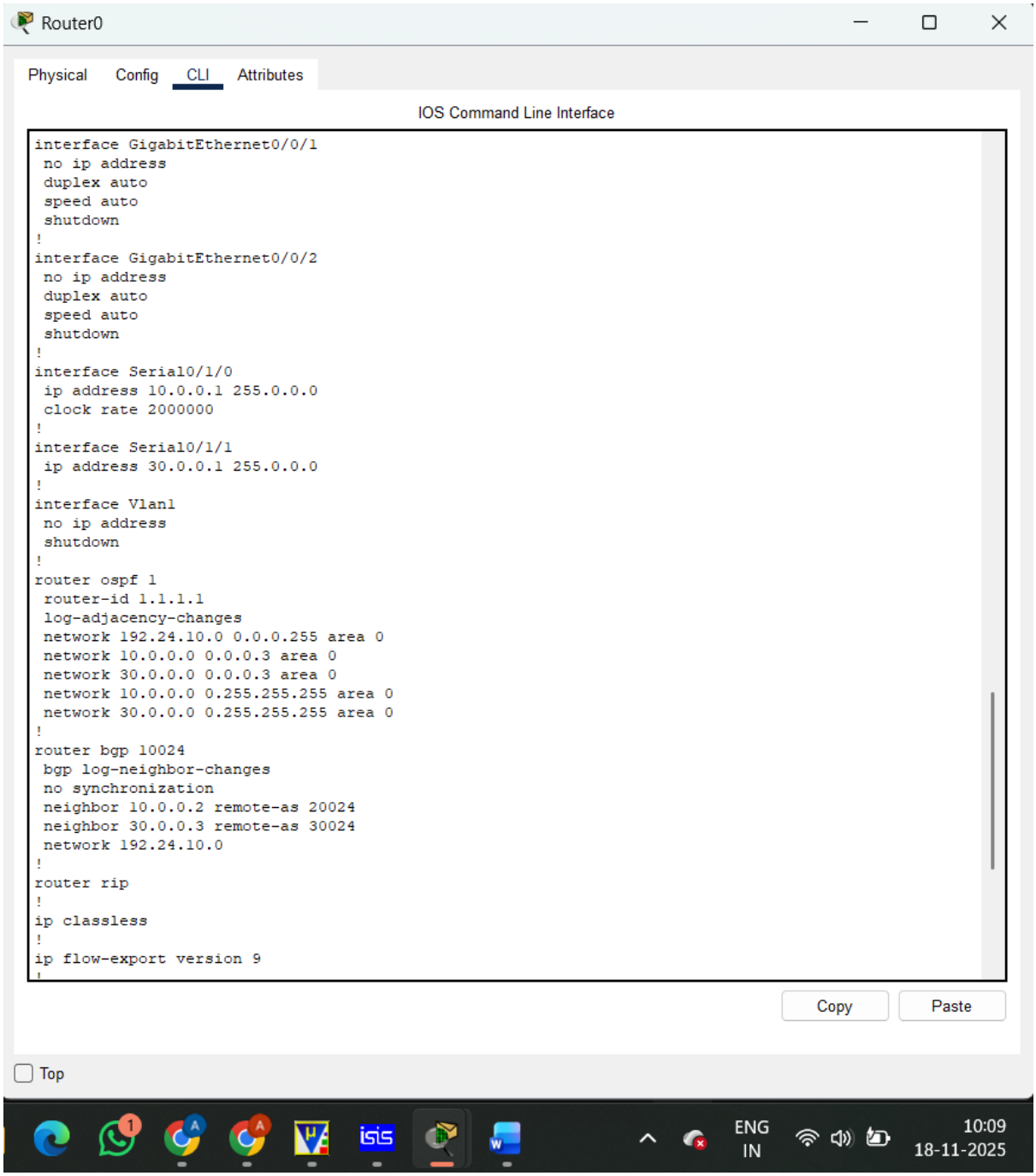

Router2
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
GigabitEthernet0/0/0
GigabitEthernet0/0/1
GigabitEthernet0/0/2
Serial0/1/0
Serial0/1/1
Serial0/1/1
Port Status
On
Duplex
Full Duplex
Clock Rate
2000000
IP Configuration
IPv4 Address
30.0.0.3
Subnet Mask
255.0.0.0
Tx Ring Limit
10
Equivalent IOS Commands
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
10:44
18-11-2025

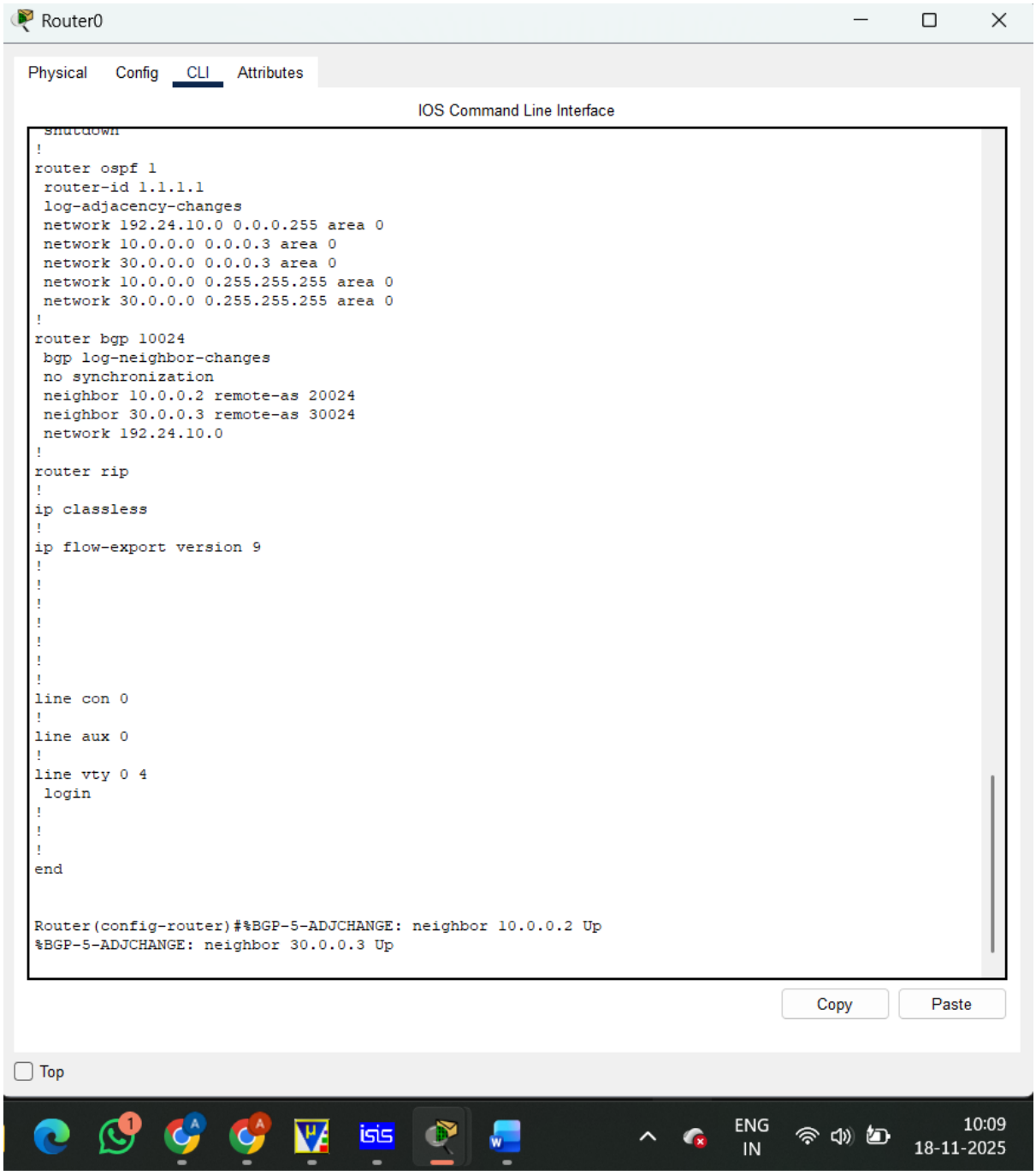
3) Configure Border Gateway Protocol (BGP)

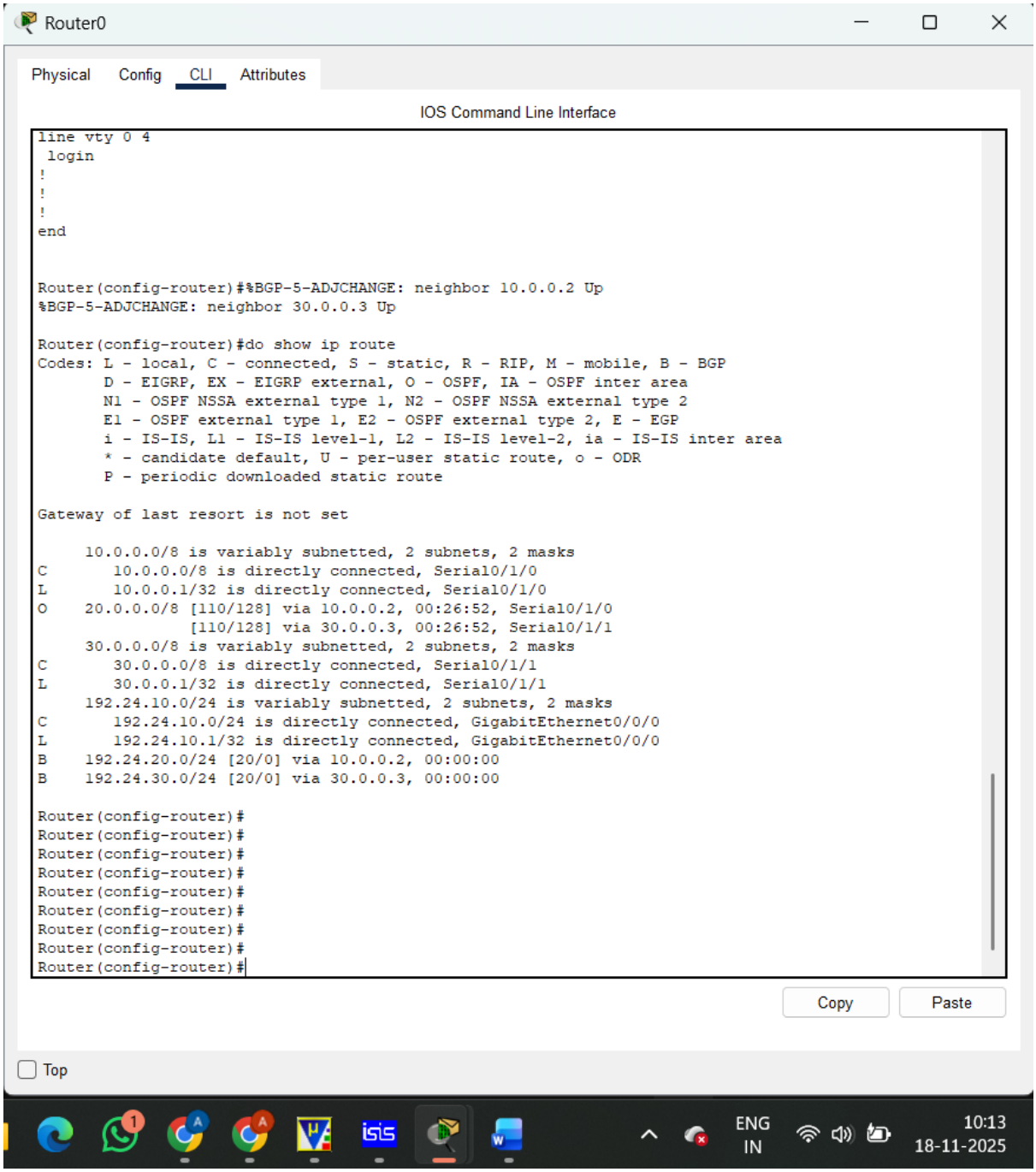
ROUTER-0

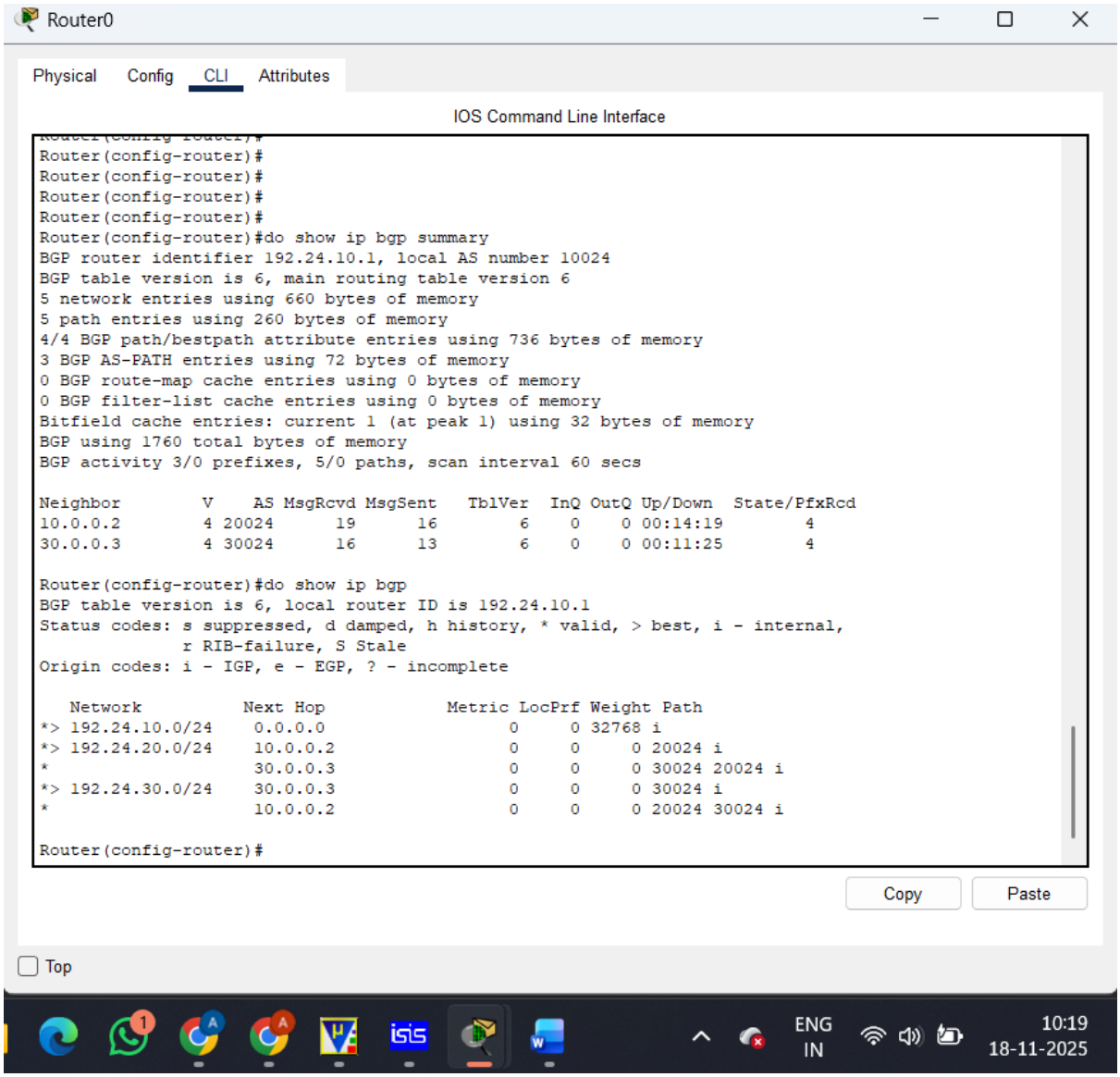



Router0
Physical
Config
CLI
Attributes
IOS Command Line Interface
!
hostname Router
!
!
!
!
!
!
!
!
no ip cef
no ipv6 cef
!
!
!
!
!
!
!
!
!
!
!
spanning-tree mode pvst
!
!
!
!
!
!
interface GigabitEthernet0/0/0
 ip address 192.24.10.1 255.255.255.0
 duplex auto
 speed auto
!
interface GigabitEthernet0/0/1
 no ip address
 duplex auto
 speed auto
 shutdown
!
Copy
Paste
Top
ENG
IN
10:09
18-11-2025

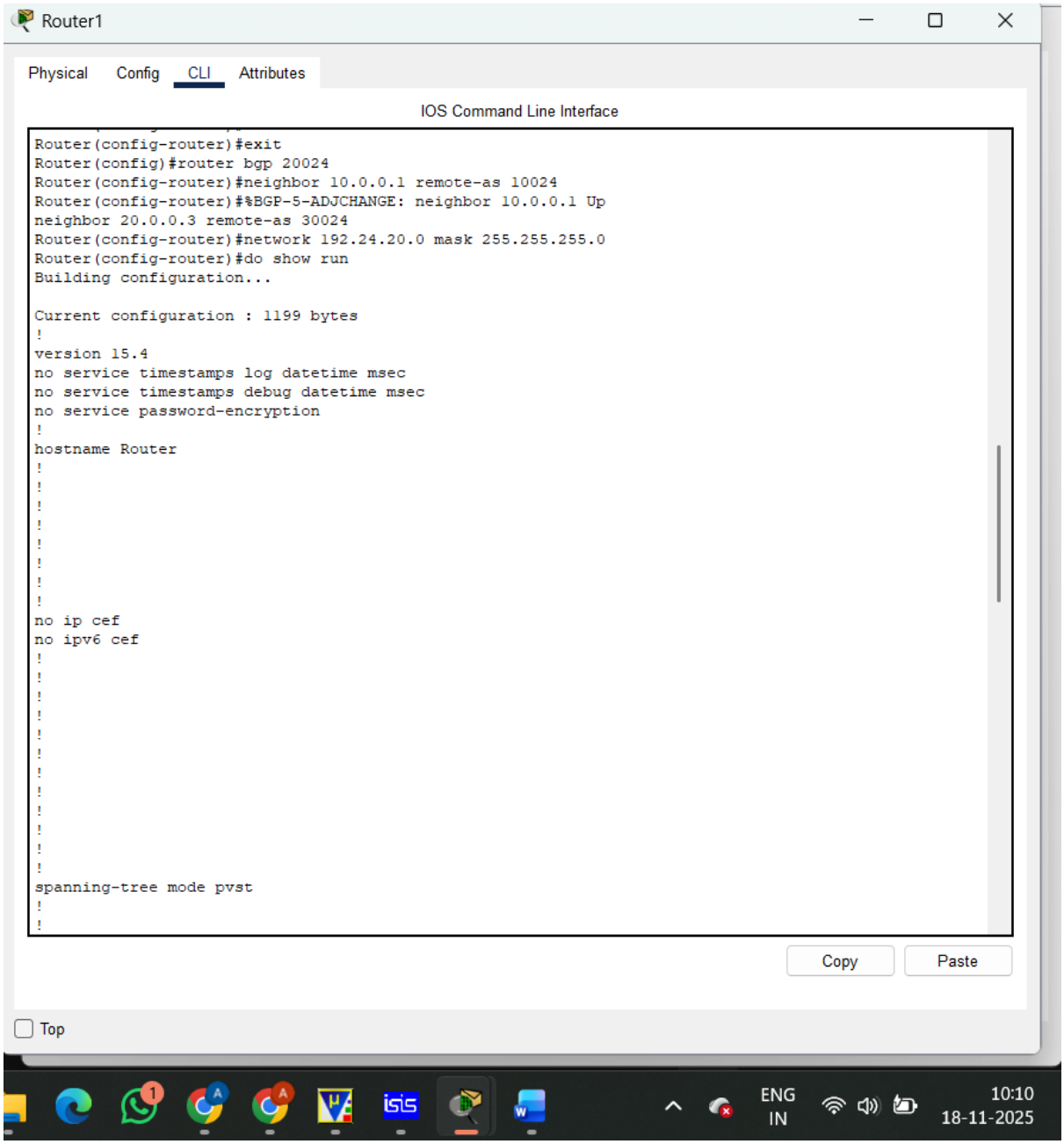

Router0
Physical
Config
CLI
Attributes
IOS Command Line Interface
interface GigabitEthernet0/0/1
 no ip address
 duplex auto
 speed auto
 shutdown
!
interface GigabitEthernet0/0/2
 no ip address
 duplex auto
 speed auto
 shutdown
!
interface Serial0/1/0
 ip address 10.0.0.1 255.0.0.0
 clock rate 2000000
!
interface Serial0/1/1
 ip address 30.0.0.1 255.0.0.0
!
interface Vlan1
 no ip address
 shutdown
!
router ospf 1
 router-id 1.1.1.1
 log-adjacency-changes
 network 192.24.10.0 0.0.0.255 area 0
 network 10.0.0.0 0.0.0.3 area 0
 network 30.0.0.0 0.0.0.3 area 0
 network 10.0.0.0 0.255.255.255 area 0
 network 30.0.0.0 0.255.255.255 area 0
!
router bgp 10024
 bgp log-neighbor-changes
 no synchronization
 neighbor 10.0.0.2 remote-as 20024
 neighbor 30.0.0.3 remote-as 30024
 network 192.24.10.0
!
router rip
!
ip classless
!
ip flow-export version 9
!
Copy
Paste
Top
ENG
IN
10:09
18-11-2025


Router0
Physical
Config
CLI
Attributes
IOS Command Line Interface
shutdown
!
router ospf 1
router-id 1.1.1.1
log-adjacency-changes
network 192.24.10.0 0.0.0.255 area 0
network 10.0.0.0 0.0.0.3 area 0
network 30.0.0.0 0.0.0.3 area 0
network 10.0.0.0 0.255.255.255 area 0
network 30.0.0.0 0.255.255.255 area 0
!
router bgp 10024
bgp log-neighbor-changes
no synchronization
neighbor 10.0.0.2 remote-as 20024
neighbor 30.0.0.3 remote-as 30024
network 192.24.10.0
!
router rip
!
ip classless
!
ip flow-export version 9
!
!
!
!
!
!
!
line con 0
!
line aux 0
!
line vty 0 4
login
!
!
!
end
Router(config-router)#%BGP-5-ADJCHANGE: neighbor 10.0.0.2 Up
%BGP-5-ADJCHANGE: neighbor 30.0.0.3 Up
Copy
Paste
Top
ENG
IN
10:09
18-11-2025


Router0
Physical
Config
CLI
Attributes
IOS Command Line Interface
line vty 0 4
login
!
!
!
end
Router(config-router)#%BGP-5-ADJCHANGE: neighbor 10.0.0.2 Up
%BGP-5-ADJCHANGE: neighbor 30.0.0.3 Up
Router(config-router)#do 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
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, 00:26:52, Serial0/1/0
[110/128] via 30.0.0.3, 00:26:52, 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
B 192.24.20.0/24 [20/0] via 10.0.0.2, 00:00:00
B 192.24.30.0/24 [20/0] via 30.0.0.3, 00:00:00
Router(config-router)#
Router(config-router)#
Router(config-router)#
Router(config-router)#
Router(config-router)#
Router(config-router)#
Router(config-router)#
Router(config-router)#
Router(config-router)#
Copy
Paste
Top
ENG
IN
10:13
18-11-2025


Router0
Physical
Config
CLI
Attributes
IOS Command Line Interface
Router(config-router)#
Router(config-router)#
Router(config-router)#
Router(config-router)#
Router(config-router)#do show ip bgp summary
BGP router identifier 192.24.10.1, local AS number 10024
BGP table version is 6, main routing table version 6
5 network entries using 660 bytes of memory
5 path entries using 260 bytes of memory
4/4 BGP path/bestpath attribute entries using 736 bytes of memory
3 BGP AS-PATH entries using 72 bytes of memory
0 BGP route-map cache entries using 0 bytes of memory
0 BGP filter-list cache entries using 0 bytes of memory
Bitfield cache entries: current 1 (at peak 1) using 32 bytes of memory
BGP using 1760 total bytes of memory
BGP activity 3/0 prefixes, 5/0 paths, scan interval 60 secs
Neighbor V AS MsgRcvd MsgSent TblVer InQ OutQ Up/Down State/PfxRcd
10.0.0.2 4 20024 19 16 6 0 0 00:14:19 4
30.0.0.3 4 30024 16 13 6 0 0 00:11:25 4
Router(config-router)#do show ip bgp
BGP table version is 6, local router ID is 192.24.10.1
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,
r RIB-failure, S Stale
Origin codes: i - IGP, e - EGP, ? - incomplete
Network Next Hop Metric LocPrf Weight Path
*> 192.24.10.0/24 0.0.0.0 0 0 32768 i
*> 192.24.20.0/24 10.0.0.2 0 0 0 20024 i
* 30.0.0.3 0 0 0 30024 20024 i
*> 192.24.30.0/24 30.0.0.3 0 0 0 30024 i
* 10.0.0.2 0 0 0 20024 30024 i
Router(config-router)#
Copy
Paste
Top
ENG
IN
10:19
18-11-2025

ROUTER-1


Router1
Physical
Config
CLI
Attributes
IOS Command Line Interface
Router(config-router)#exit
Router(config)#router bgp 20024
Router(config-router)#neighbor 10.0.0.1 remote-as 10024
Router(config-router)#%BGP-5-ADJCHANGE: neighbor 10.0.0.1 Up
neighbor 20.0.0.3 remote-as 30024
Router(config-router)#network 192.24.20.0 mask 255.255.255.0
Router(config-router)#do show run
Building configuration...
Current configuration : 1199 bytes
!
version 15.4
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname Router
!
!
!
!
!
!
!
!
no ip cef
no ipv6 cef
!
!
!
!
!
!
!
!
!
!
!
!
spanning-tree mode pvst
!
!
Copy
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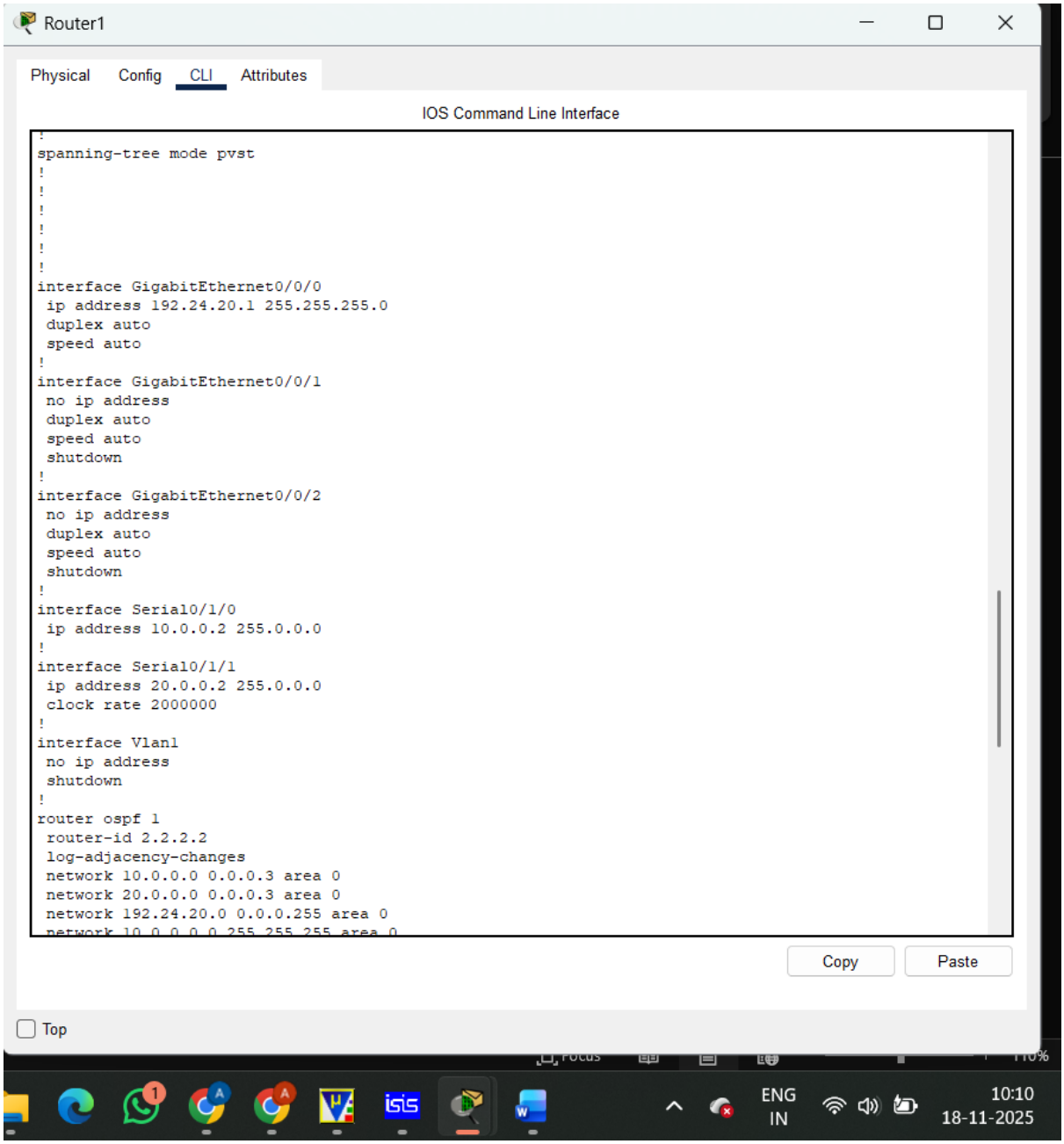
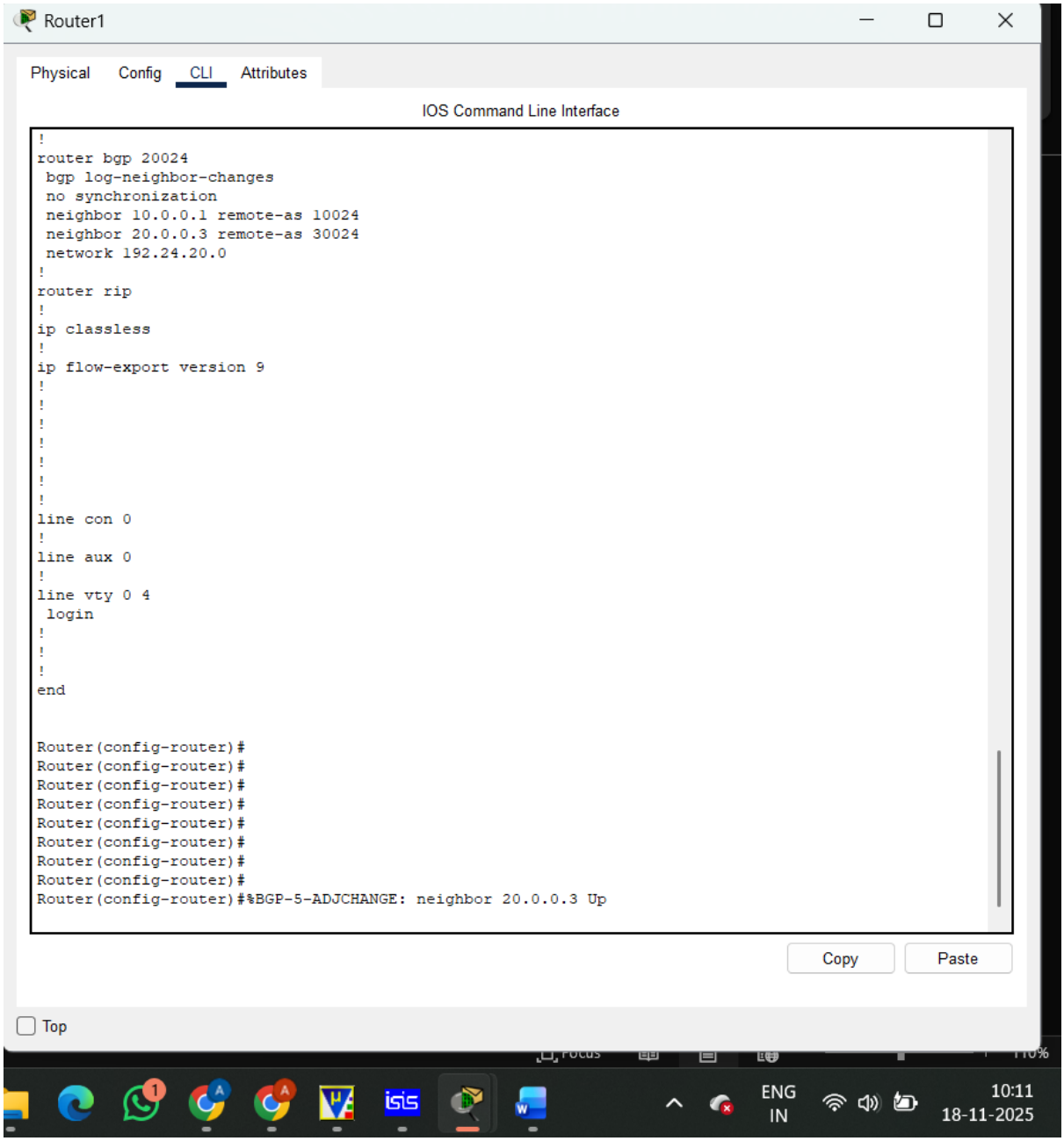
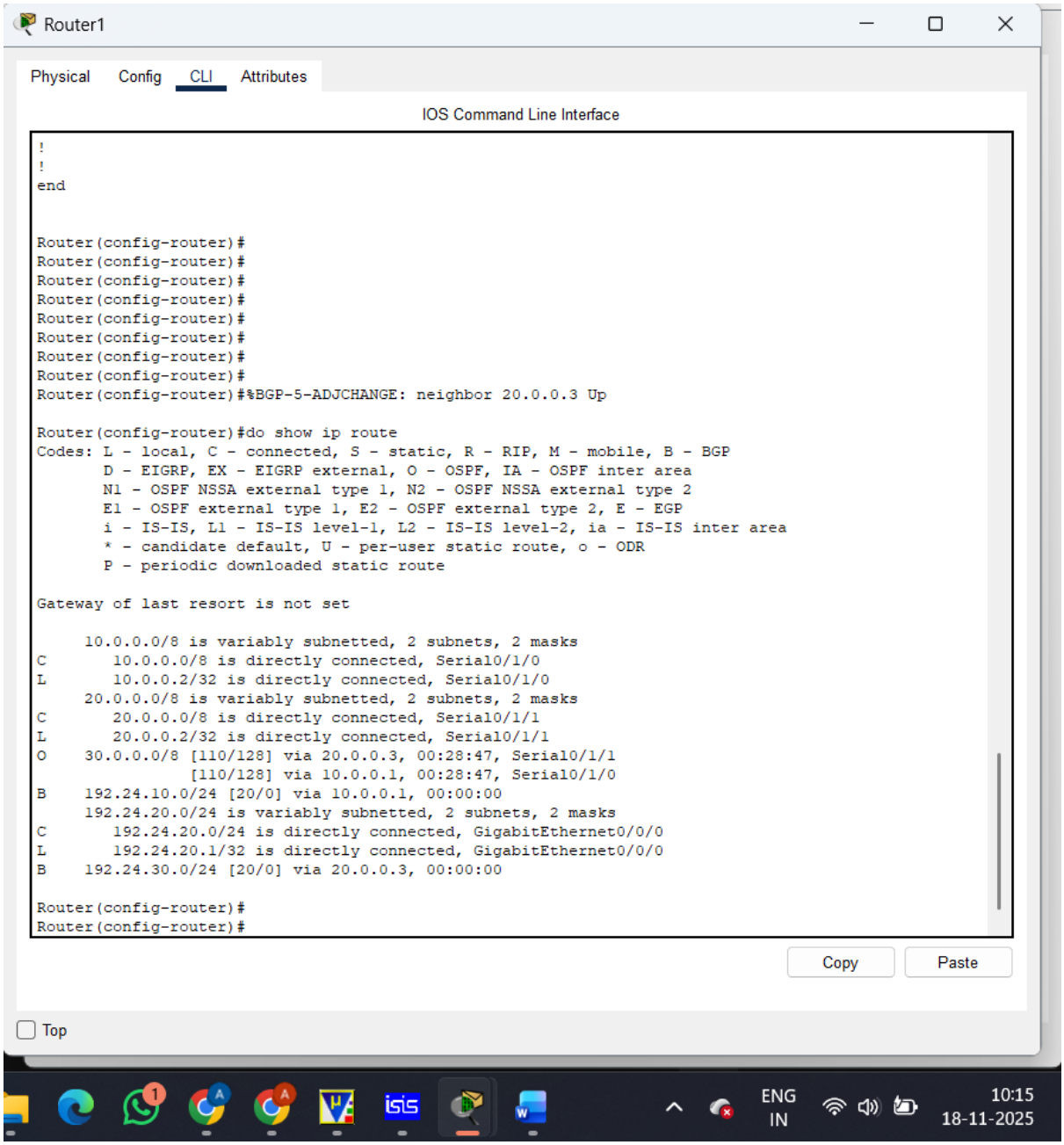
Top
ENG
IN
10:10
18-11-2025


Router1
Physical
Config
CLI
Attributes
IOS Command Line Interface
spanning-tree mode pvst
interface GigabitEthernet0/0/0
ip address 192.24.20.1 255.255.255.0
duplex auto
speed auto
interface GigabitEthernet0/0/1
no ip address
duplex auto
speed auto
shutdown
interface GigabitEthernet0/0/2
no ip address
duplex auto
speed auto
shutdown
interface Serial0/1/0
ip address 10.0.0.2 255.0.0.0
interface Serial0/1/1
ip address 20.0.0.2 255.0.0.0
clock rate 2000000
interface Vlan1
no ip address
shutdown
router ospf 1
router-id 2.2.2.2
log-adjacency-changes
network 10.0.0.0 0.0.0.3 area 0
network 20.0.0.0 0.0.0.3 area 0
network 192.24.20.0 0.0.0.255 area 0
Copy
Paste
Top
ENG
IN
10:10
18-11-2025


Router1
Physical
Config
CLI
Attributes
IOS Command Line Interface
no ip address
shutdown
!
router ospf 1
router-id 2.2.2.2
log-adjacency-changes
network 10.0.0.0 0.0.0.3 area 0
network 20.0.0.0 0.0.0.3 area 0
network 192.24.20.0 0.0.0.255 area 0
network 10.0.0.0 0.255.255.255 area 0
network 20.0.0.0 0.255.255.255 area 0
!
router bgp 20024
bgp log-neighbor-changes
no synchronization
neighbor 10.0.0.1 remote-as 10024
neighbor 20.0.0.3 remote-as 30024
network 192.24.20.0
!
router rip
!
ip classless
!
ip flow-export version 9
!
!
!
!
!
!
!
line con 0
!
line aux 0
!
line vty 0 4
login
!
!
!
end
Copy
Paste
Top
ENG
IN
10:11
18-11-2025


Router1
Physical
Config
CLI
Attributes
IOS Command Line Interface
!
router bgp 20024
bgp log-neighbor-changes
no synchronization
neighbor 10.0.0.1 remote-as 10024
neighbor 20.0.0.3 remote-as 30024
network 192.24.20.0
!
router rip
!
ip classless
!
ip flow-export version 9
!
!
!
!
!
!
!
line con 0
!
line aux 0
!
line vty 0 4
login
!
!
!
end
Router(config-router)#
Router(config-router)#
Router(config-router)#
Router(config-router)#
Router(config-router)#
Router(config-router)#
Router(config-router)#
Router(config-router)#
Router(config-router)#%BGP-5-ADJCHANGE: neighbor 20.0.0.3 Up
Copy
Paste
Top
ENG
IN
10:11
18-11-2025


Router1
Physical
Config
CLI
Attributes
IOS Command Line Interface
!
!
end
Router(config-router)#
Router(config-router)#
Router(config-router)#
Router(config-router)#
Router(config-router)#
Router(config-router)#
Router(config-router)#
Router(config-router)#
Router(config-router)#%BGP-5-ADJCHANGE: neighbor 20.0.0.3 Up
Router(config-router)#do 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
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, 00:28:47, Serial0/1/1
[110/128] via 10.0.0.1, 00:28:47, Serial0/1/0
B 192.24.10.0/24 [20/0] via 10.0.0.1, 00:00:00
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
B 192.24.30.0/24 [20/0] via 20.0.0.3, 00:00:00
Router(config-router)#
Router(config-router)#
Copy
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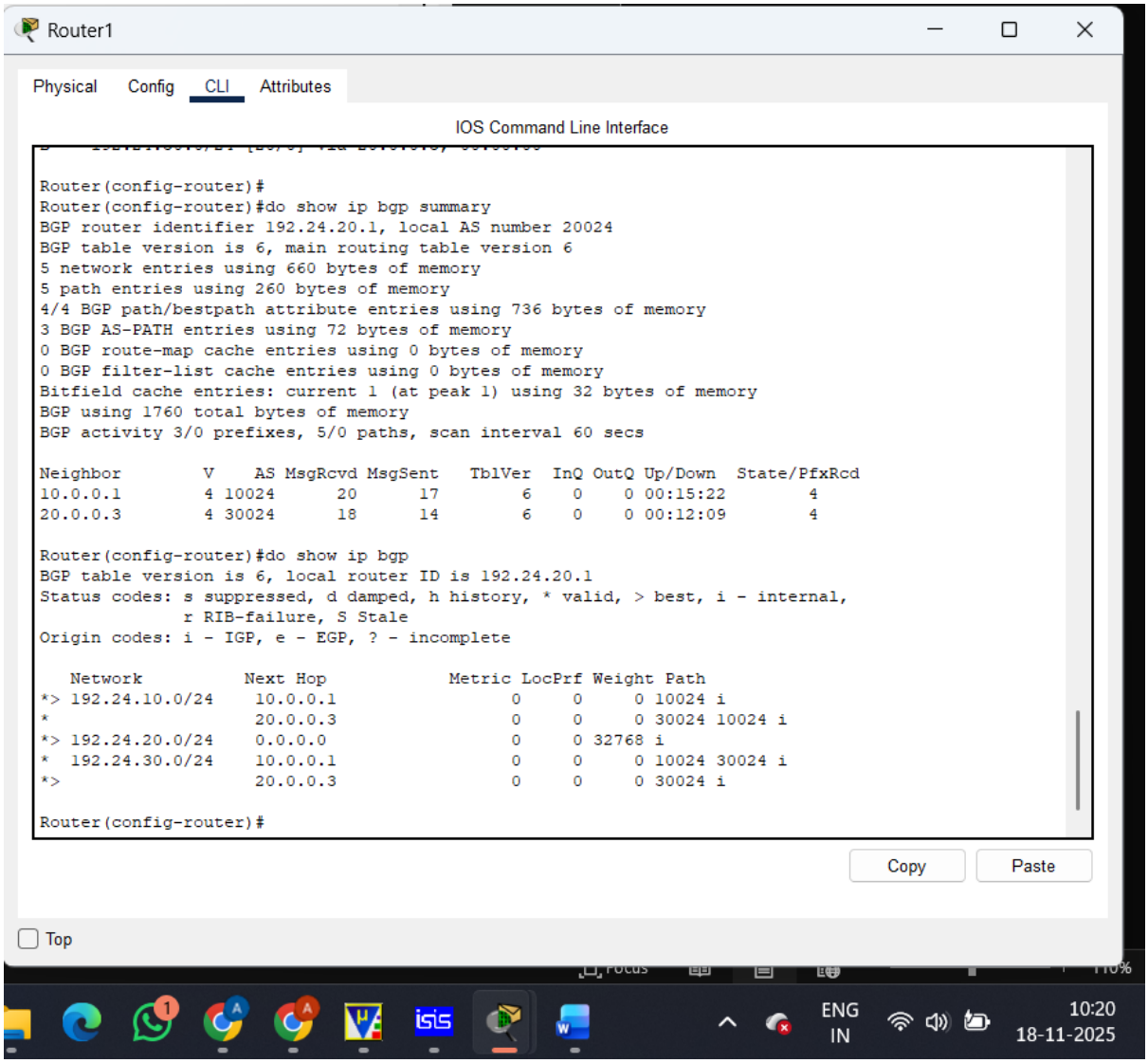
Top
ENG
IN
10:15
18-11-2025


Router1
Physical
Config
CLI
Attributes
IOS Command Line Interface
Router(config-router)#
Router(config-router)#do show ip bgp summary
BGP router identifier 192.24.20.1, local AS number 20024
BGP table version is 6, main routing table version 6
5 network entries using 660 bytes of memory
5 path entries using 260 bytes of memory
4/4 BGP path/bestpath attribute entries using 736 bytes of memory
3 BGP AS-PATH entries using 72 bytes of memory
0 BGP route-map cache entries using 0 bytes of memory
0 BGP filter-list cache entries using 0 bytes of memory
Bitfield cache entries: current 1 (at peak 1) using 32 bytes of memory
BGP using 1760 total bytes of memory
BGP activity 3/0 prefixes, 5/0 paths, scan interval 60 secs
Neighbor V AS MsgRcvd MsgSent TblVer InQ OutQ Up/Down State/PfxRcd
10.0.0.1 4 10024 20 17 6 0 0 00:15:22 4
20.0.0.3 4 30024 18 14 6 0 0 00:12:09 4
Router(config-router)#do show ip bgp
BGP table version is 6, local router ID is 192.24.20.1
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,
r RIB-failure, S Stale
Origin codes: i - IGP, e - EGP, ? - incomplete
Network Next Hop Metric LocPrf Weight Path
*> 192.24.10.0/24 10.0.0.1 0 0 0 10024 i
* 20.0.0.3 0 0 0 30024 10024 i
*> 192.24.20.0/24 0.0.0.0 0 0 32768 i
* 192.24.30.0/24 10.0.0.1 0 0 0 10024 30024 i
*> 20.0.0.3 0 0 0 30024 i
Router(config-router)#
Copy
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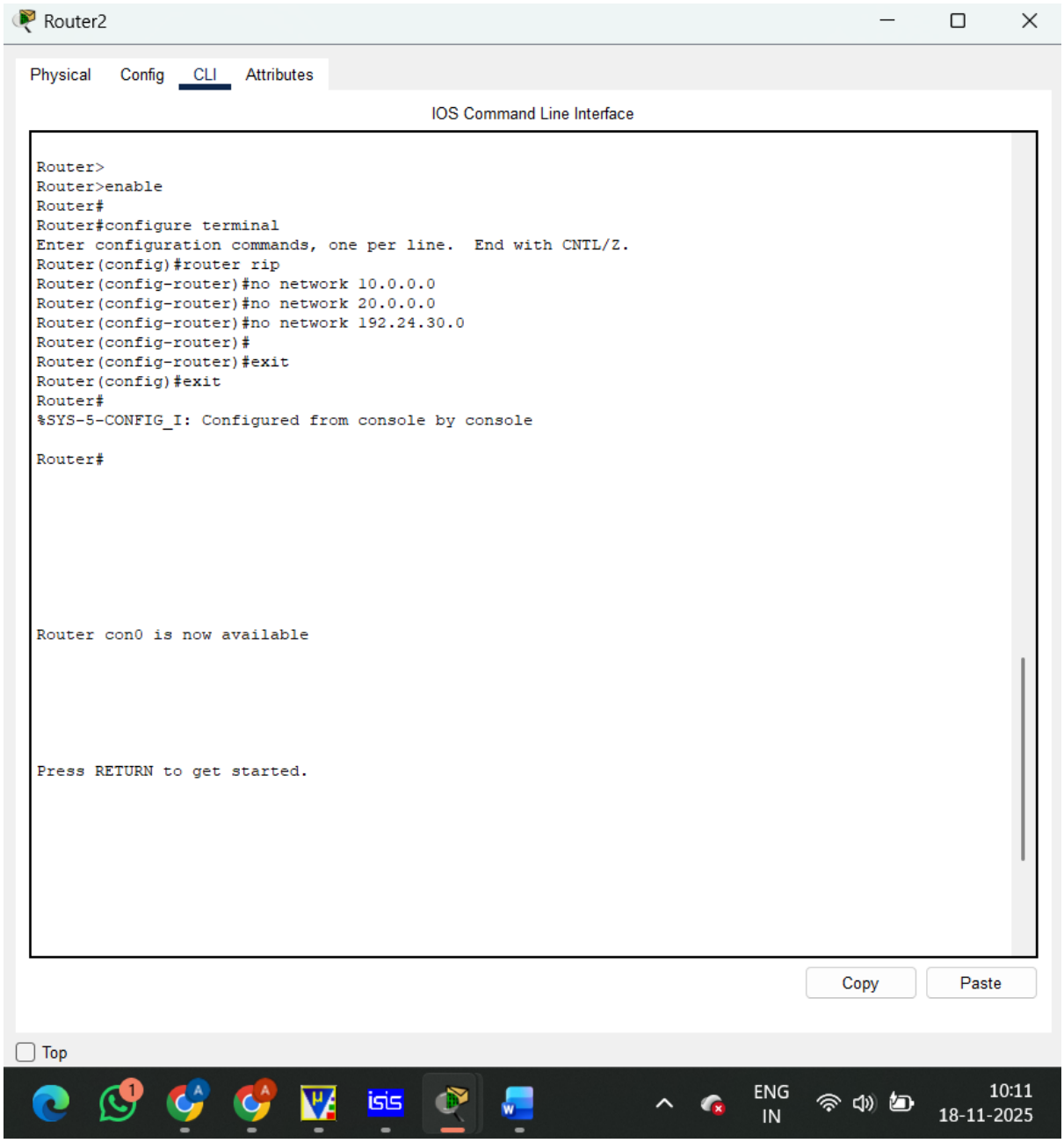
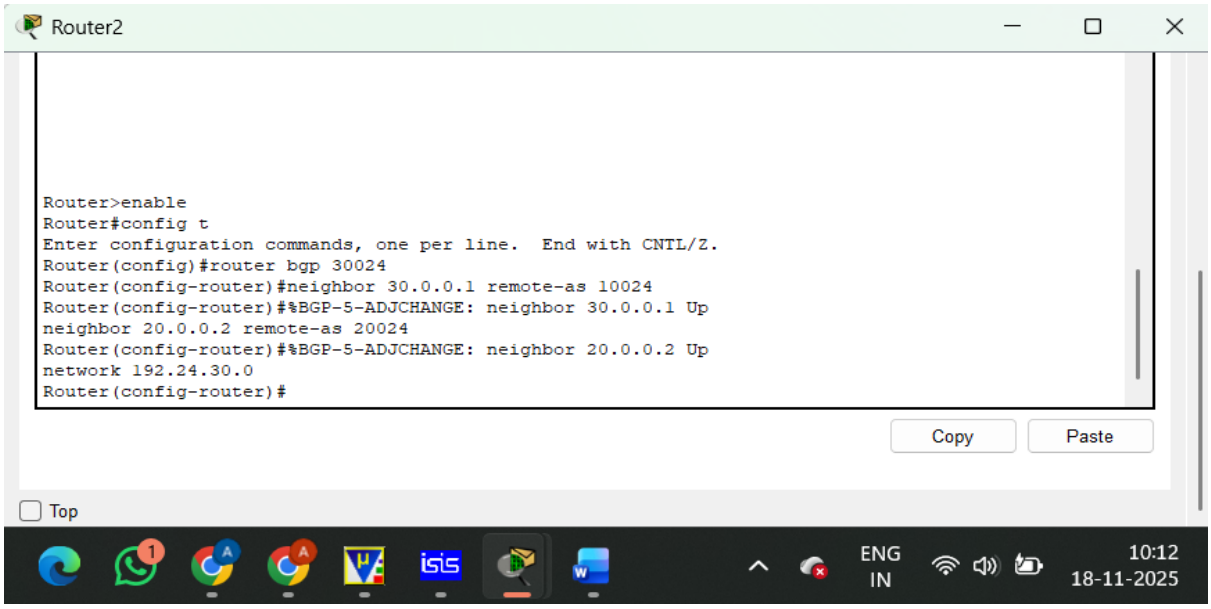
ENG
IN
10:20
18-11-2025

ROUTER-2


Router2
Physical
Config
CLI
Attributes
IOS Command Line Interface
Router>
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#router rip
Router(config-router)#no network 10.0.0.0
Router(config-router)#no network 20.0.0.0
Router(config-router)#no network 192.24.30.0
Router(config-router)#
Router(config-router)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console
Router#
Router con0 is now available
Press RETURN to get started.
Copy
Paste
Top
ENG
IN
10:11
18-11-2025


Router2
Router>enable
Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#router bgp 30024
Router(config-router)#neighbor 30.0.0.1 remote-as 10024
Router(config-router)#%BGP-5-ADJCHANGE: neighbor 30.0.0.1 Up
neighbor 20.0.0.2 remote-as 20024
Router(config-router)#%BGP-5-ADJCHANGE: neighbor 20.0.0.2 Up
network 192.24.30.0
Router(config-router)#
Copy
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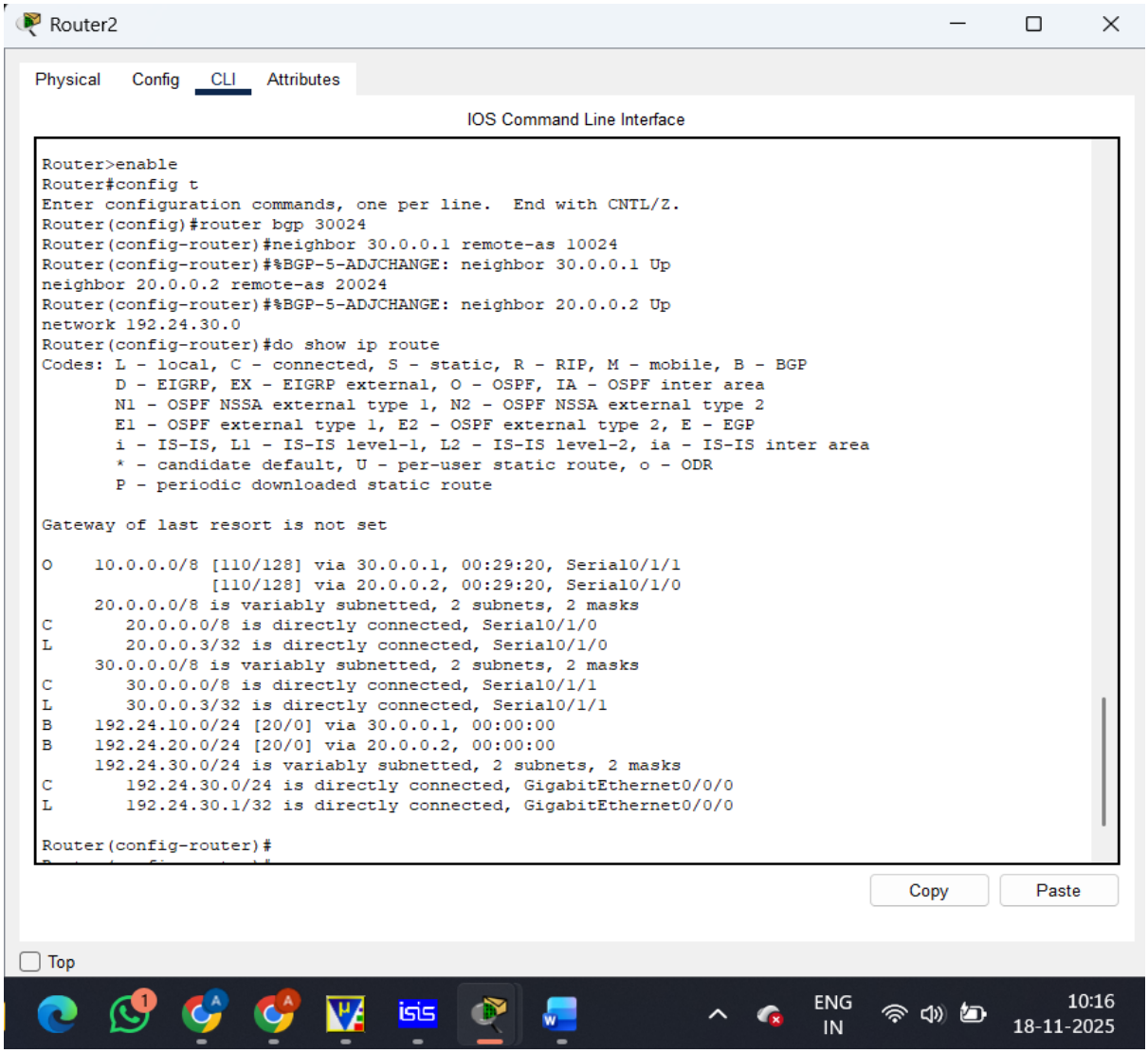
Top
ENG
IN
10:12
18-11-2025


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)#router bgp 30024
Router(config-router)#neighbor 30.0.0.1 remote-as 10024
Router(config-router)#%BGP-5-ADJCHANGE: neighbor 30.0.0.1 Up
neighbor 20.0.0.2 remote-as 20024
Router(config-router)#%BGP-5-ADJCHANGE: neighbor 20.0.0.2 Up
network 192.24.30.0
Router(config-router)#do 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
O 10.0.0.0/8 [110/128] via 30.0.0.1, 00:29:20, Serial0/1/1
[110/128] via 20.0.0.2, 00:29:20, 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
B 192.24.10.0/24 [20/0] via 30.0.0.1, 00:00:00
B 192.24.20.0/24 [20/0] via 20.0.0.2, 00:00:00
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)#
Copy
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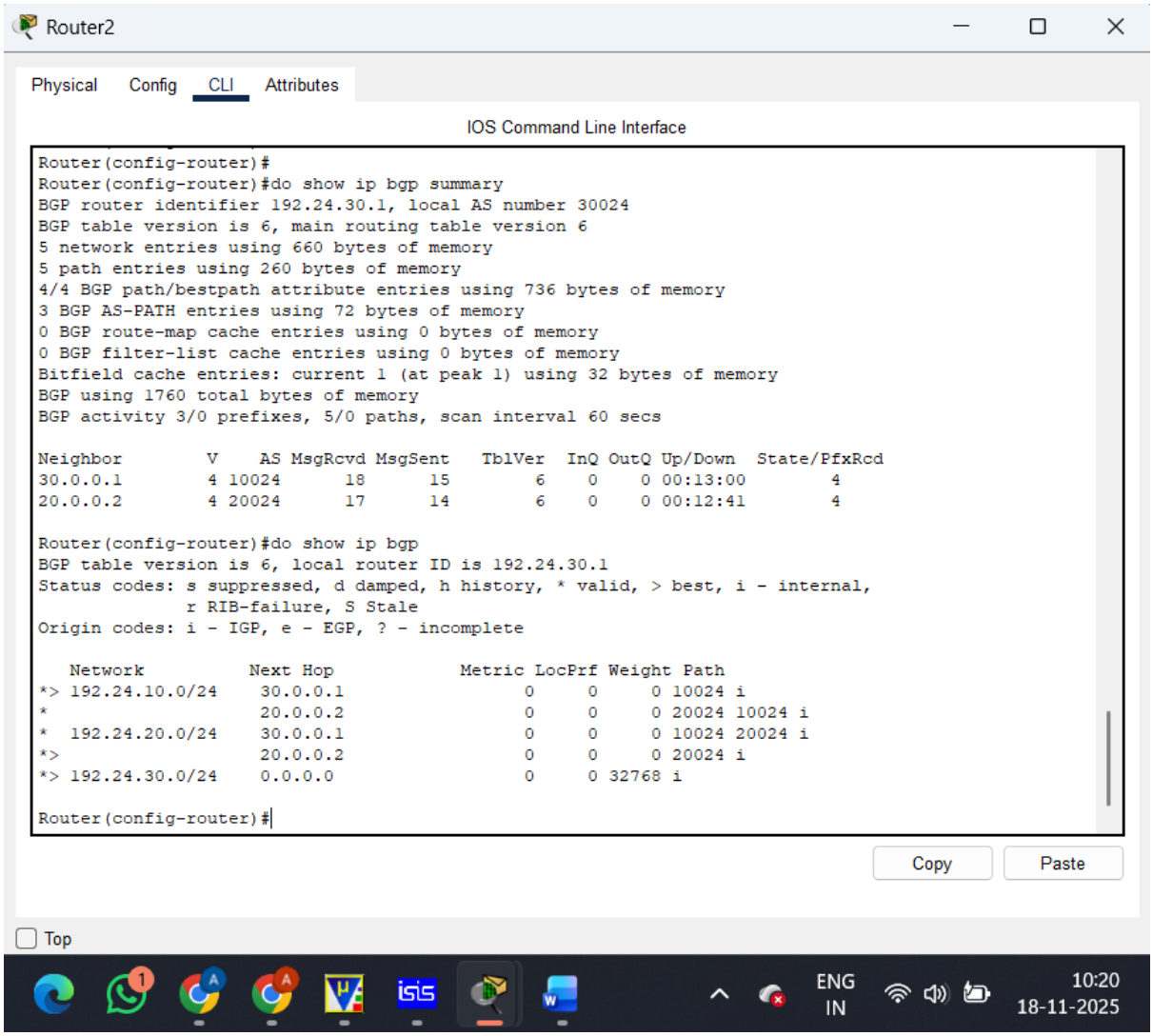
Top
ENG
IN
10:16
18-11-2025


Router2
Physical
Config
CLI
Attributes
IOS Command Line Interface
Router(config-router)#
Router(config-router)#do show ip bgp summary
BGP router identifier 192.24.30.1, local AS number 30024
BGP table version is 6, main routing table version 6
5 network entries using 660 bytes of memory
5 path entries using 260 bytes of memory
4/4 BGP path/bestpath attribute entries using 736 bytes of memory
3 BGP AS-PATH entries using 72 bytes of memory
0 BGP route-map cache entries using 0 bytes of memory
0 BGP filter-list cache entries using 0 bytes of memory
Bitfield cache entries: current 1 (at peak 1) using 32 bytes of memory
BGP using 1760 total bytes of memory
BGP activity 3/0 prefixes, 5/0 paths, scan interval 60 secs
Neighbor V AS MsgRcvd MsgSent TblVer InQ OutQ Up/Down State/PfxRcd
30.0.0.1 4 10024 18 15 6 0 0 00:13:00 4
20.0.0.2 4 20024 17 14 6 0 0 00:12:41 4
Router(config-router)#do show ip bgp
BGP table version is 6, local router ID is 192.24.30.1
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,
r RIB-failure, S Stale
Origin codes: i - IGP, e - EGP, ? - incomplete
Network Next Hop Metric LocPrf Weight Path
*> 192.24.10.0/24 30.0.0.1 0 0 0 10024 i
* 20.0.0.2 0 0 0 20024 10024 i
* 192.24.20.0/24 30.0.0.1 0 0 0 10024 20024 i
*> 20.0.0.2 0 0 0 20024 i
*> 192.24.30.0/24 0.0.0.0 0 0 32768 i
Router(config-router)#
Copy
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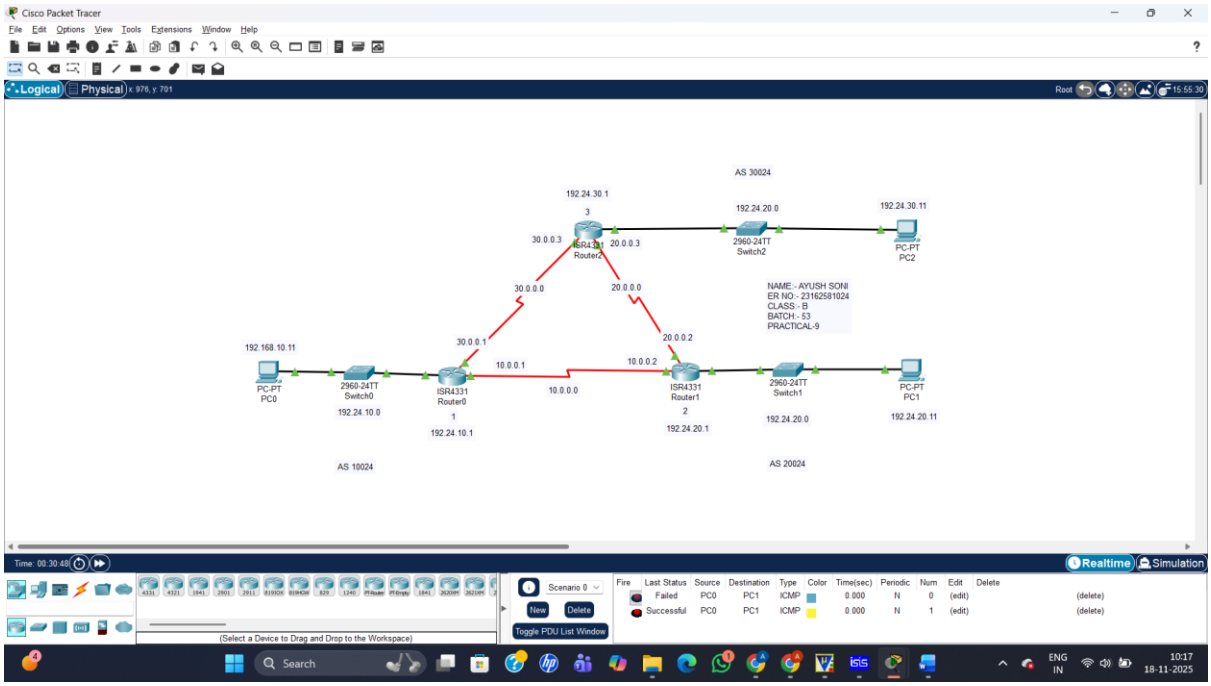
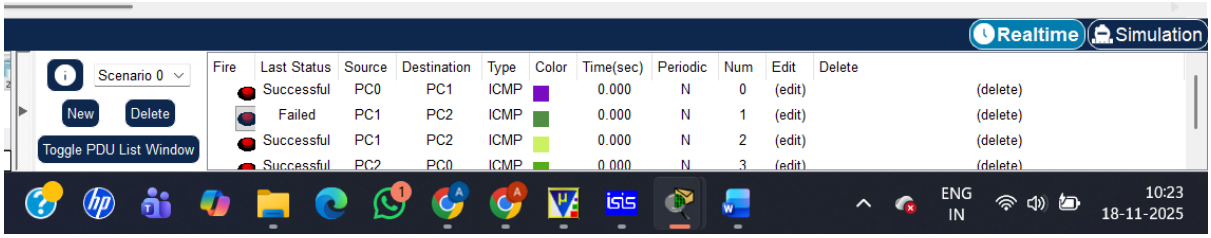
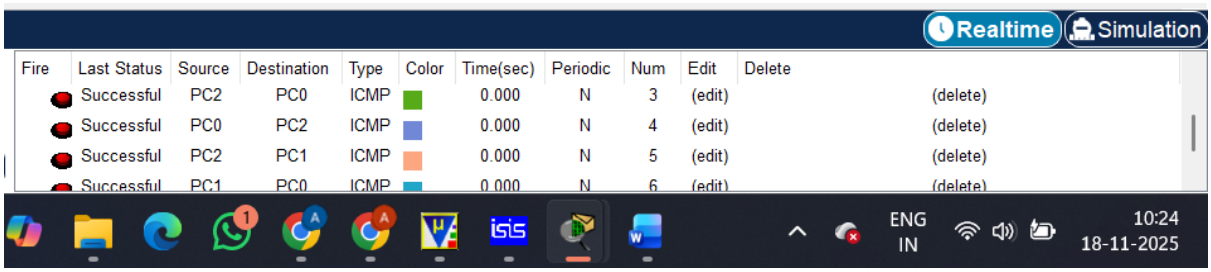
Top
ENG
IN
10:20
18-11-2025

PACKET TRANSFER SUCCESSFUL







Conclusion:-

The network was successfully designed and configured using Border Gateway Protocol (BGP) to enable communication between all three departments. BGP routing was implemented correctly on each router, and route exchange occurred smoothly across the autonomous systems. The final setup demonstrated stable connectivity and efficient inter-department communication.

Note:

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