INSTITUTE OF COMPUTER TECHNOLOGY

B-TECH COMPUTER SCIENCE ENGINEERING 2025-26

SUBJECT:COMPUTER NETWORKS

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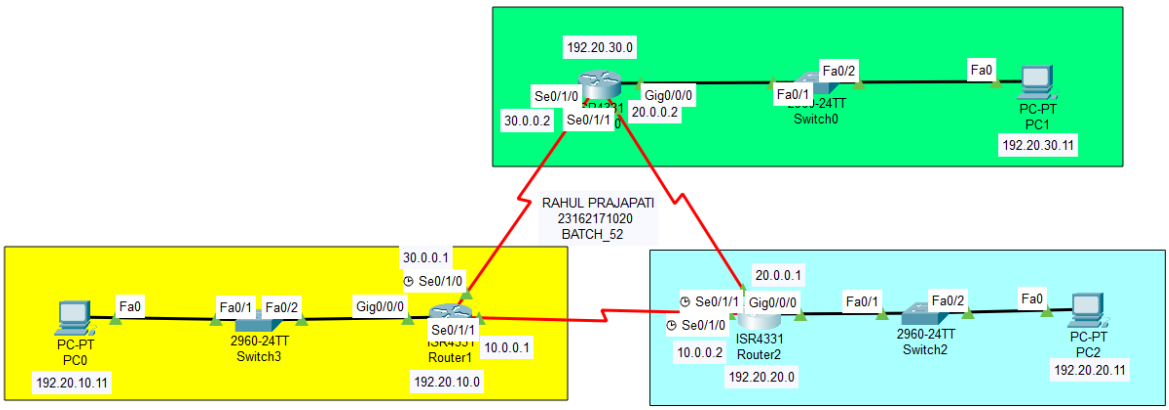
BRANCH: CYBER SECURITY

BATCH: 52

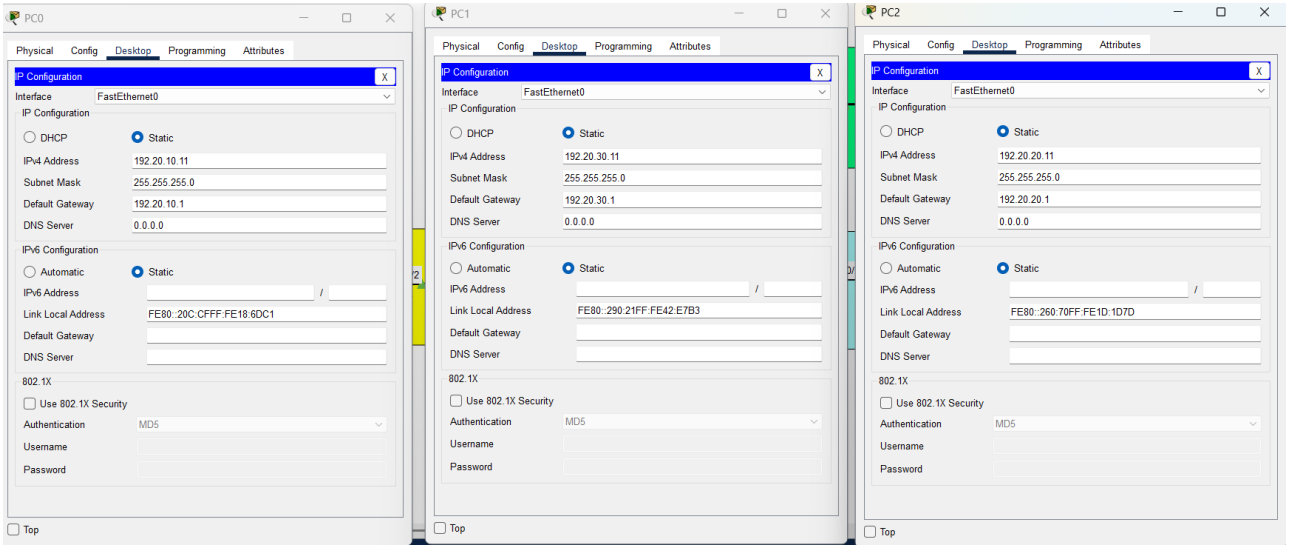
PRACTICAL_10

Aim: To design a network using EIGRP (Enhanced Interior Gateway Routing Protocol).

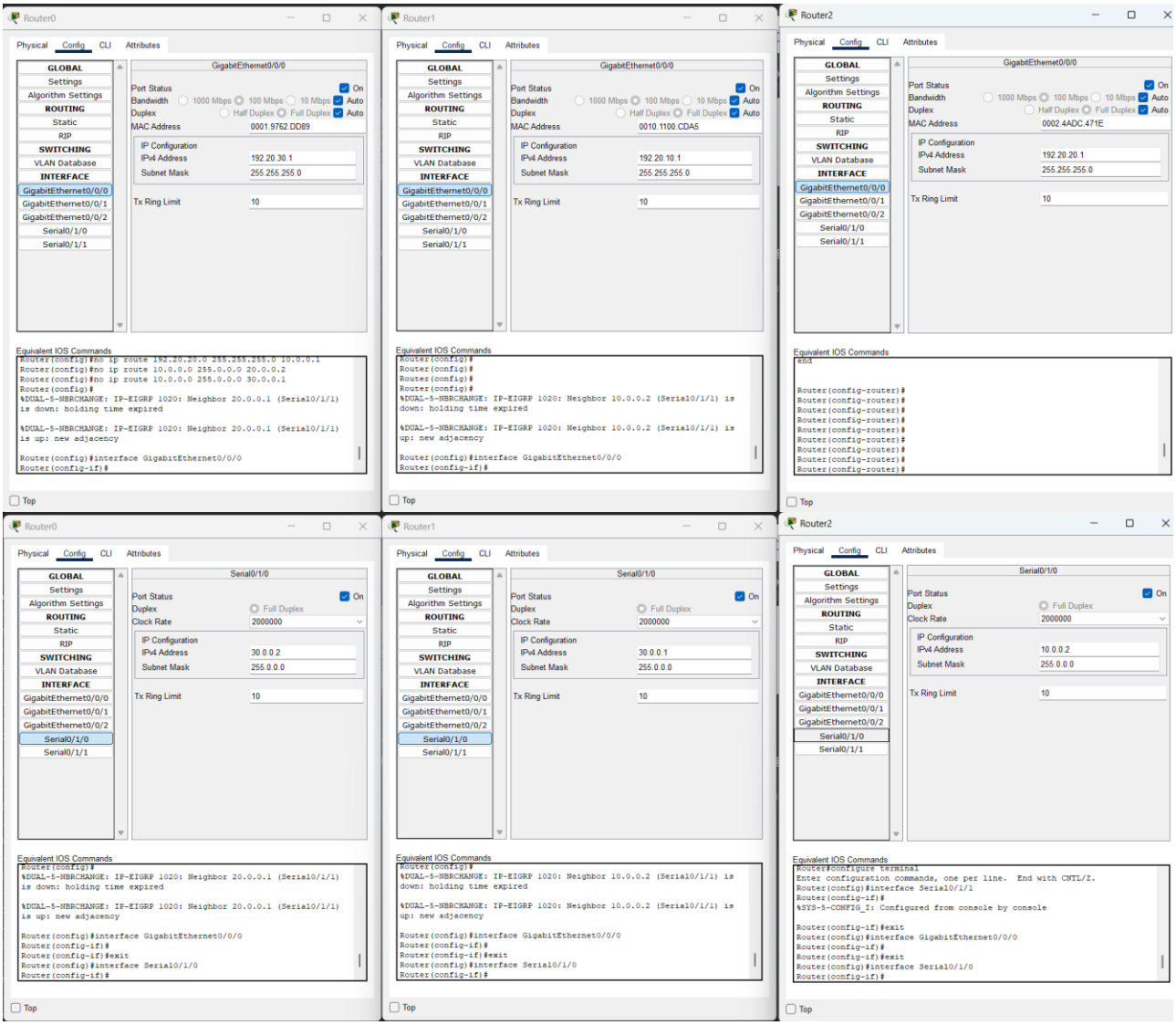
1. NETWORK DESIGN:

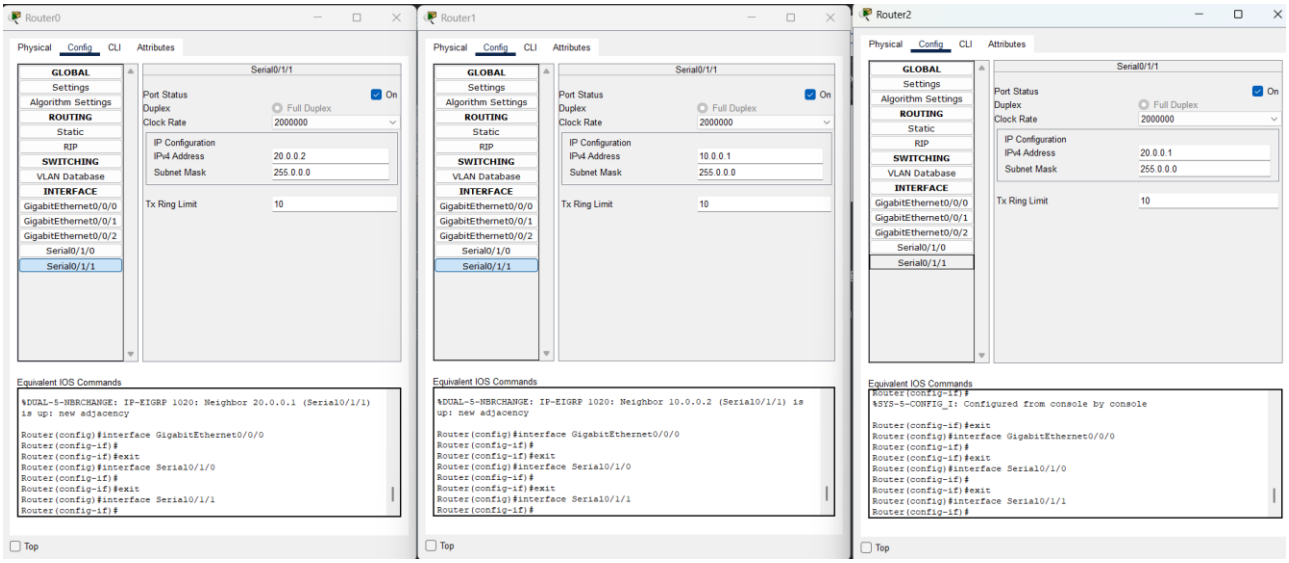


2. PCs_IP:



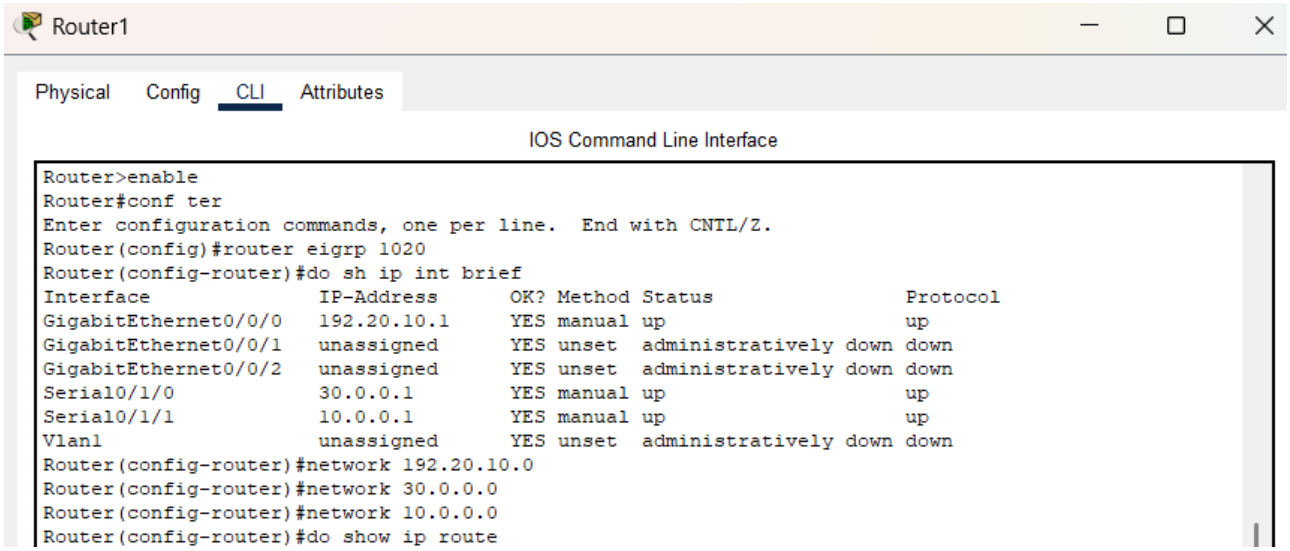
3. ROUTERs_IP_CONFIGURATION:

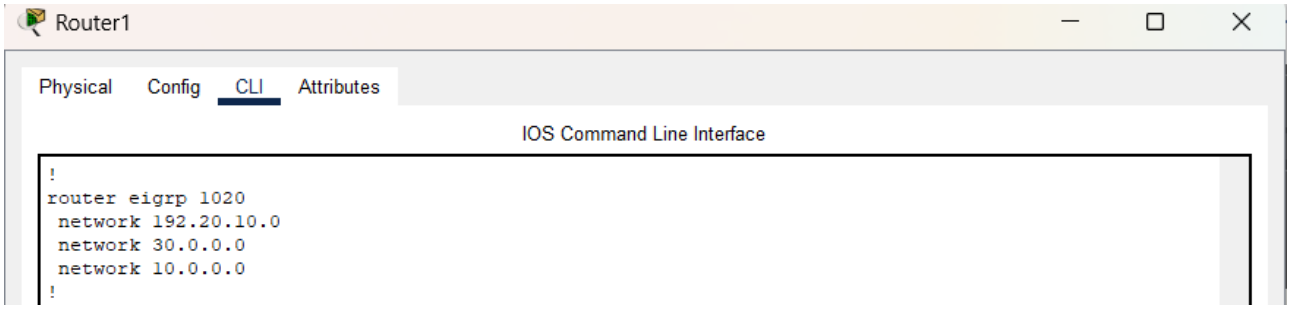




4. IP_ROUTE & CONFIGURATION :

A. ROUTEs_1





Router1

Physical Config CLI Attributes

IOS Command Line Interface

```
Router(config)#
Router(config)#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, Serial0/1/1
L       10.0.0.1/32 is directly connected, Serial0/1/1
D    20.0.0.0/8 [90/2681856] via 30.0.0.2, 00:19:10, Serial0/1/0
                [90/2681856] via 10.0.0.2, 00:17:43, Serial0/1/1
     30.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C       30.0.0.0/8 is directly connected, Serial0/1/0
L       30.0.0.1/32 is directly connected, Serial0/1/0
     192.20.10.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.20.10.0/24 is directly connected, GigabitEthernet0/0/0
L       192.20.10.1/32 is directly connected, GigabitEthernet0/0/0
D    192.20.20.0/24 [90/2172416] via 10.0.0.2, 00:17:49, Serial0/1/1

Router(config)#
```

A. ROUTER_0:

Router0

Physical Config CLI Attributes

IOS Command Line Interface

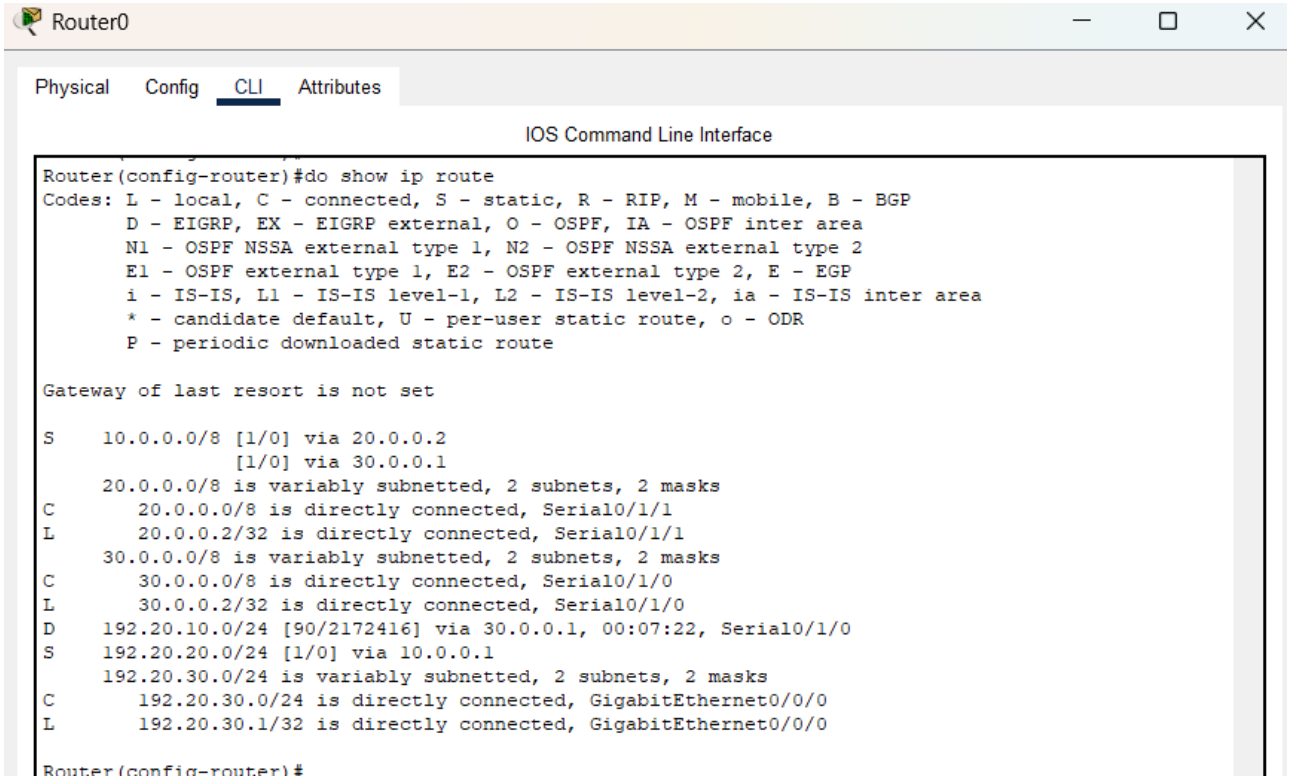
```
Router>
Router>
Router>enable
Router#conf ter
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#router eigrp 1020
Router(config-router)#do show ip interface brief
Interface              IP-Address      OK? Method Status                Protocol
GigabitEthernet0/0/0   192.20.30.1     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            30.0.0.2        YES manual up                    up
Serial0/1/1            20.0.0.2        YES manual up                    up
Vlan1                  unassigned      YES unset  administratively down down
Router(config-router)#network 120.20.30.0
Router(config-router)#network 30.0.0.0
Router(config-router)#
%DUAL-5-NBRCHANGE: IP-EIGRP 1020: Neighbor 30.0.0.1 (Serial0/1/0) is up: new adjacency

Router(config-router)#network 20.0.0.0
```

Router0

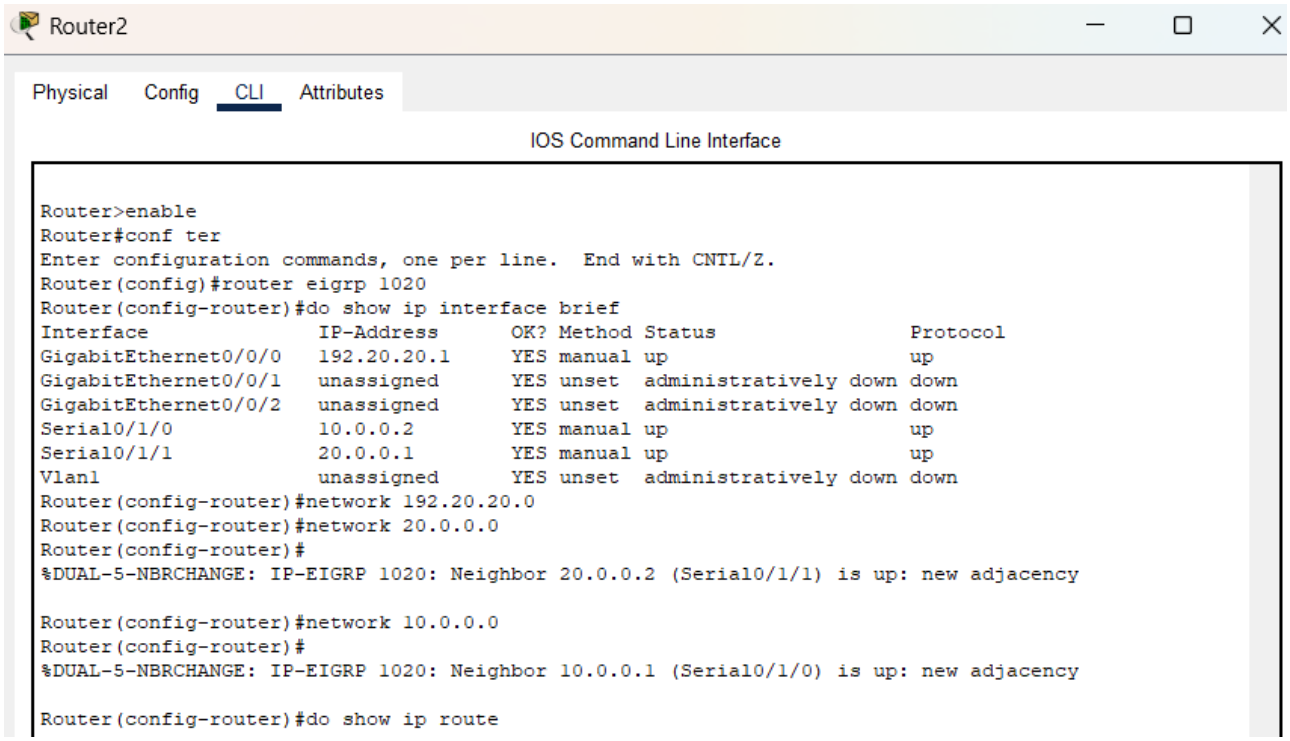
Physical Config CLI Attributes

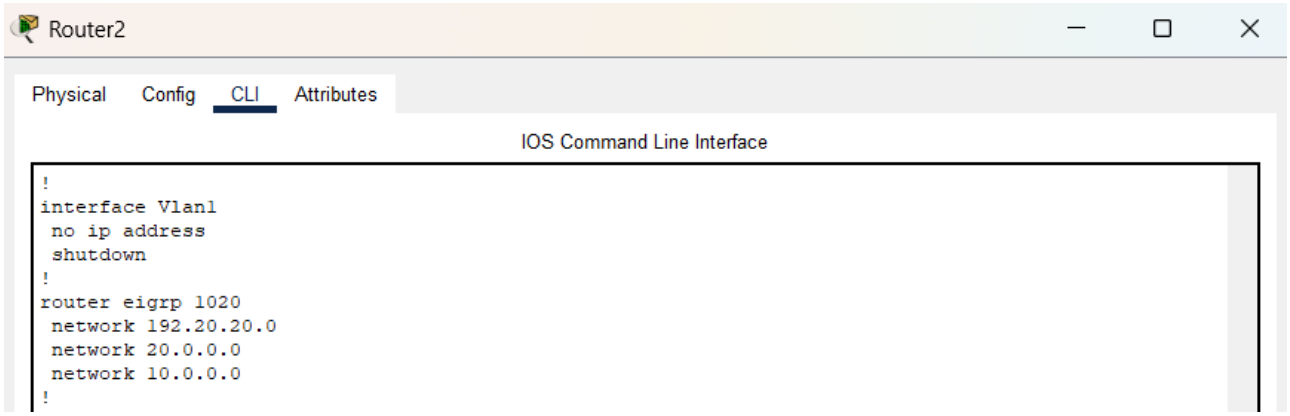
IOS Command Line Interface

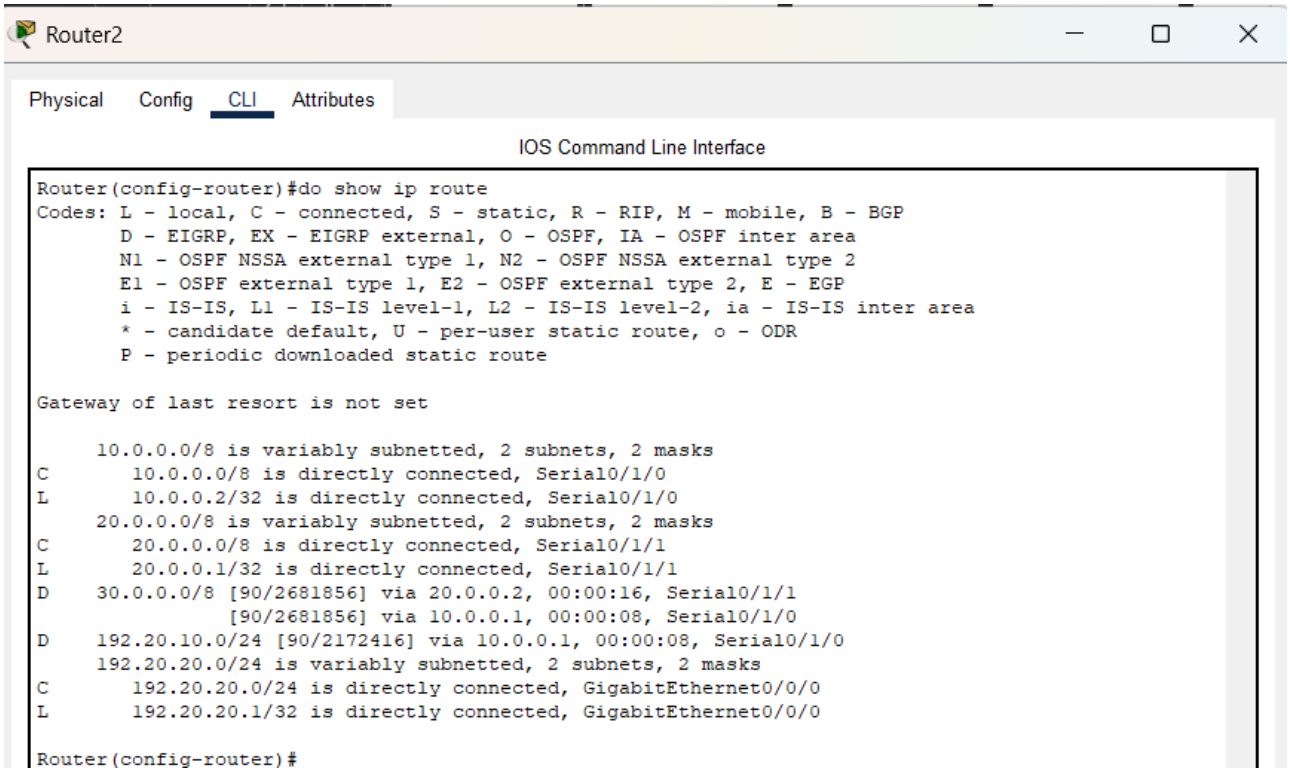
```
router eigrp 1020
 network 120.0.0.0
 network 30.0.0.0
 network 20.0.0.0
!
```


Router0
Physical
Config
CLI
Attributes
IOS Command Line Interface
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
S 10.0.0.0/8 [1/0] via 20.0.0.2
[1/0] via 30.0.0.1
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
30.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C 30.0.0.0/8 is directly connected, Serial0/1/0
L 30.0.0.2/32 is directly connected, Serial0/1/0
D 192.20.10.0/24 [90/2172416] via 30.0.0.1, 00:07:22, Serial0/1/0
S 192.20.20.0/24 [1/0] via 10.0.0.1
192.20.30.0/24 is variably subnetted, 2 subnets, 2 masks
C 192.20.30.0/24 is directly connected, GigabitEthernet0/0/0
L 192.20.30.1/32 is directly connected, GigabitEthernet0/0/0
Router(config-router)#

A. ROUTER_2:


Router2
Physical
Config
CLI
Attributes
IOS Command Line Interface
Router>enable
Router#conf ter
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#router eigrp 1020
Router(config-router)#do show ip interface brief
Interface IP-Address OK? Method Status Protocol
GigabitEthernet0/0/0 192.20.20.1 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 20.0.0.1 YES manual up up
Vlan1 unassigned YES unset administratively down down
Router(config-router)#network 192.20.20.0
Router(config-router)#network 20.0.0.0
Router(config-router)#
%DUAL-5-NBRCHANGE: IP-EIGRP 1020: Neighbor 20.0.0.2 (Serial0/1/1) is up: new adjacency
Router(config-router)#network 10.0.0.0
Router(config-router)#
%DUAL-5-NBRCHANGE: IP-EIGRP 1020: Neighbor 10.0.0.1 (Serial0/1/0) is up: new adjacency
Router(config-router)#do show ip route





Conclusion:

EIGRP was successfully configured. After assigning IP addresses and enabling EIGRP on all routers, they exchanged routing information within the same autonomous system. This verified that EIGRP provides fast convergence, efficient route calculation, and stable communication across the internal network.