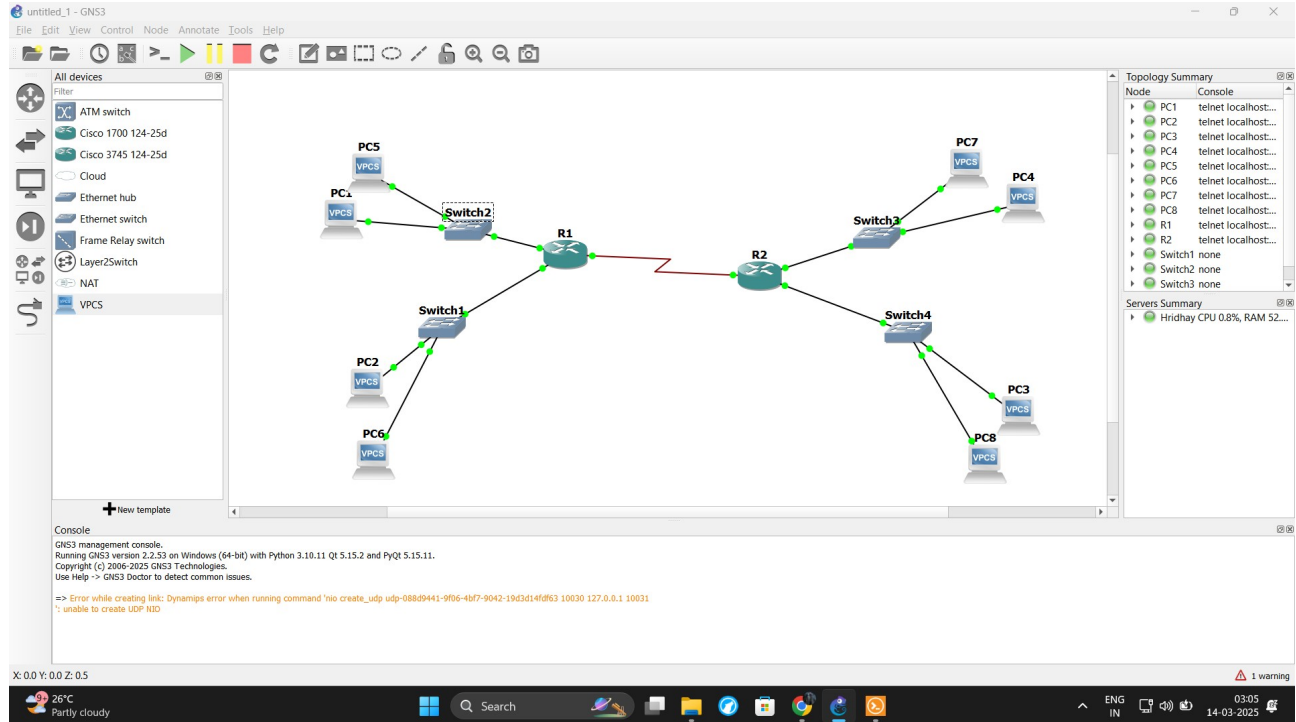Subnet Mask – 255.255.255.192
No of Subnets – 4
Subnet 1 Range 192.168.190.0-63/26
Subnet 2 Range 192.168.190.64-127/26
Subnet 3 Range 192.168.190.128-191/26
Subnet 4 Range 192.168.190.192-255/26

```
*Mar  1 00:12:45.439: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0, changed state to down
R1(config-if)#
*Mar  1 00:12:55.435: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0, changed state to up
R1(config-if)#no shutdown
R1(config-if)#
R1(config-if)#exit
R1(config)#ip route 192.168.190.192 255.255.255.192 10.10.10.2
R1(config)#ip route 192.168.190.128 255.255.255.192 10.10.10.2
R1(config)#exit
R1#s
*Mar  1 00:14:53.763: %SYS-5-CONFIG_I: Configured from console by console
R1#show ip interface brief
Interface              IP-Address      OK? Method Status                Protocol
FastEthernet0/0        192.168.190.1   YES manual up                    up
Serial0/0              10.10.10.1      YES manual up                    up
FastEthernet0/1        192.168.190.65  YES manual up                    up
Serial0/1              unassigned      YES unset  administratively down down
Serial0/2              unassigned      YES unset  administratively down down
FastEthernet1/0        unassigned      YES unset  administratively down down
Serial2/0              unassigned      YES unset  administratively down down
Serial2/1              unassigned      YES unset  administratively down down
Serial2/2              unassigned      YES unset  administratively down down
Serial2/3              unassigned      YES unset  administratively down down
R1#show arp
Protocol  Address        Age (min)  Hardware Addr   Type   Interface
Internet  192.168.190.65      -     c401.0a1c.0001  ARPA   FastEthernet0/1
Internet  192.168.190.1       -     c401.0a1c.0000  ARPA   FastEthernet0/0
R1#show ip route
Codes: 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
       i - IS-IS, su - IS-IS summary, 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

     192.168.190.0/26 is subnetted, 4 subnets
S       192.168.190.192 [1/0] via 10.10.10.2
S       192.168.190.128 [1/0] via 10.10.10.2
C       192.168.190.64 is directly connected, FastEthernet0/1
C       192.168.190.0 is directly connected, FastEthernet0/0
     10.0.0.0/24 is subnetted, 1 subnets
C       10.10.10.0 is directly connected, Serial0/0
R1#
```

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```
 changed state to down
*Mar  1 00:00:07.5et1/0, changed state to downe protocol on Interface FastEthern
*Mar  1 00:00:07.531: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to down
*Mar  1 00:00:07.535: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/1, changed state to down
*Mar  1 00:00:07.535: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/2, changed state to down
*Mar  1 00:00:07.539: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/3, changed state to down
R2#
R2#
R2#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
R2(config)#interface FastEthernet0/0
R2(config-if)#ip address 192.168.190.193 255.255.255.192
R2(config-if)#no shutdown
R2(config-if)#
*Mar  1 00:05:33.175: %LINK-3-UPDOWN: Interface FastEthernet0/0, changed state to up
*Mar  1 00:05:34.175: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
R2(config-if)#do wr
Building configuration...
[OK]
R2(config-if)#interface FastEthernet0/1
R2(config-if)#ip address 192.168.190.129 255.255.255.192
R2(config-if)#no shutdown
R2(config-if)#d
*Mar  1 00:06:19.919: %LINK-3-UPDOWN: Interface FastEthernet0/1, changed state to up
*Mar  1 00:06:20.919: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
R2(config-if)#do wr
Building configuration...
[OK]
R2(config-if)#interface Serial0/0
R2(config-if)#ip address 10.10.10.2 255.255.255.0
R2(config-if)#no shutdown
R2(config-if)#
*Mar  1 00:12:07.635: %LINK-3-UPDOWN: Interface Serial0/0, changed state to up
R2(config-if)#do
*Mar  1 00:12:08.639: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0, changed state to up
R2(config-if)#do wr
Building configuration...
[OK]
R2(config-if)#exit
R2(config)#ip route 192.168.190.0 255.255.255.192 10.10.10.1
R2(config)#ip route 192.168.190.64 255.255.255.192 10.10.10.1
R2(config)#exit
R2#
*Mar  1 00:14:07.515: %SYS-5-CONFIG_I: Configured from console by console
R2#show ip interface biref
                      ^
```

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```
[OK]
R2(config-if)#exit
R2(config)#ip route 192.168.190.0 255.255.255.192 10.10.10.1
R2(config)#ip route 192.168.190.64 255.255.255.192 10.10.10.1
R2(config)#exit
R2#
*Mar  1 00:14:07.515: %SYS-5-CONFIG_I: Configured from console by console
R2#show ip interface biref
                          ^
% Invalid input detected at '^' marker.

R2#show ip interface brief
Interface              IP-Address      OK? Method Status                Protocol
FastEthernet0/0        192.168.190.193 YES manual up                    up
Serial0/0              10.10.10.2      YES manual up                    up
FastEthernet0/1        192.168.190.129 YES manual up                    up
Serial0/1              unassigned      YES unset  administratively down down
Serial0/2              unassigned      YES unset  administratively down down
FastEthernet1/0        unassigned      YES unset  administratively down down
Serial2/0              unassigned      YES unset  administratively down down
Serial2/1              unassigned      YES unset  administratively down down
Serial2/2              unassigned      YES unset  administratively down down
Serial2/3              unassigned      YES unset  administratively down down
R2#show arp
Protocol  Address          Age (min)  Hardware Addr   Type   Interface
Internet  192.168.190.193        -    c402.5230.0000  ARPA   FastEthernet0/0
Internet  192.168.190.129        -    c402.5230.0001  ARPA   FastEthernet0/1
R2#show ip route
Codes: 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
       i - IS-IS, su - IS-IS summary, 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

     192.168.190.0/26 is subnetted, 4 subnets
C       192.168.190.192 is directly connected, FastEthernet0/0
C       192.168.190.128 is directly connected, FastEthernet0/1
S       192.168.190.64 [1/0] via 10.10.10.1
S       192.168.190.0 [1/0] via 10.10.10.1
     10.0.0.0/24 is subnetted, 1 subnets
C       10.10.10.0 is directly connected, Serial0/0
R2#
```

```
PC1> ping 192.168.190.3
84 bytes from 192.168.190.3 icmp_seq=1 ttl=64 time=1.186 ms
84 bytes from 192.168.190.3 icmp_seq=2 ttl=64 time=1.246 ms
84 bytes from 192.168.190.3 icmp_seq=3 ttl=64 time=3.876 ms
84 bytes from 192.168.190.3 icmp_seq=4 ttl=64 time=3.610 ms
84 bytes from 192.168.190.3 icmp_seq=5 ttl=64 time=3.557 ms

PC1> ping 192.168.190.66
192.168.190.66 icmp_seq=1 timeout
84 bytes from 192.168.190.66 icmp_seq=2 ttl=63 time=32.571 ms
84 bytes from 192.168.190.66 icmp_seq=3 ttl=63 time=31.062 ms
84 bytes from 192.168.190.66 icmp_seq=4 ttl=63 time=32.232 ms
84 bytes from 192.168.190.66 icmp_seq=5 ttl=63 time=32.226 ms

PC1> ping 192.168.190.130
192.168.190.130 icmp_seq=1 timeout
84 bytes from 192.168.190.130 icmp_seq=2 ttl=62 time=31.450 ms
84 bytes from 192.168.190.130 icmp_seq=3 ttl=62 time=30.959 ms
84 bytes from 192.168.190.130 icmp_seq=4 ttl=62 time=31.401 ms
84 bytes from 192.168.190.130 icmp_seq=5 ttl=62 time=31.566 ms

PC1> ping 192.168.190.194
192.168.190.194 icmp_seq=1 timeout
84 bytes from 192.168.190.194 icmp_seq=2 ttl=62 time=32.025 ms
84 bytes from 192.168.190.194 icmp_seq=3 ttl=62 time=31.840 ms
84 bytes from 192.168.190.194 icmp_seq=4 ttl=62 time=31.585 ms
84 bytes from 192.168.190.194 icmp_seq=5 ttl=62 time=31.543 ms

PC1> trace 192.168.190.66
trace to 192.168.190.66, 8 hops max, press Ctrl+C to stop
 1   192.168.190.1   15.440 ms  15.612 ms  16.083 ms
 2  *192.168.190.66   32.327 ms (ICMP type:3, code:3, Destination port unreachable)

PC1> trace 192.168.190.130
trace to 192.168.190.130, 8 hops max, press Ctrl+C to stop
 1   192.168.190.1   15.299 ms  15.599 ms  15.684 ms
 2   10.10.10.2   16.477 ms  16.108 ms  16.296 ms
 3  *192.168.190.130   30.727 ms (ICMP type:3, code:3, Destination port unreachable)

PC1> trace 192.168.190.194
trace to 192.168.190.194, 8 hops max, press Ctrl+C to stop
 1   192.168.190.1   15.723 ms  15.478 ms  15.333 ms
 2   10.10.10.2   16.039 ms  15.880 ms  15.934 ms
 3  *192.168.190.194   30.994 ms (ICMP type:3, code:3, Destination port unreachable)
```