NWK780 – TRADITIONAL NETWORKS

Seneca | SCHOOL OF INFORMATION TECHNOLOGY ADMINISTRATION & SECURITY

GROUP MEMBERS:

[redacted]

Lab2 Static and Default routes for routers Group size =3

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Lab Objectives

1. To gain skills for achieving basic configuration of a router.
2. To practice calculating IP addresses using VLSM and major network address
3. To configure the IP addresses of different networks connected through routers.
4. To check the status of the interfaces of a router.
5. To achieve connectivity through two different ways; static and default.
6. To understand the meaning of the routing table

Lab Instructions

1. **Mode of Operation:** This lab must be done **in person** with groups of **three** students.
2. **Handle Equipment Carefully:** Cisco devices are delicate and expensive. Handle all equipment with care.
3. **Power Safety:** Ensure all devices are powered off before connecting or disconnecting cables to avoid electrical hazards.
4. **Avoid Physical Hazards:** Be mindful of cables to prevent tripping and ensure proper cable management to avoid entanglements.
5. Each group must **present** the results to the instructor to gain the mark of this lab.
6. **After finishing your lab:** Disconnect cables, return them to their proper place and power down all devices.

Network Topology

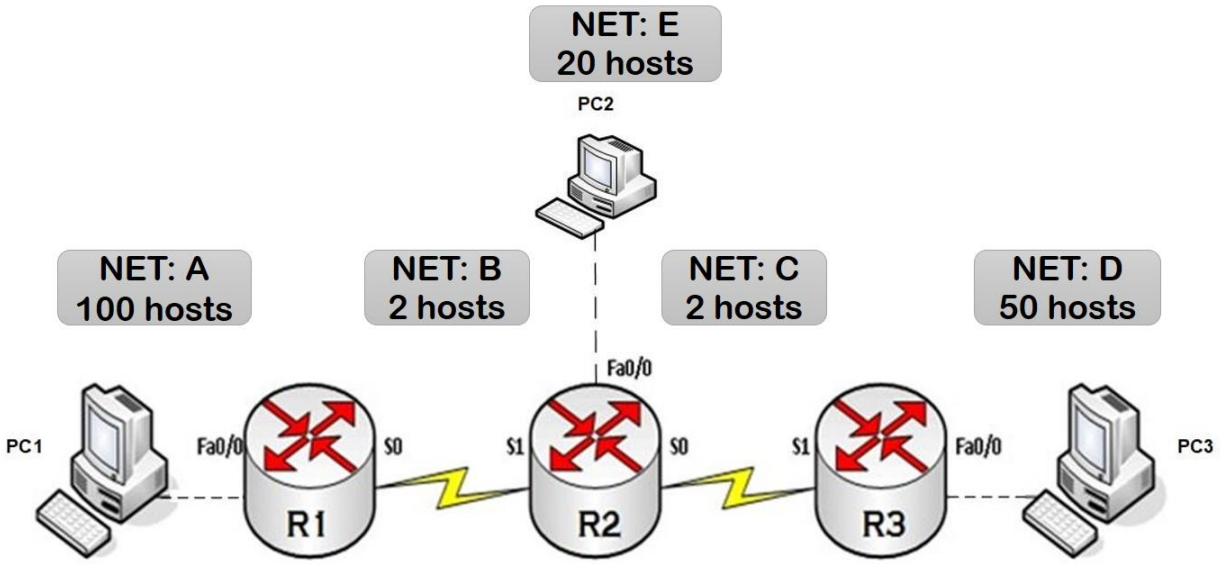


Fig.1: Topology of Static and Default routes

Procedure:

1. Your major IP address is 10.xx.0.0 where xx is your group number.
2. Use `to calculate all the subnet IDs, IP addresses and ranges
3. Draw a detailed labeled network diagram showing all IP addresses in CIDR notation.
4. For the serial cables, connect the DCE end to the lowest serial interface
5. For the serial cable, connect the first valid address to the lowest serial interface
6. For networks A, D & E: assign lowest IP of the range (first valid address) to the router's interface and the highest IP (last valid address) to the PC
7. Add enough notes when appropriate to make the diagram well understood
8. **Check point 1:** Call your Instructor to show the above results.

9. Fill in the below table with the proper IP addresses

	Hardware	IP address	Subnet mask	Default gateway
R1	FastEthernet0/0	10.1.0.1	255.255.255.128	N.A
	Serial0	10.1.0.225.	255.255.255.252	N.A.
R2	Serial1	10.1.0.226	255.255.255.252	N.A.
	Serial0	10.1.0.229	255.255.255.252	N.A.
	FastEthernet0/0	10.1.0.193	255.255.255.224	N.A.
R3	FastEthernet0/0	10.1.0.129	255.255.255.192	N.A.
	Serial1	10.1.0.230	255.255.255.252	N.A.
PC1	NIC	10.1.0.126	255.255.255.128	10.1.0.1
PC2	NIC	10.1.0.222	255.255.255.224	10.1.0.193
PC3	NIC	10.1.0.190	255.255.255.192	10.1.0.129

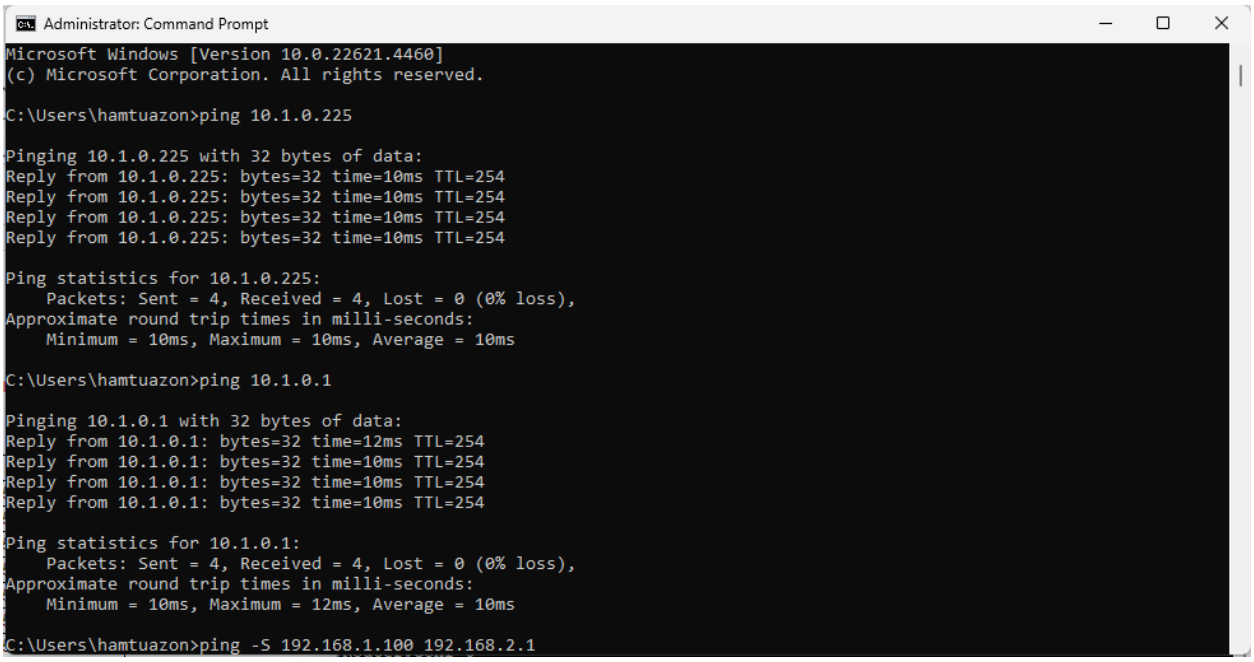
Enable

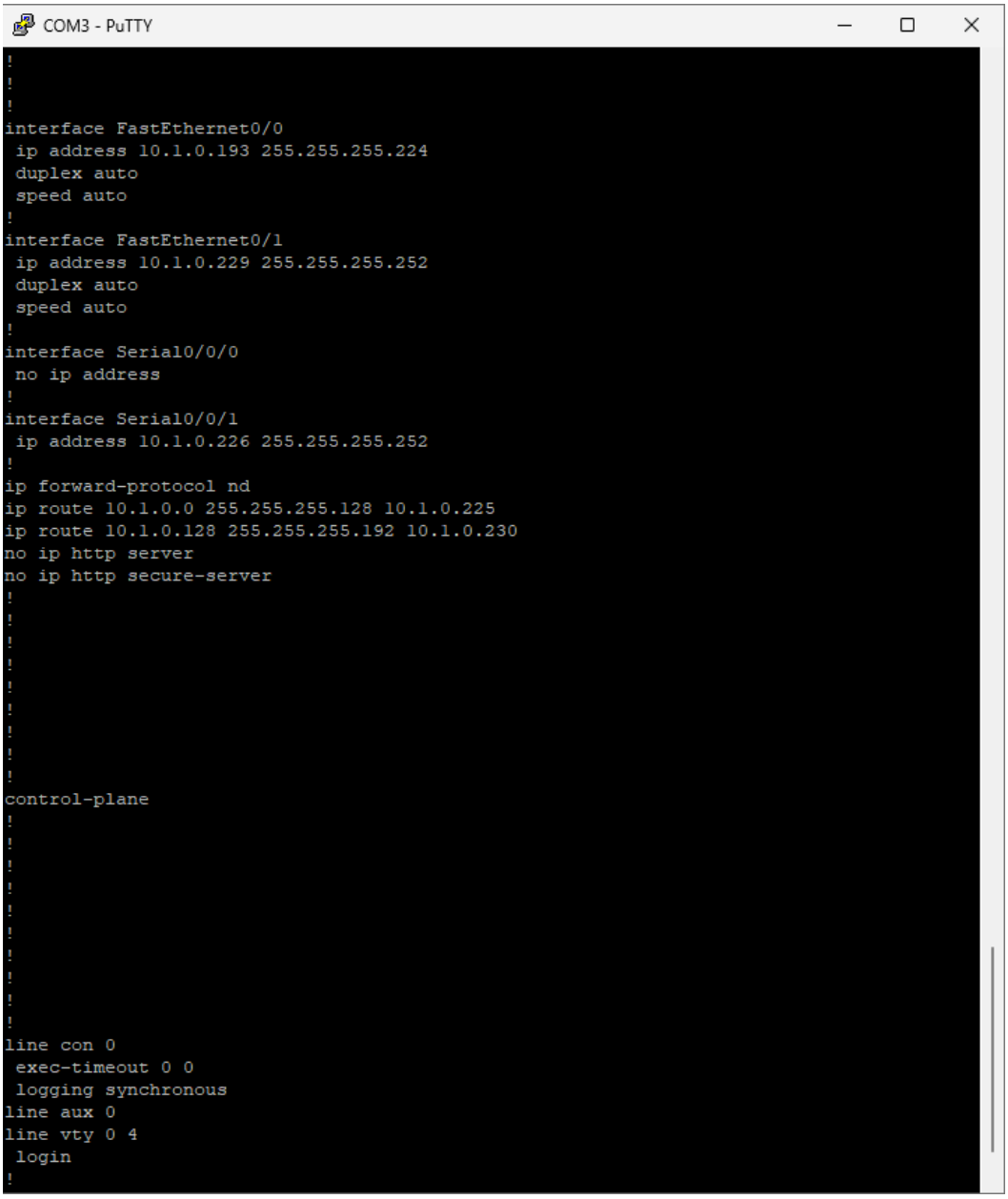
Table 1: IP addresses for all devices

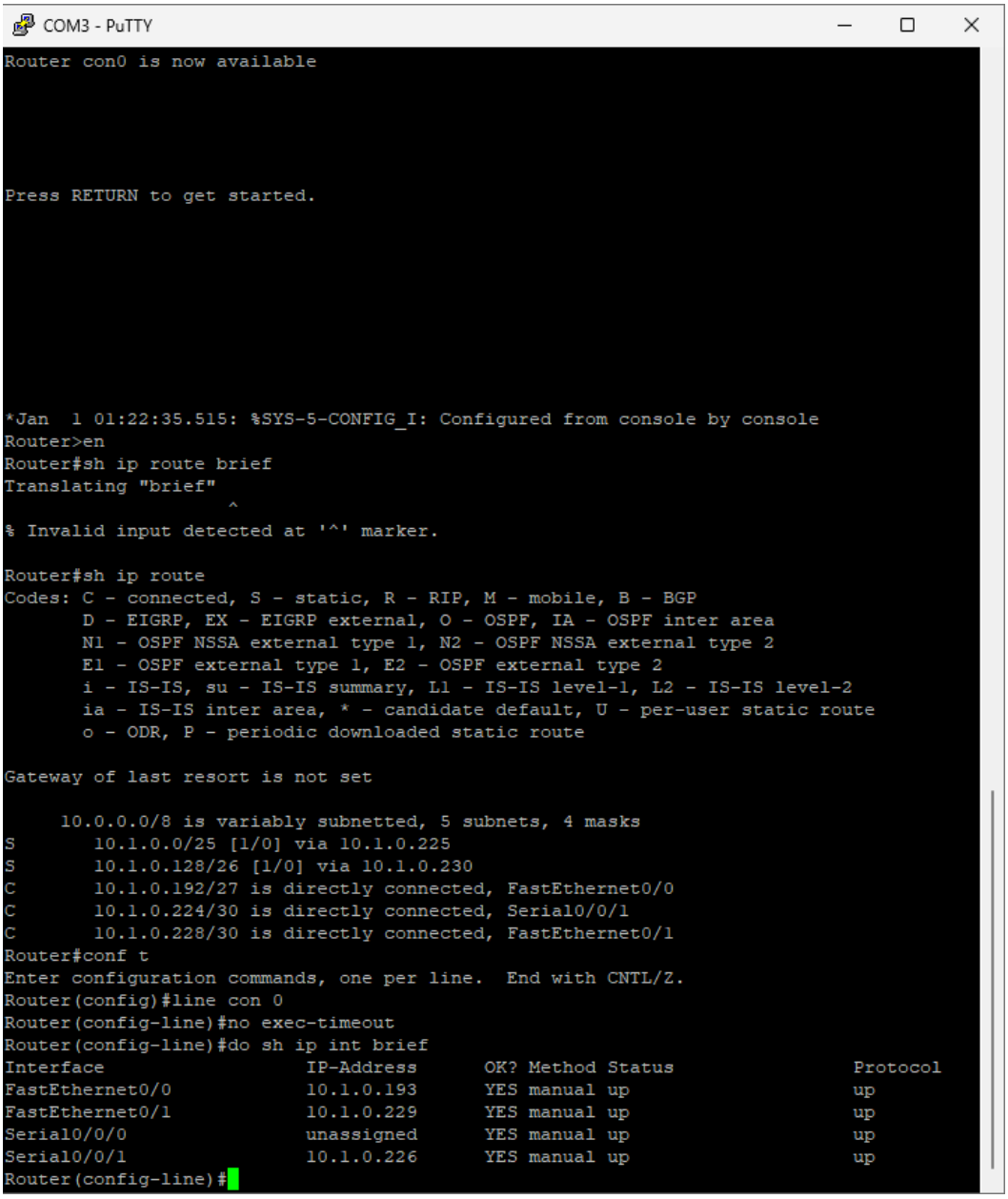
Procedure

10. Connect the Network Topology shown in Figure 1
11. Assign IP addresses to all your devices
12. Use the hostname command to give the routes proper names (R1, R2 & R3).
13. Check connectivity between each PC and its gateway by pinging the gateway from the PC's CMD
14. Check the routing table of each router and make sure that it includes the **connected** networks
15. Configure the required static rout
16. es on all three routers
17. no
18. **Check point 2:** Call your Instructor to show the above results.
19. Delete the static routes of Routers R1 and R3

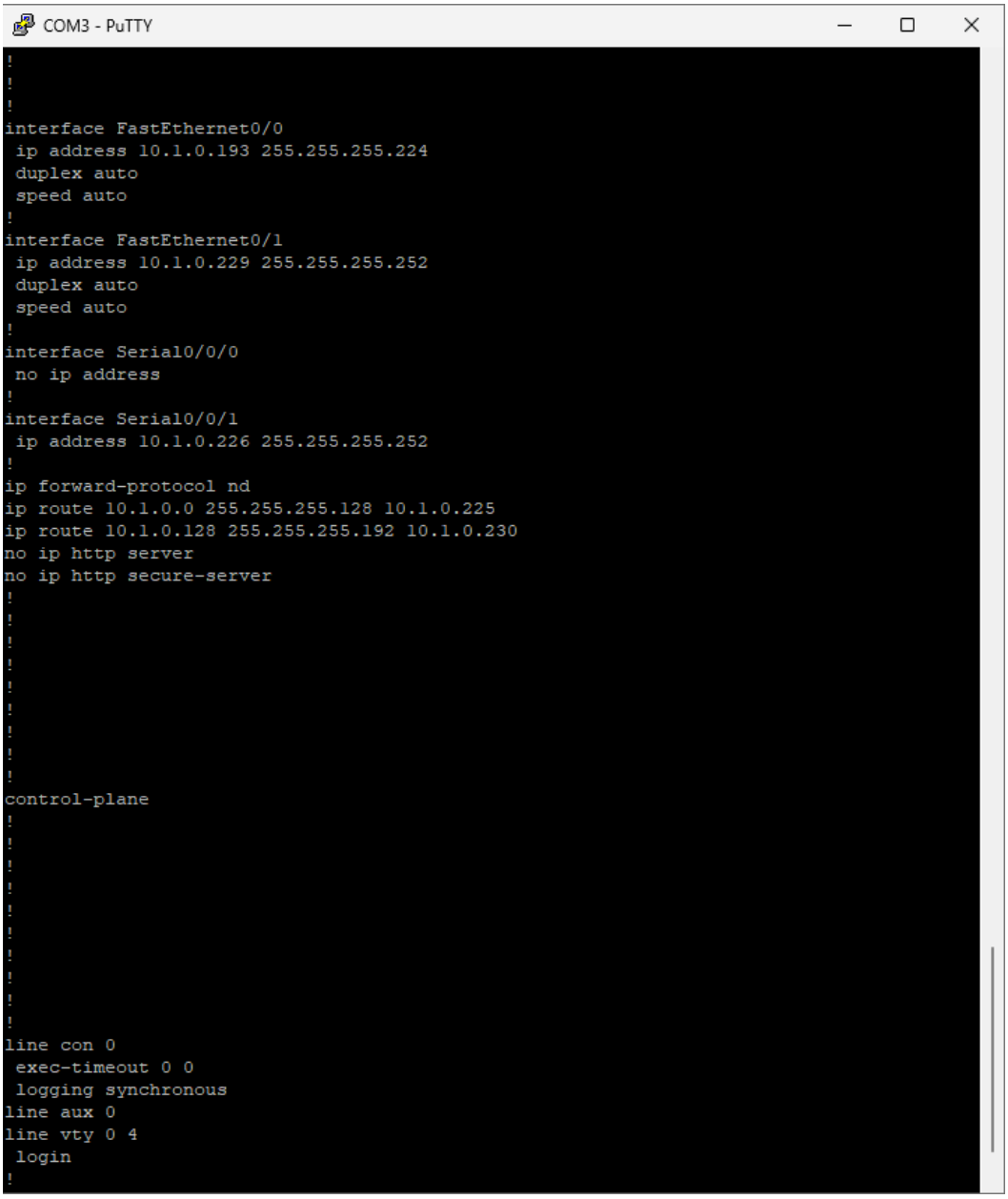
20. Set default routes on both R1 and R3
21. Check the routing table of each router and make sure that it includes all the networks of the diagram.
22. Check connectivity between all PCs, the three PCs must be able to ping all others
23. **Check point 3:** Call your Instructor to show the above results.


Administrator: Command Prompt
Microsoft Windows [Version 10.0.22621.4460]
(c) Microsoft Corporation. All rights reserved.
C:\Users\hamtuazon>ping 10.1.0.225
Pinging 10.1.0.225 with 32 bytes of data:
Reply from 10.1.0.225: bytes=32 time=10ms TTL=254
Reply from 10.1.0.225: bytes=32 time=10ms TTL=254
Reply from 10.1.0.225: bytes=32 time=10ms TTL=254
Reply from 10.1.0.225: bytes=32 time=10ms TTL=254
Ping statistics for 10.1.0.225:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 10ms, Maximum = 10ms, Average = 10ms
C:\Users\hamtuazon>ping 10.1.0.1
Pinging 10.1.0.1 with 32 bytes of data:
Reply from 10.1.0.1: bytes=32 time=12ms TTL=254
Reply from 10.1.0.1: bytes=32 time=10ms TTL=254
Reply from 10.1.0.1: bytes=32 time=10ms TTL=254
Reply from 10.1.0.1: bytes=32 time=10ms TTL=254
Ping statistics for 10.1.0.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 10ms, Maximum = 12ms, Average = 10ms
C:\Users\hamtuazon>ping -S 192.168.1.100 192.168.2.1

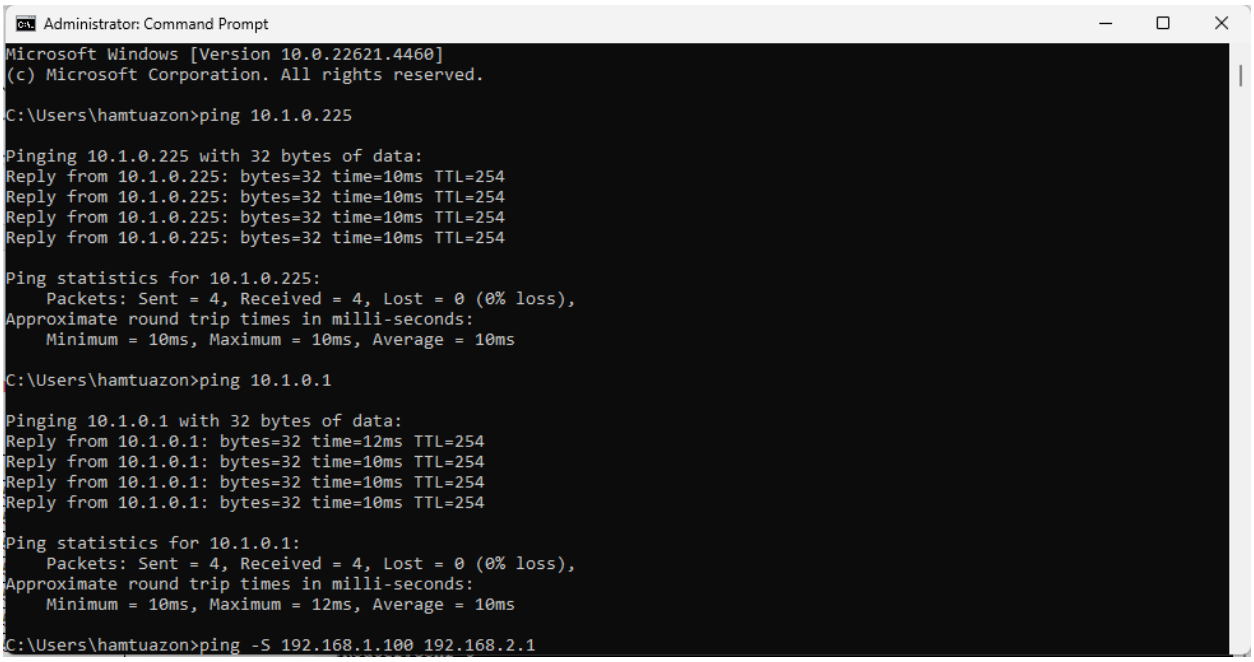

COM3 - PuTTY
!
!
!
interface FastEthernet0/0
 ip address 10.1.0.193 255.255.255.224
 duplex auto
 speed auto
!
interface FastEthernet0/1
 ip address 10.1.0.229 255.255.255.252
 duplex auto
 speed auto
!
interface Serial0/0/0
 no ip address
!
interface Serial0/0/1
 ip address 10.1.0.226 255.255.255.252
!
ip forward-protocol nd
ip route 10.1.0.0 255.255.255.128 10.1.0.225
ip route 10.1.0.128 255.255.255.192 10.1.0.230
no ip http server
no ip http secure-server
!
!
!
!
!
!
!
!
!
control-plane
!
!
!
!
!
!
!
!
!
!
line con 0
 exec-timeout 0 0
 logging synchronous
line aux 0
line vty 0 4
 login
!



PC2 IP Route & IP interface Brief



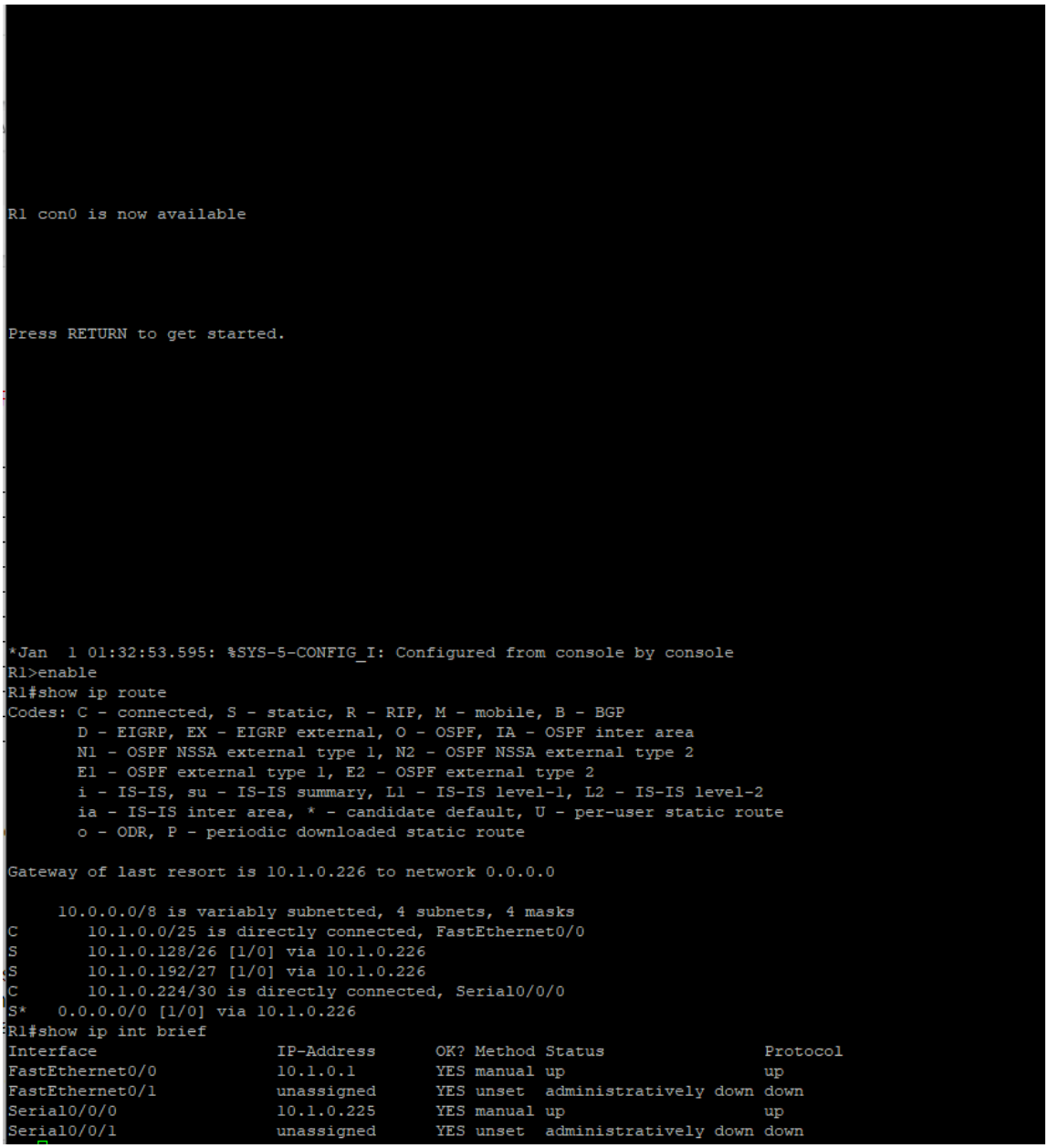
PC2 Running Configuration



PC2 Pinging PC1 and PC3

```
C:\Users\fmnoor>ping 10.1.0.190 -S 10.1.0.126

Pinging 10.1.0.190 from 10.1.0.126 with 32 bytes of data:
Reply from 10.1.0.190: bytes=32 time=10ms TTL=125
Reply from 10.1.0.190: bytes=32 time=11ms TTL=125
Reply from 10.1.0.190: bytes=32 time=11ms TTL=125
Reply from 10.1.0.190: bytes=32 time=11ms TTL=125

Ping statistics for 10.1.0.190:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 10ms, Maximum = 11ms, Average = 10ms

C:\Users\fmnoor>10.1.0.222 -S 10.1.0.126
'10.1.0.222' is not recognized as an internal or external command,
operable program or batch file.

C:\Users\fmnoor>ping 10.1.0.222 -S 10.1.0.126

Pinging 10.1.0.222 from 10.1.0.126 with 32 bytes of data:
Reply from 10.1.0.222: bytes=32 time=10ms TTL=126
Reply from 10.1.0.222: bytes=32 time=10ms TTL=126
Reply from 10.1.0.222: bytes=32 time=10ms TTL=126
Reply from 10.1.0.222: bytes=32 time=10ms TTL=126

Ping statistics for 10.1.0.222:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 10ms, Maximum = 10ms, Average = 10ms

C:\Users\fmnoor>ping 10.1.0.1

Pinging 10.1.0.1 with 32 bytes of data:
Reply from 10.1.0.1: bytes=32 time=1ms TTL=255
Reply from 10.1.0.1: bytes=32 time=1ms TTL=255
Reply from 10.1.0.1: bytes=32 time=1ms TTL=255
Reply from 10.1.0.1: bytes=32 time=1ms TTL=255

Ping statistics for 10.1.0.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 1ms, Average = 1ms

C:\Users\fmnoor>
```

PC1 Pinging PC2 and PC3



PC1 IP Route & IP interface Brief