CSE307 NETWORKING LAB REPORT On

Multi-floor Network Setup and Configuration

Submitted to:

Dr. Atul Malhotra

UID: 18011

submitted by:

Name: Raghav Chauhan

Reg No: 12302916

Section: K23CH

Roll no: 24

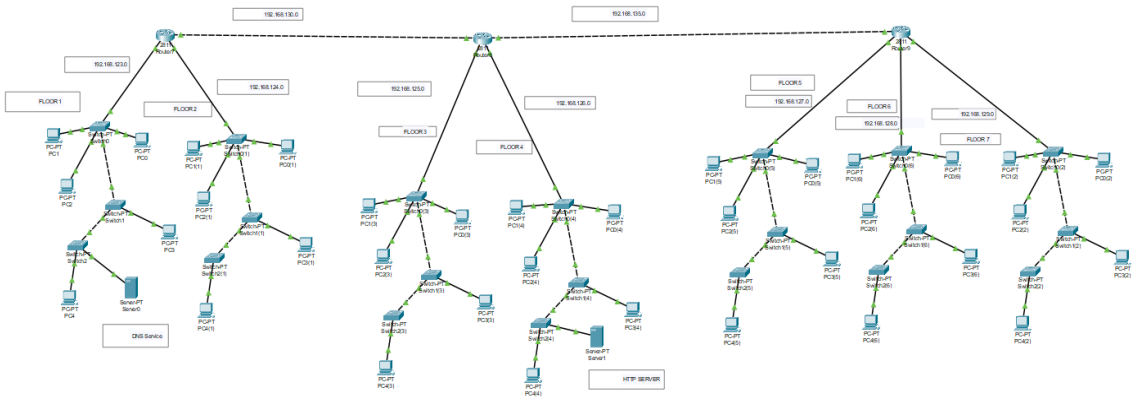
GitHub Repository Link: https://github.com/Raghav-chauhan1/MultiFloor-Network.git

Physical Scenario Creation:

This network represents Seven floors building of a mid-sized enterprise named XL Network Solutions, where each floor has its own set of 5 Pc's each. By all floors computers are connected in hybrid topology using star and tree topology. Each floor has its own dedicated PT-Switch which is connected to all devices on floor using fast ethernet ports. First two floors have its own 2811 router and the next two floor also having their own router 2811 and the last three floors having a common router and router are connected in a bus topology for a seamless connection and with the Servers DNS and HTTP to configure DNS Service.

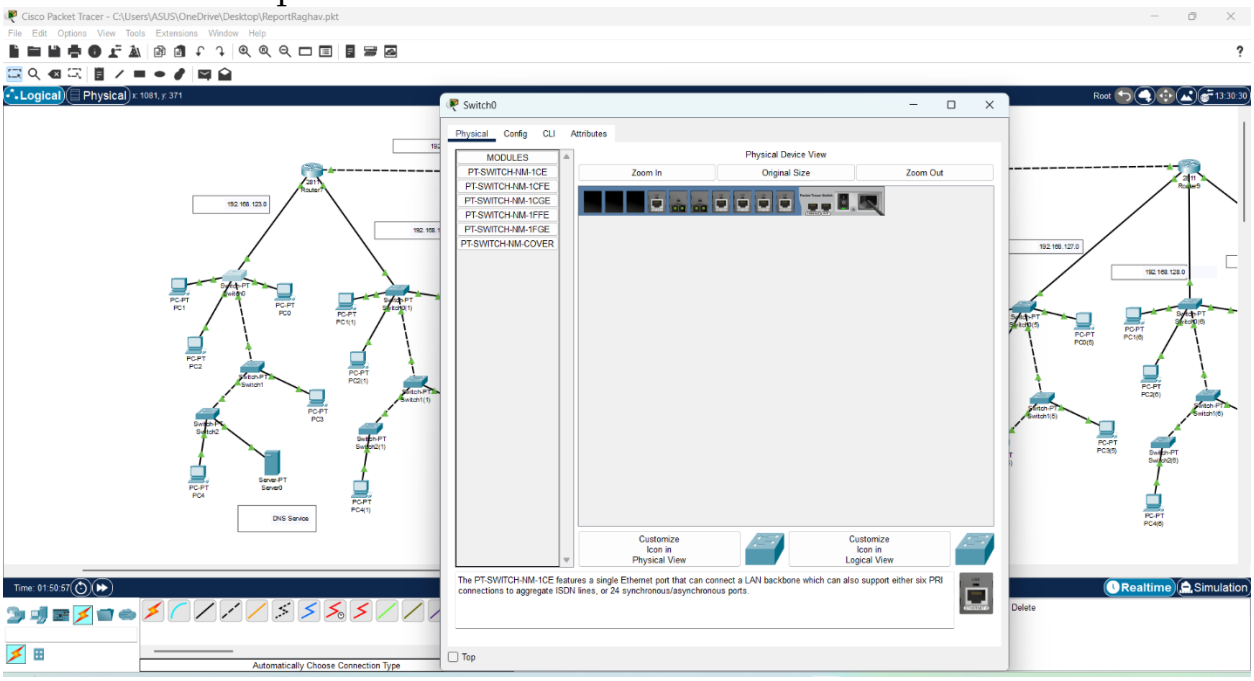
To connect the floors with each other, we used Gigabit Ethernet ports available on the routers and switches. Specifically, each floor's switch connects to its floor router using Gigabit Ethernet, and routers of adjacent floors are also interconnected through Gigabit Ethernet ports to ensure faster communication and better bandwidth for inter-floor data transfer.

Following are the snapshots of the physical layout of the entire network:



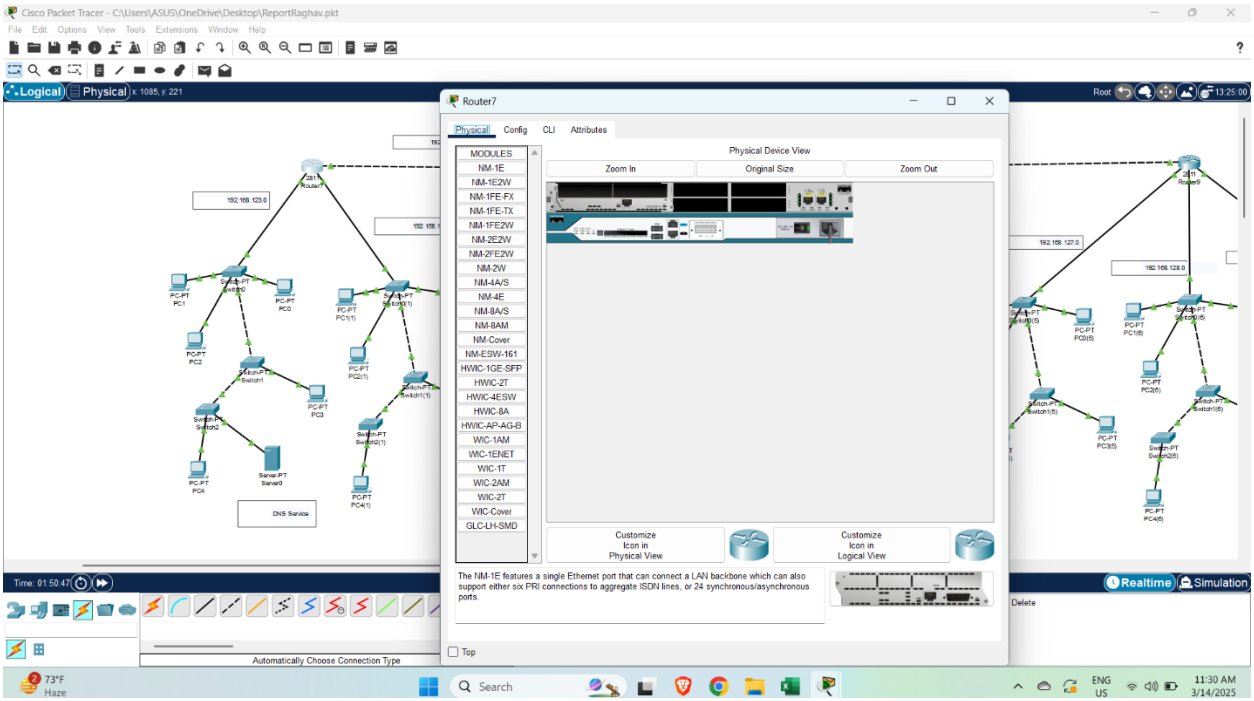
Switch Used: PT-Switch

Extended Switch port:



Router Used: 2811

Extended Router Port:



Hybrid Topology – Star Topology + Tree Topology

Server Used: DNS and HTTP

IP Addressing

To ensure proper segmentation and clear identification of devices, we assigned IP addresses floor-wise.

Floor wise IP addressing for Pc's:

1. Floor 1
   IP address 192.168.123.0
   Subnet mask 255.255.255.0
   Default Gateway 192.168.123.1
   DNS Server 192.168.126.7
2. Floor 2
   IP address 192.168.124.0
   Subnet mask 255.255.255.0
   Default Gateway 192.168.124.1
   DNS Server 192.168.126.7
3. Floor 3
   IP address 192.168.125.0
   Subnet mask 255.255.255.0
   Default Gateway 192.168.125.1
   DNS Server 192.168.126.7
4. Floor 4
   IP address 192.168.126.0
   Subnet mask 255.255.255.0
   Default Gateway 192.168.126.1
   DNS Server 192.168.126.7
5. Floor 5
   IP address 192.168.127.0
   Subnet mask 255.255.255.0
   Default Gateway 192.168.127.1
   DNS Server 192.168.126.7
6. Floor 6
   IP address 192.168.128.0
   Subnet mask 255.255.255.0

Default Gateway 192.168.128.1
DNS Server 192.168.126.7

7. Floor 7
   IP address 192.168.129.0
   Subnet mask 255.255.255.0
   Default Gateway 192.168.129.1
   DNS Server 192.168.126.7

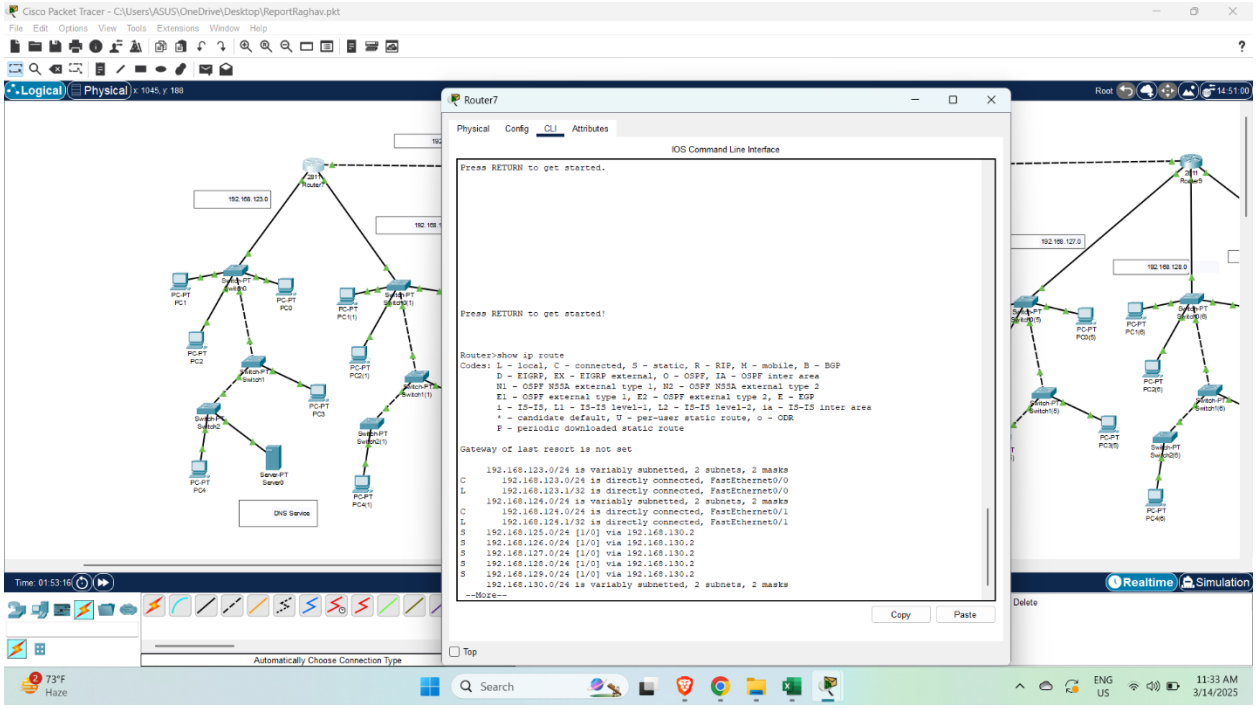
Router wise IP addressing:

Router 1 to 2 IP address 192.168.130.0

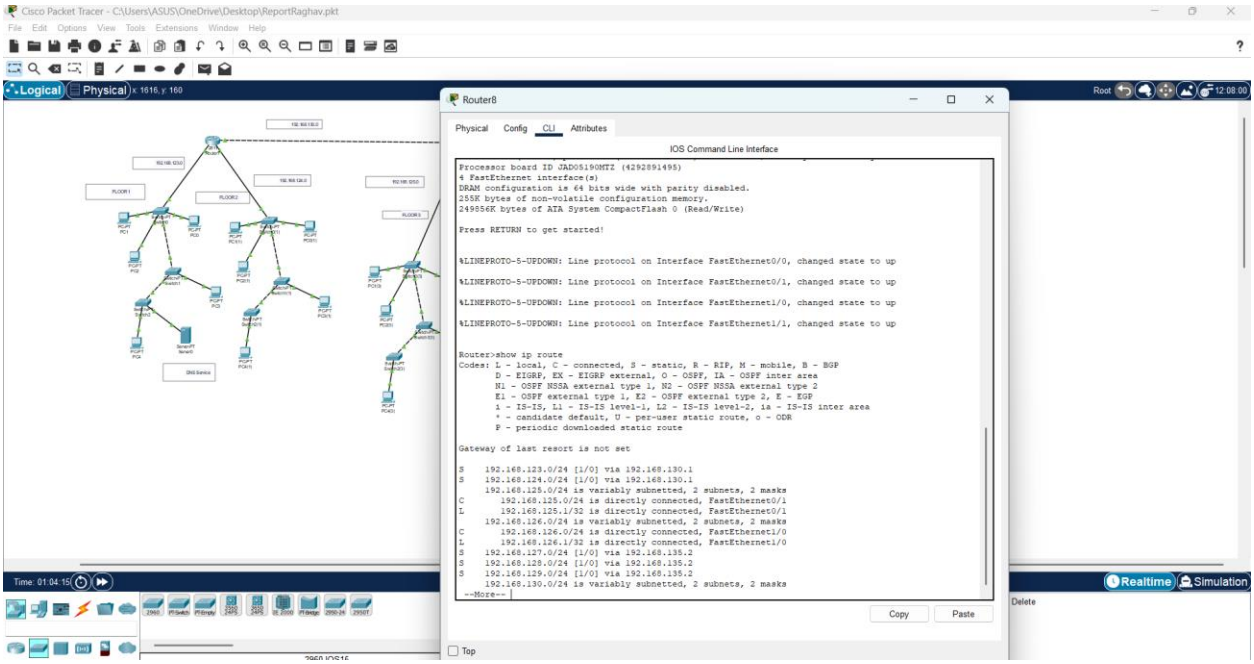
Router 2 to 3 IP address 192.168.135.0

Static Routing Ip Routes:

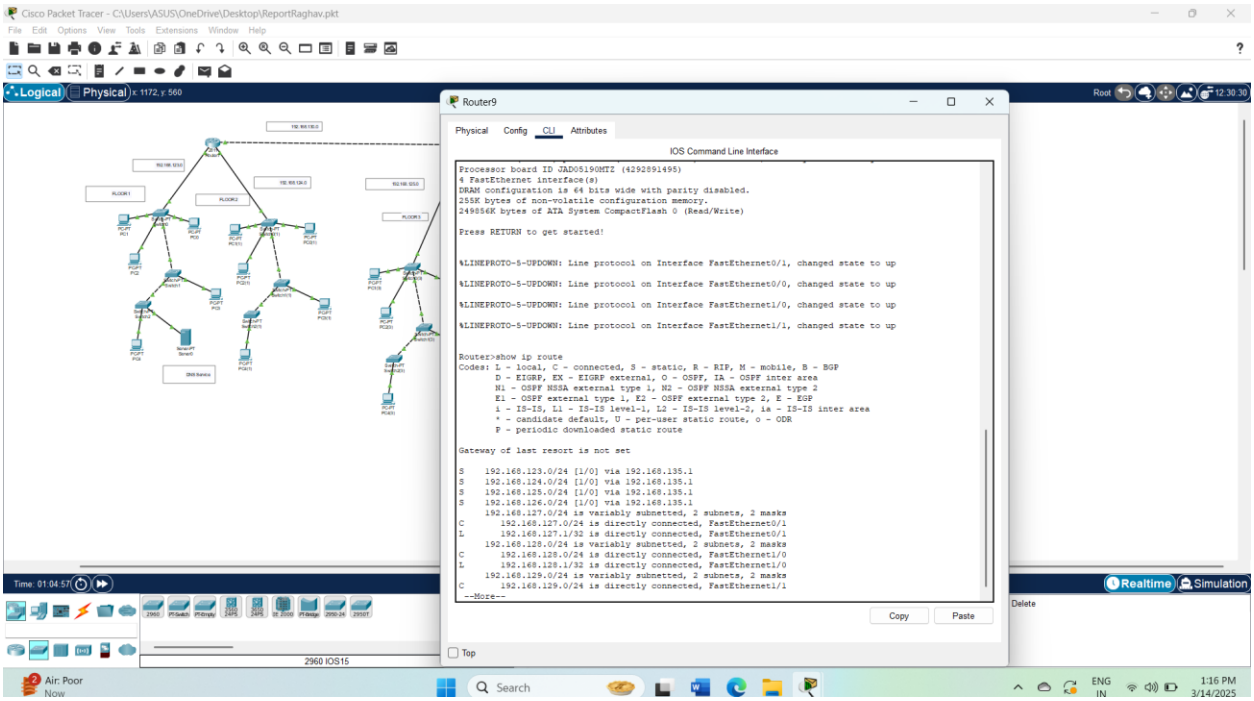
Router 7:



Router 8:



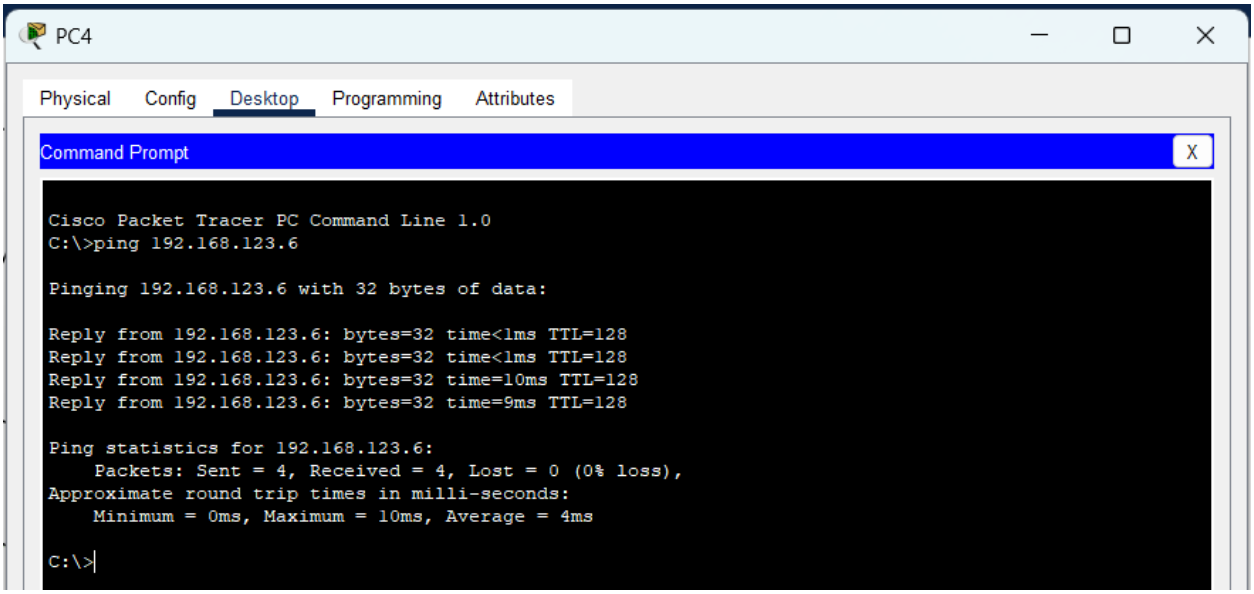
Router 9:



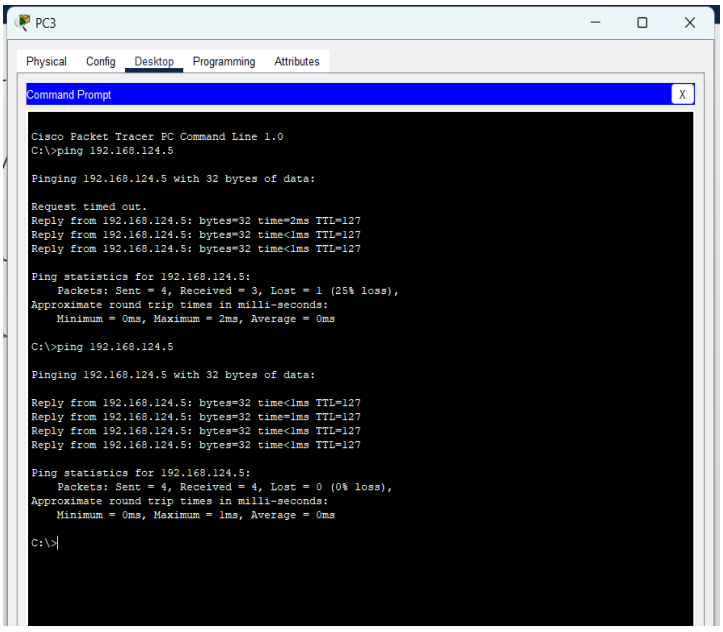
Communication between PC's

To check communication between pc's we used the ping command in the command prompt and to see the paths we used tracert command also to see flow of packets.

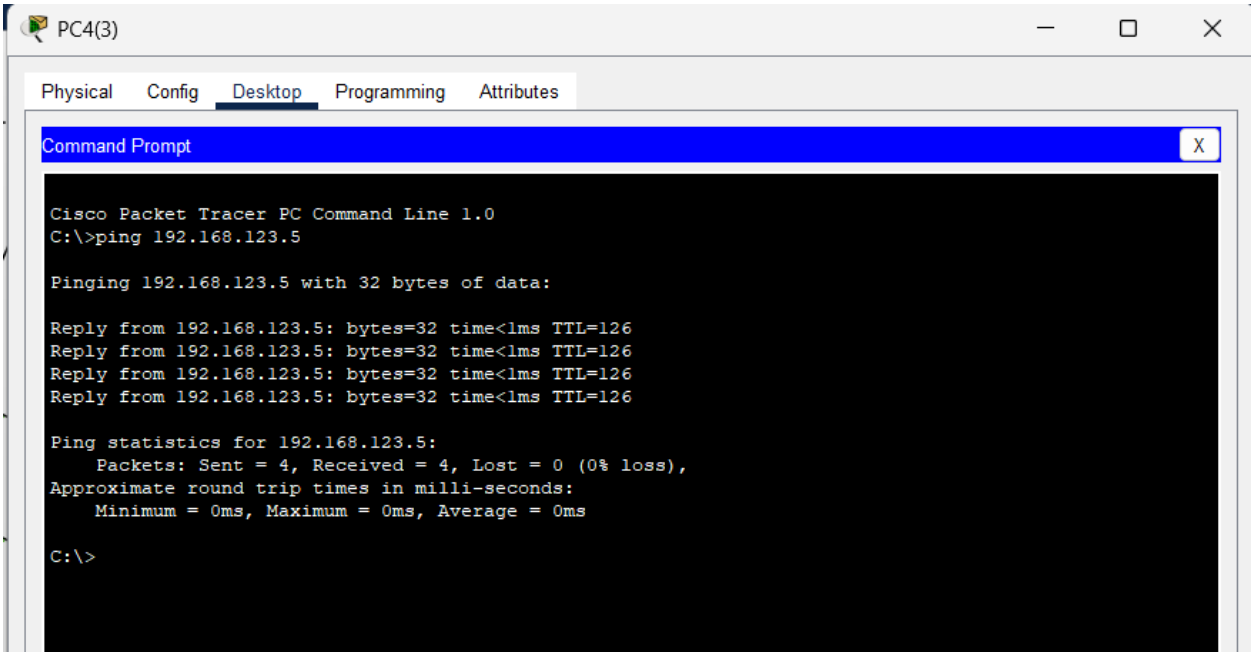
Floor 1 to 1:



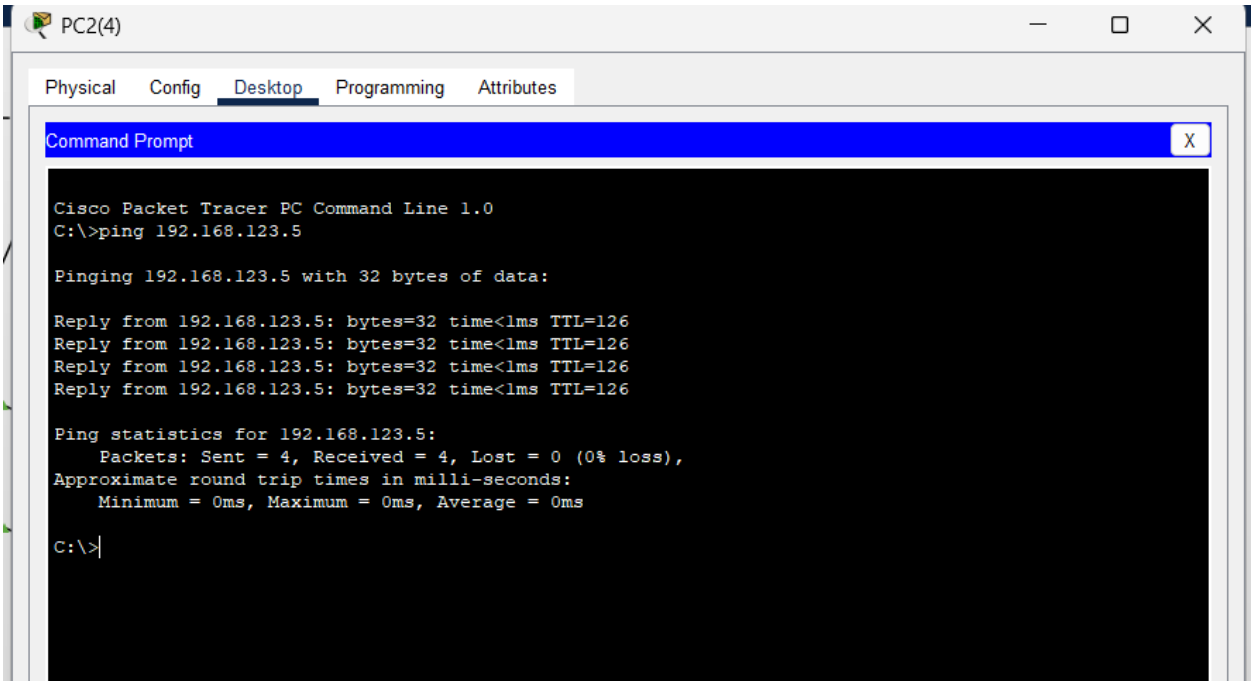
Floor 1 to 2:



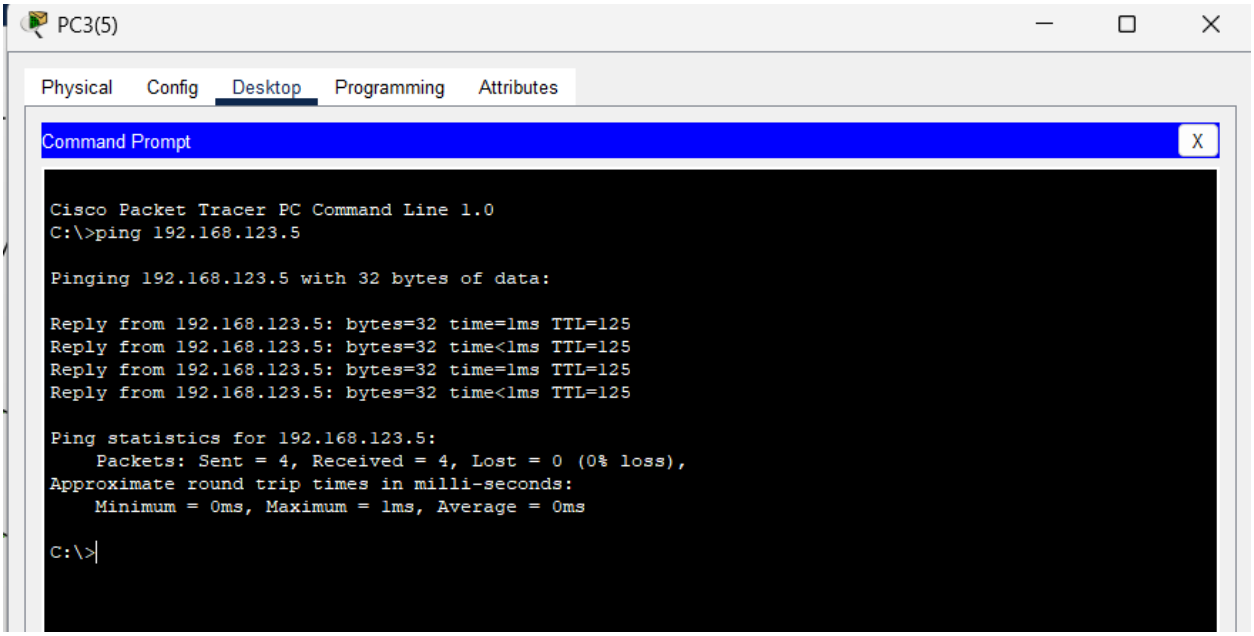
Floor 1 to 3:



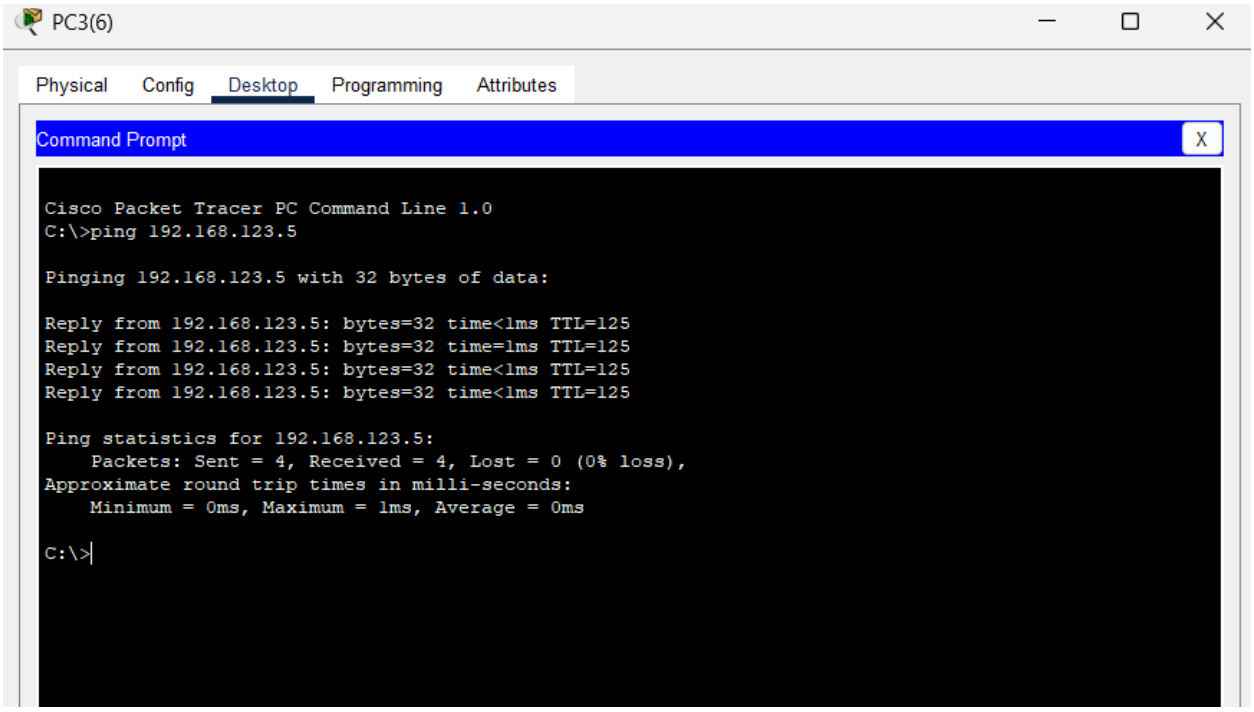
Floor 1 to 4:



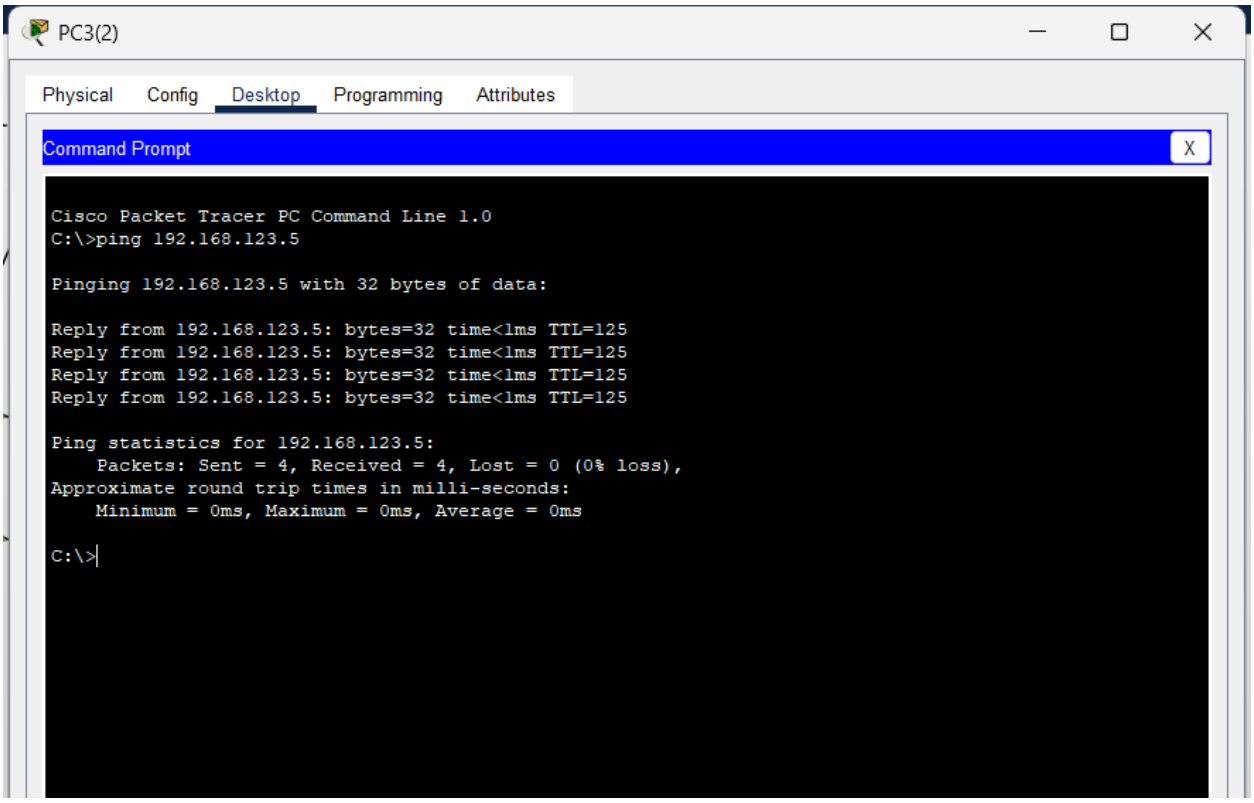
Floor 1 to 5:



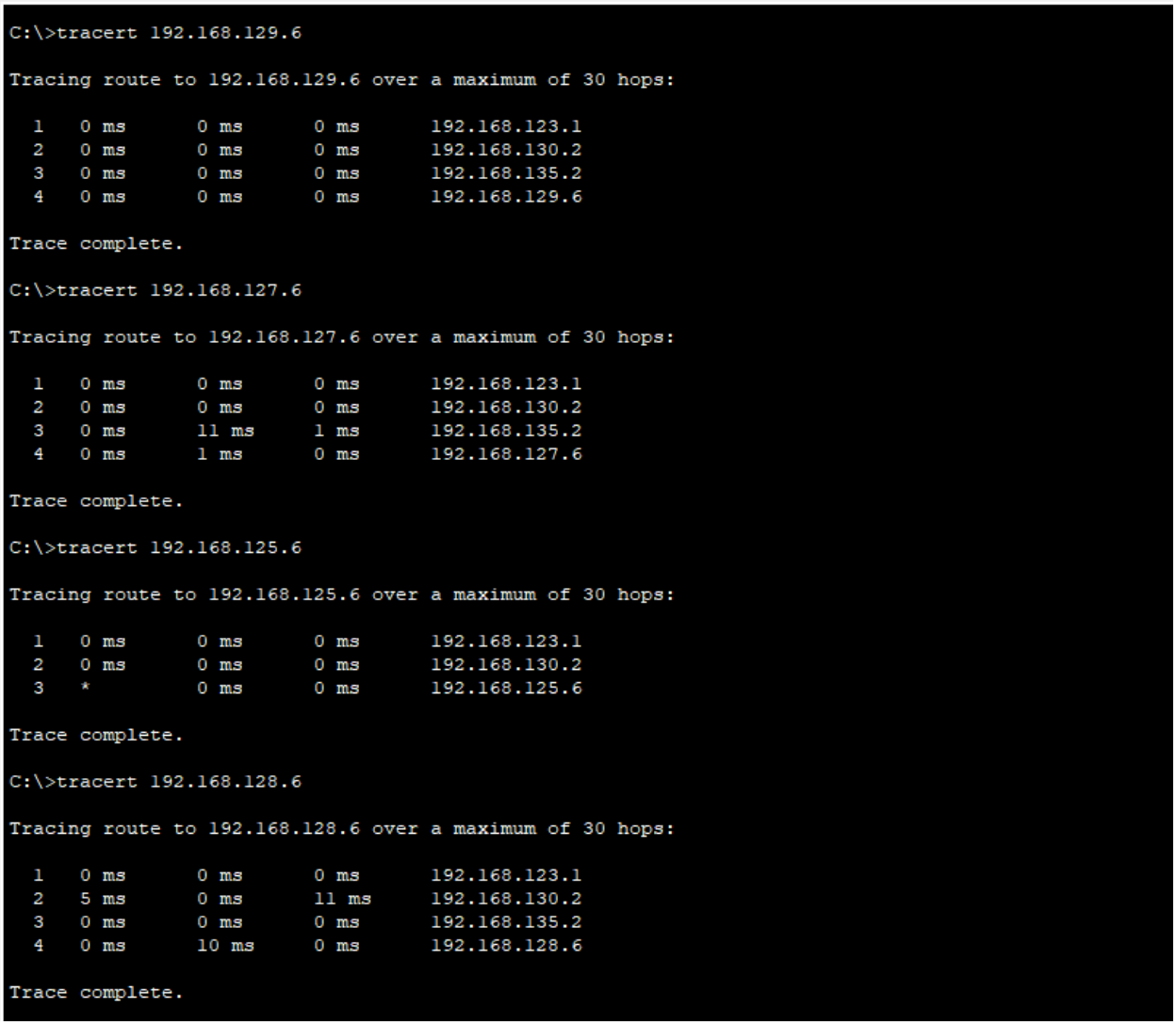
Floor 1 to 6:



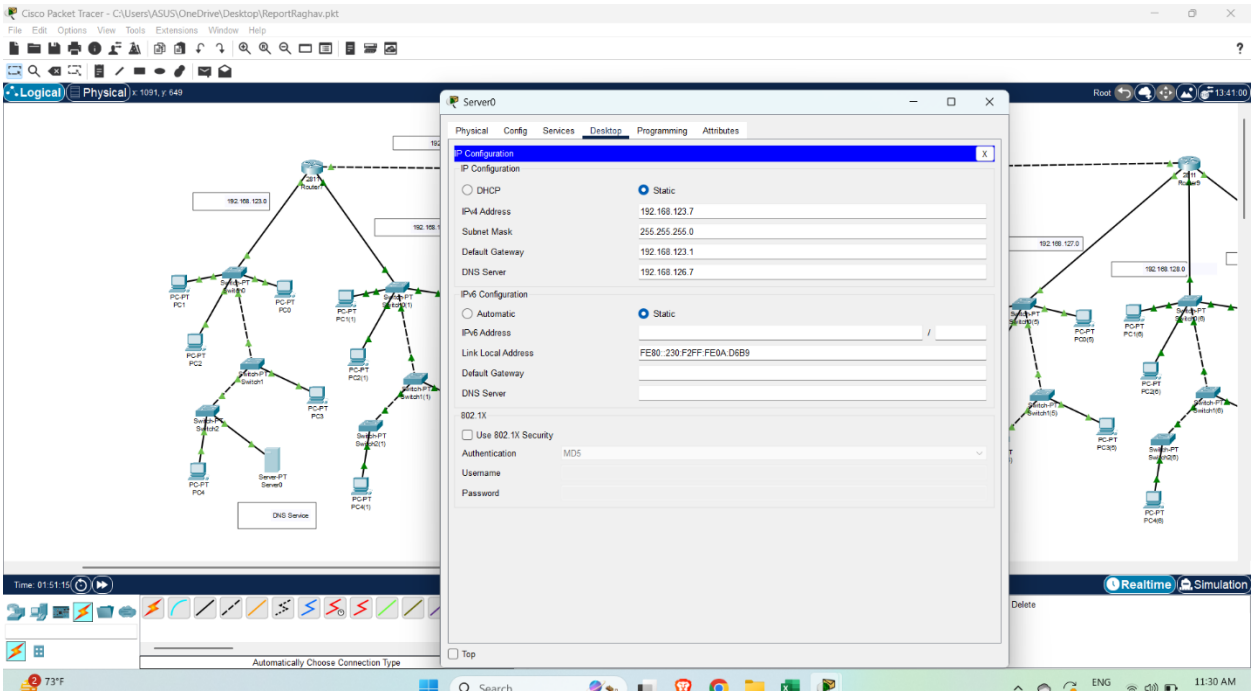
Floor 1 to 7:

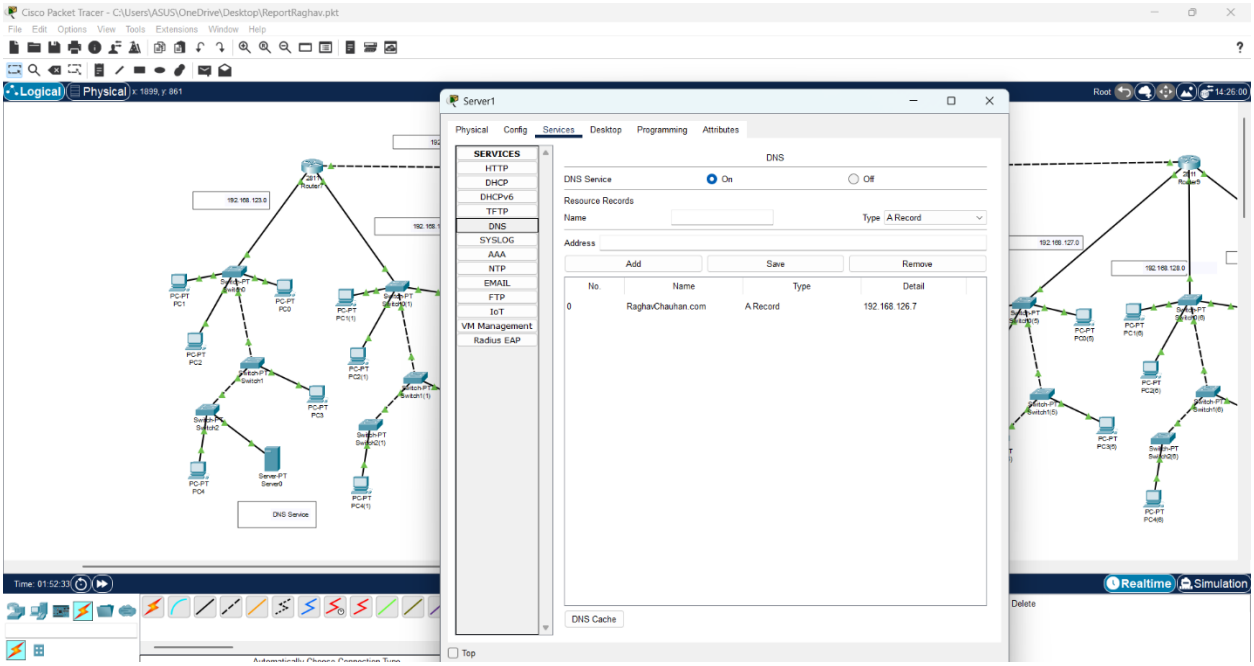

PC3(2)
Physical
Config
Desktop
Programming
Attributes
Command Prompt
X
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.123.5
Pinging 192.168.123.5 with 32 bytes of data:
Reply from 192.168.123.5: bytes=32 time<1ms TTL=125
Reply from 192.168.123.5: bytes=32 time<1ms TTL=125
Reply from 192.168.123.5: bytes=32 time<1ms TTL=125
Reply from 192.168.123.5: bytes=32 time<1ms TTL=125
Ping statistics for 192.168.123.5:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\>

Use of Tracert command on floor 1's pc to floor 7's pc to see flow of data to trace the route.

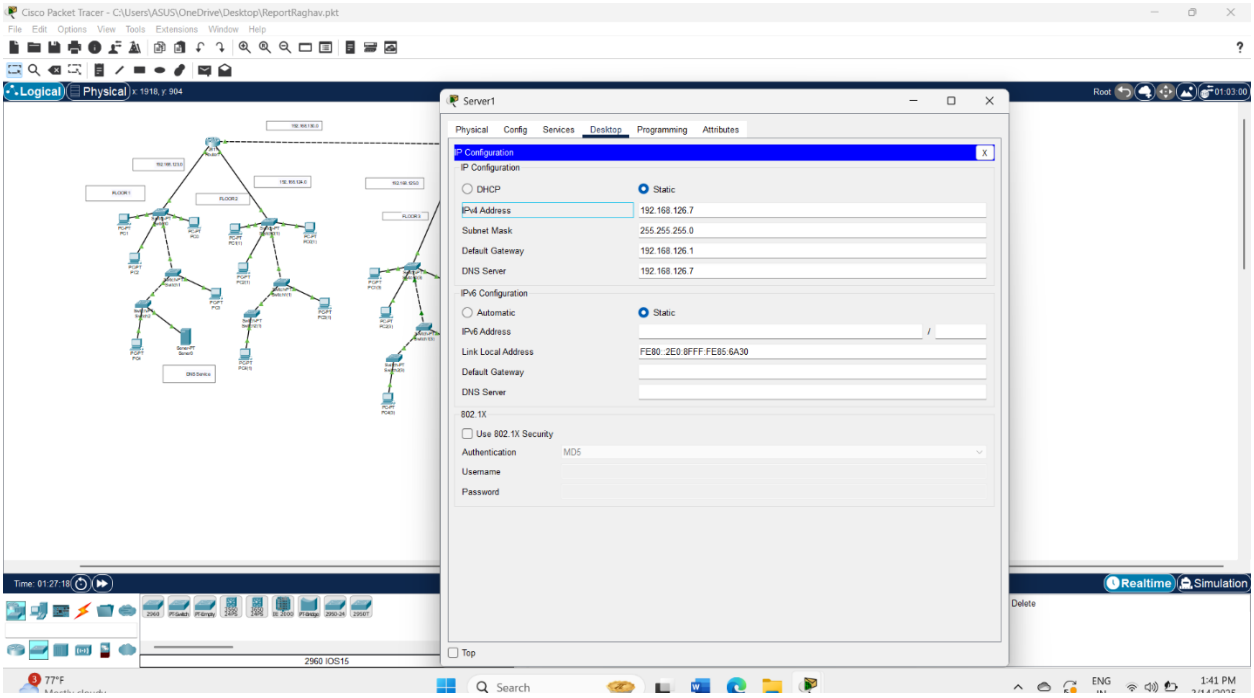


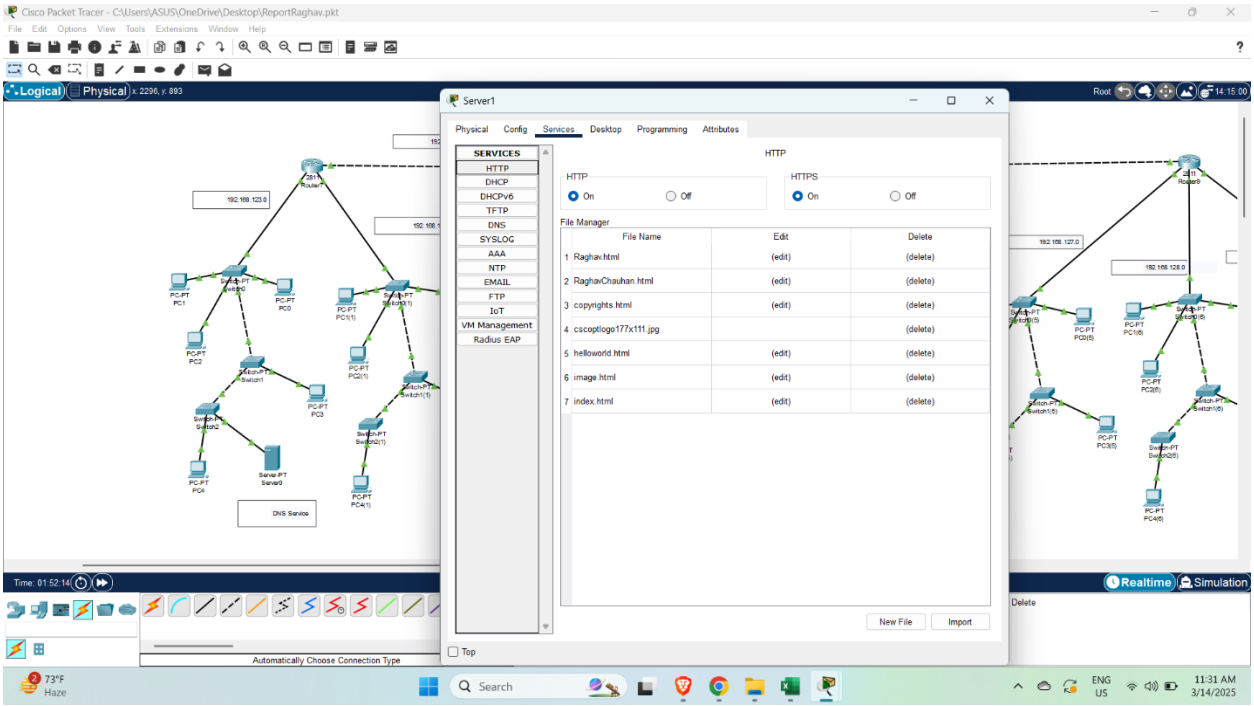
DNS Server With IP:



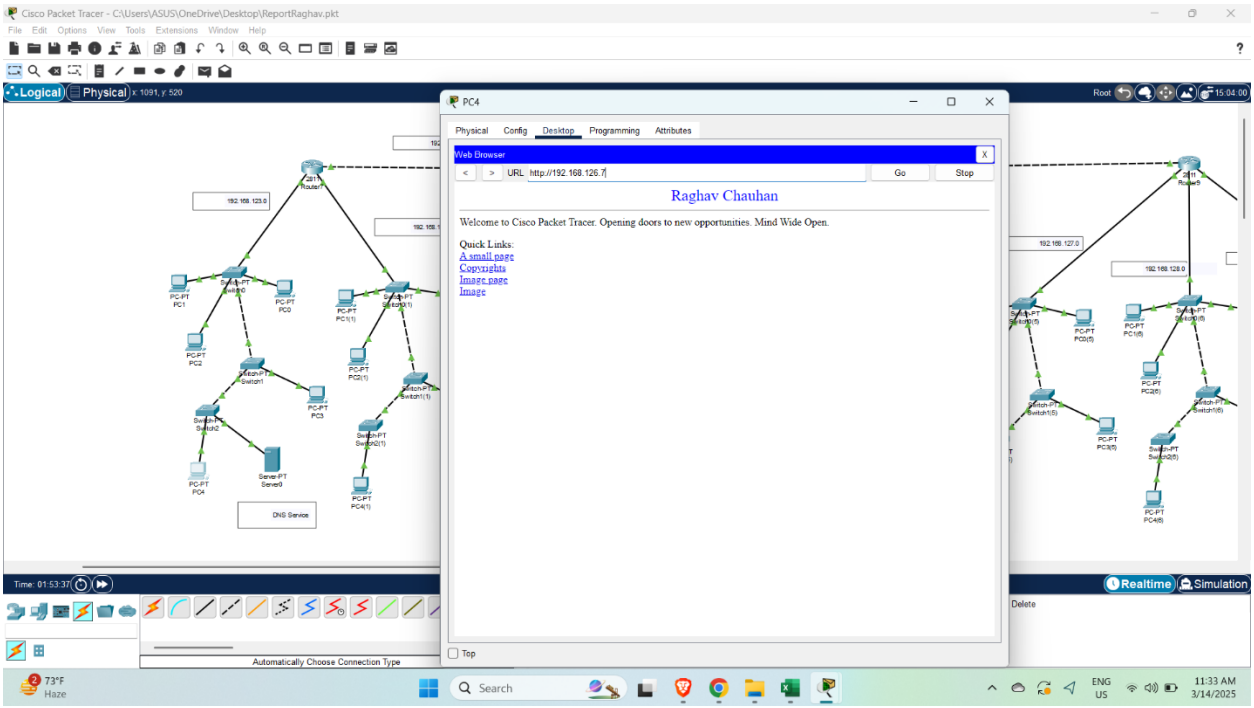


HTTP Server With IP:

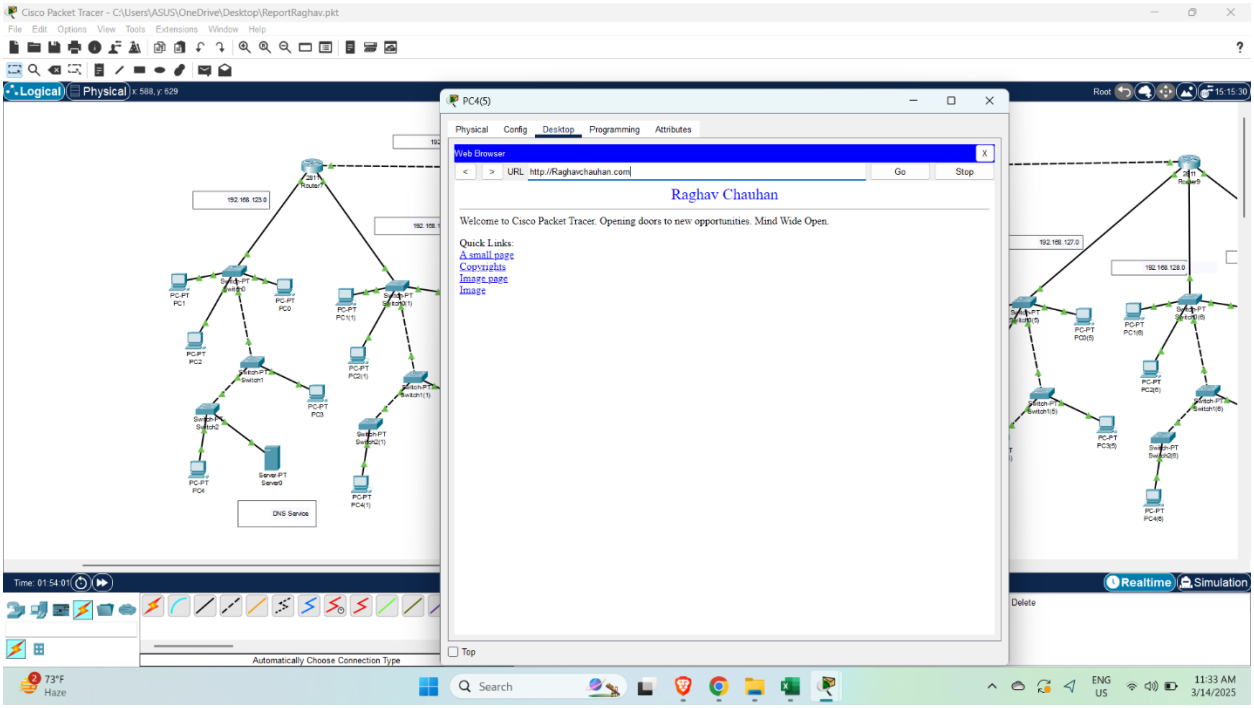




Service Verification of DNS Server with IP:



Service Verification of DNS Server with Domain:



Conclusion:

In this networking lab, we successfully designed and configured a multi-floor network setup for a mid-sized enterprise. By using a combination of star and tree topologies, along with efficient IP addressing and routing strategies, we ensured smooth communication between all floors. Testing with ping and tracert commands confirmed seamless connectivity across the network. This project gave me hands-on experience in real-world networking concepts, reinforcing my understanding of routers, switches, and static routing. Overall, it was a valuable learning experience that enhanced my practical skills in network design and troubleshooting.