

BIRZEIT UNIVERSITY

Faculty of Engineering & Technology
Department of Electrical & Computer Engineering
ENCS3320-Computer Networks
Project #2

Prepared by:

Saja Asfour 1210737
Rouand Bawatneh 1211403
Shahd Shreteh 1210444

Instructor:

Dr. Abd Alkarim Awad , Dr. Mohammad Jubran

Section:

Saja &rouand sec 3
Shahd sec2

Abstract:

This project consists of five parts. part0 is IP subnetting and assignment which we find the subnet mask and range of IP subnetting for all subnets in Figure and by using the table below. Part 1 is Building the topology on the packet tracer. Part 2 is to Configuring servers and make an html file and put it into index.html in the http server. Part 3 we open shortest path protocol (OSPF) on all routers given that the process id is 10 and take snapshot for the result. Part 4 which is the last part we make a Test connectivity, routes, website, and take snapshot for a result.

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Part0: IP subnetting and assignment

1. You are required to assign the IP addresses of the routers and end devices with respect to **one of the student IDs** in your group as follows:
 - o Assume the ID is 1212031 then the IP is 200.20.10.0/25.
 - o You need to create the required number of subnets using this IP based on the number of devices in **Table 2** and the topology given in **Figure 1**.
2. Note that any solution without including the ID as above **will not be accepted**.
3. Include a table in your report with the following information for all subnets (edge and core).

We use Saja Asfour ID which is 1210737 then the IP is 200.07.10.0/25

1.

200.07.10.00000000 → from this we can have 4 networks.

→ 200.07.10.00000000 → 200.07.10.0/27 here we have 30 users (for company A).

→ 200.07.10.00100000 → 200.07.10.32/27 here we have 30 users (for company B).

→ 200.07.10.01000000 from this we can have 2 more subnets which is:

→ 200.07.10.01000000 → 200.07.10.64/28 here we have 14 users (for company C office1).

→ 200.07.10.01010000 → 200.07.10.80/28 here we have 14 users (for company C office2).

→ 200.07.10.01100000 from this we can have 4 more subnets which is:

→ 200.07.10.01100000 → 200.07.10.96/29 here we have 6 users (for Data Center).

→ 200.07.10.01101000 → 200.07.10.104/29 here we have 6 users (for link R1-R2).

→ 200.07.10.01110000 → 200.07.10.112/29 here we have 6 users (for link R2-R3).

→ 200.07.10.01111000 from this we can have 2 more subnet which is:

→ 200.07.10.01111000 → 200.07.10.120/30 here we have 2 users (for link R3-R4).

→ 200.07.10.01111100 → 200.07.10.124/30 here we have 2 users (for link R4-R1).

3.

| Subnet | Subnet Mask | Network IP | Broadcast IP | First IP | Last IP | Maximum number of IPs in this subnet |
|--------------------------------------|-----------------|---------------|---------------|---------------|---------------|--------------------------------------|
| 200.07.10.0/27 Company A | 255.255.255.224 | 200.07.10.0 | 200.07.10.31 | 200.07.10.1 | 200.07.10.30 | 30 |
| 200.07.10.32/27 Company B | 255.255.255.224 | 200.07.10.32 | 200.07.10.63 | 200.07.10.33 | 200.07.10.62 | 30 |
| 200.07.10.64/28 Company C office1 | 255.255.255.240 | 200.07.10.64 | 200.07.10.79 | 200.07.10.65 | 200.07.10.78 | 14 |
| 200.07.10.80/28 Company C office2 | 255.255.255.240 | 200.07.10.80 | 200.07.10.95 | 200.07.10.81 | 200.07.10.94 | 14 |
| 200.07.10.96/29 Data Center | 255.255.255.248 | 200.07.10.96 | 200.07.10.103 | 200.07.10.97 | 200.07.10.102 | 6 |
| 200.07.10.104/29 R1-R2 | 255.255.255.248 | 200.07.10.104 | 200.07.10.111 | 200.07.10.105 | 200.07.10.110 | 6 |
| 200.07.10.112/29 R2-R3 | 255.255.255.248 | 200.07.10.112 | 200.07.10.119 | 200.07.10.113 | 200.07.10.118 | 6 |

| | | | | | | |
|---------------------------|-----------------|---------------|---------------|---------------|---------------|---|
| 200.07.10.120/30 R3-R4 | 255.255.255.252 | 200.07.10.120 | 200.07.10.123 | 200.07.10.121 | 200.07.10.122 | 2 |
| 200.07.10.124/30 R4-R1 | 255.255.255.252 | 200.07.10.124 | 200.07.10.127 | 200.07.10.126 | 200.07.10.125 | 2 |

Part1: Building the topology

1. Build the topology given in **Figure 1** using packet tracer based on the IPs found in **Part0** and do the appropriate subnetting.
2. Configure the interfaces of all routers as instructed in the figure.
3. End devices (i.e. PCs and Servers) in the data center and companies networks are getting their IPs in a static manner based on the assigned network IPs.

1. Build the topology:

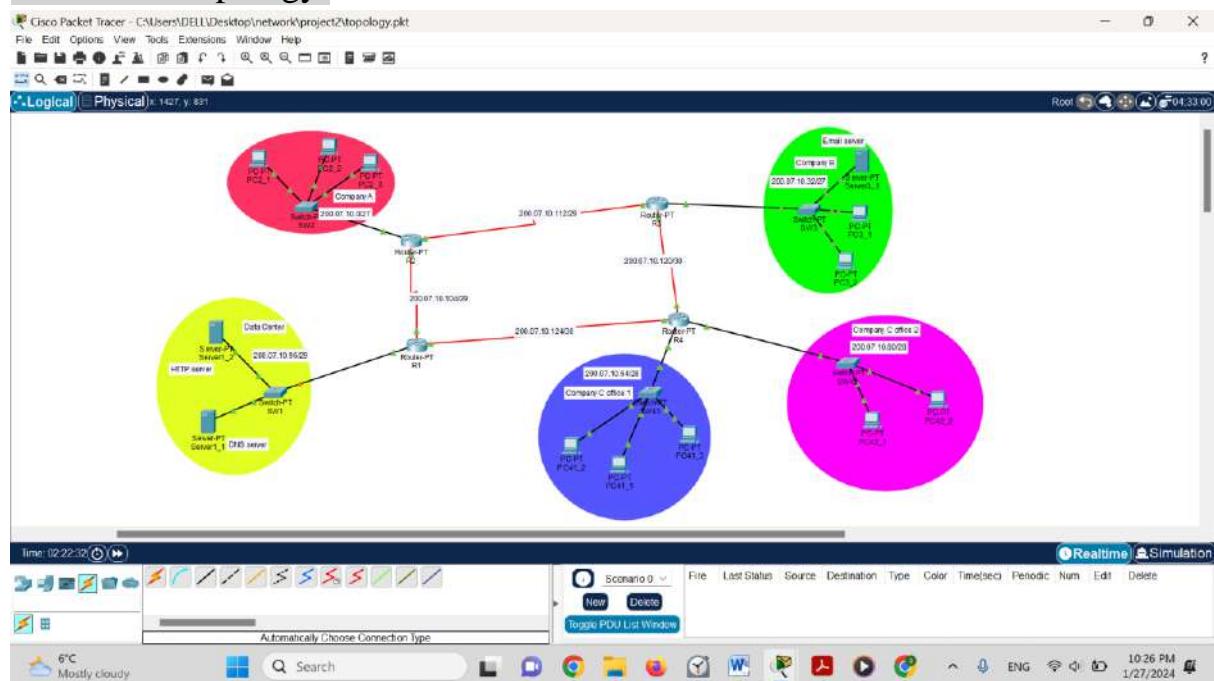


Figure 1 : topology built

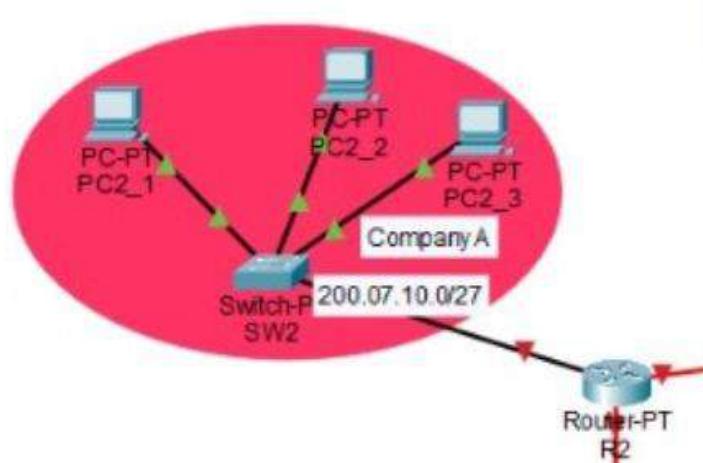


Figure 2 : subnet1

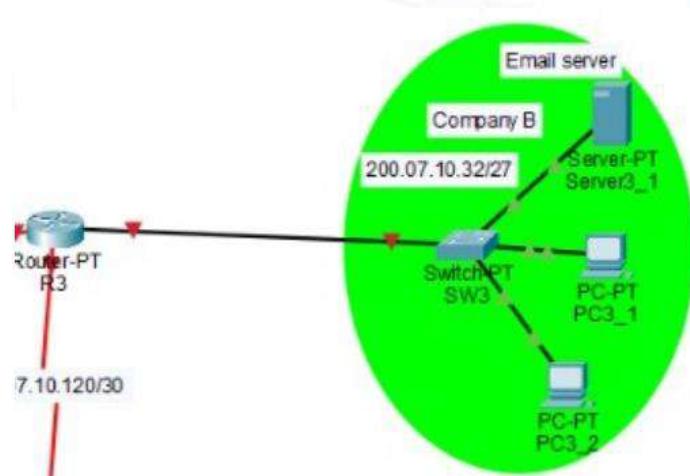


Figure 3 : subnet2

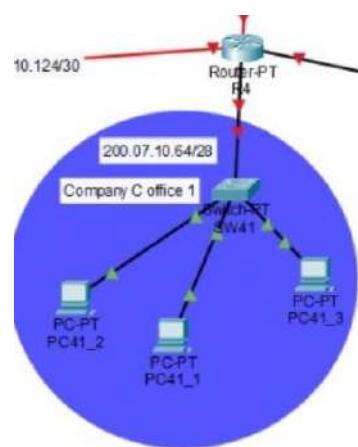


Figure 4 : subnet3

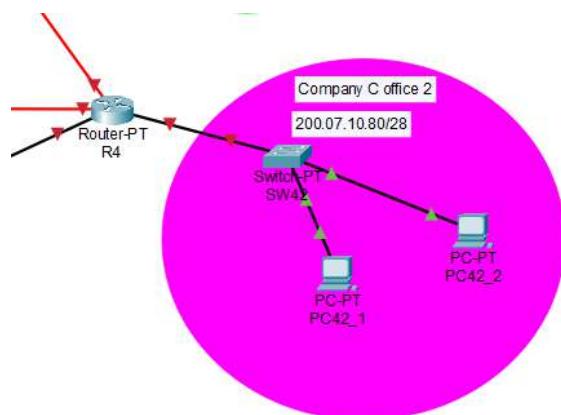


Figure 5 : subnet4

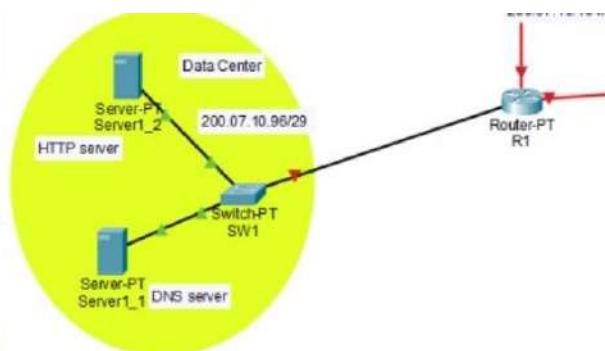


Figure 6 : subnet5

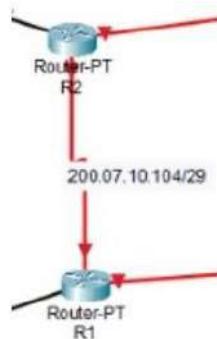


Figure 7 : subnet6



Figure 8 : subnet7

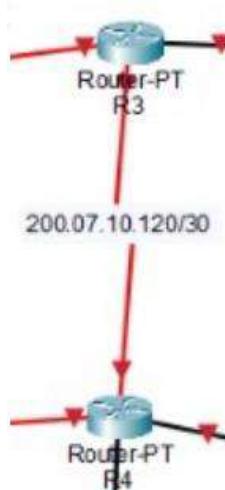


Figure 9 : subnet8



Figure 10 : subnet9

2. Configure the interfaces of all routers

Each port of the routers has been given an ip address according to the subnet it was connecting to

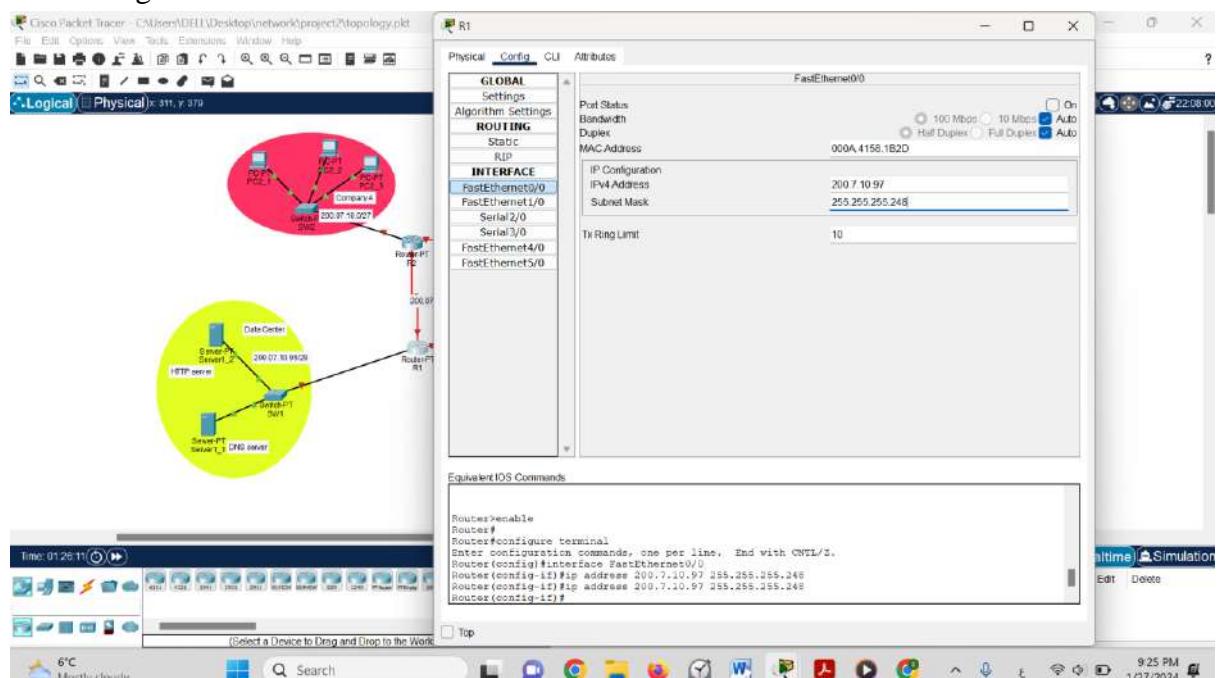


Figure 11: R1 fa

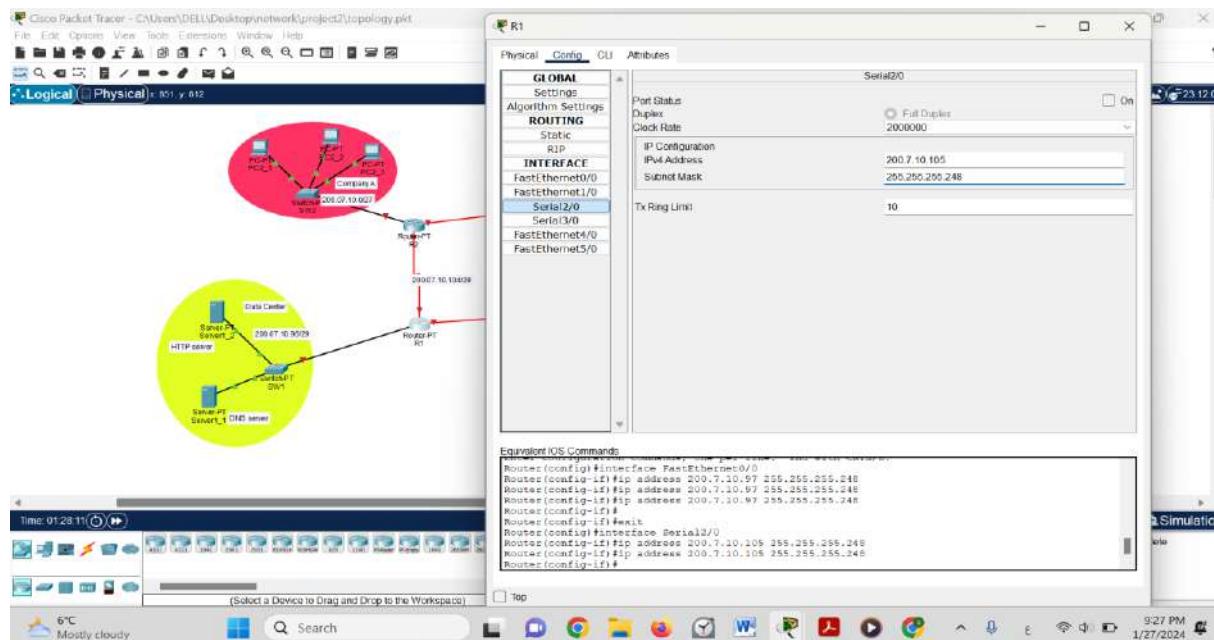


Figure 12: R1 Serial2

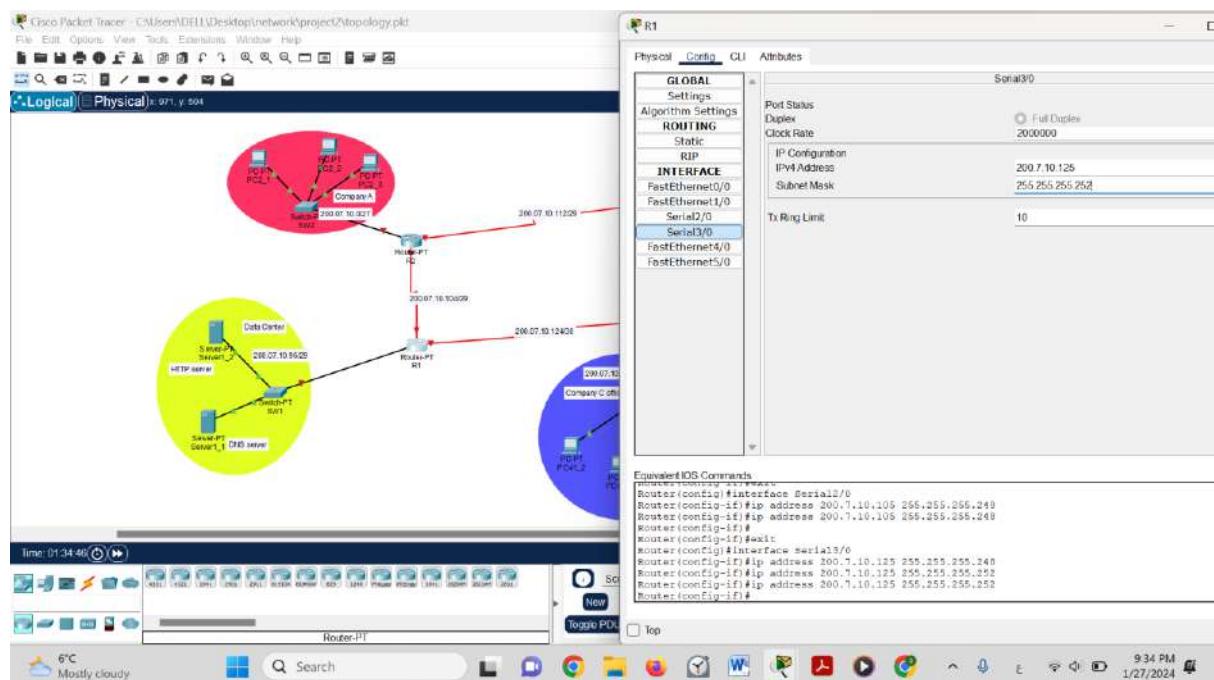


Figure 13: R1 Serial3

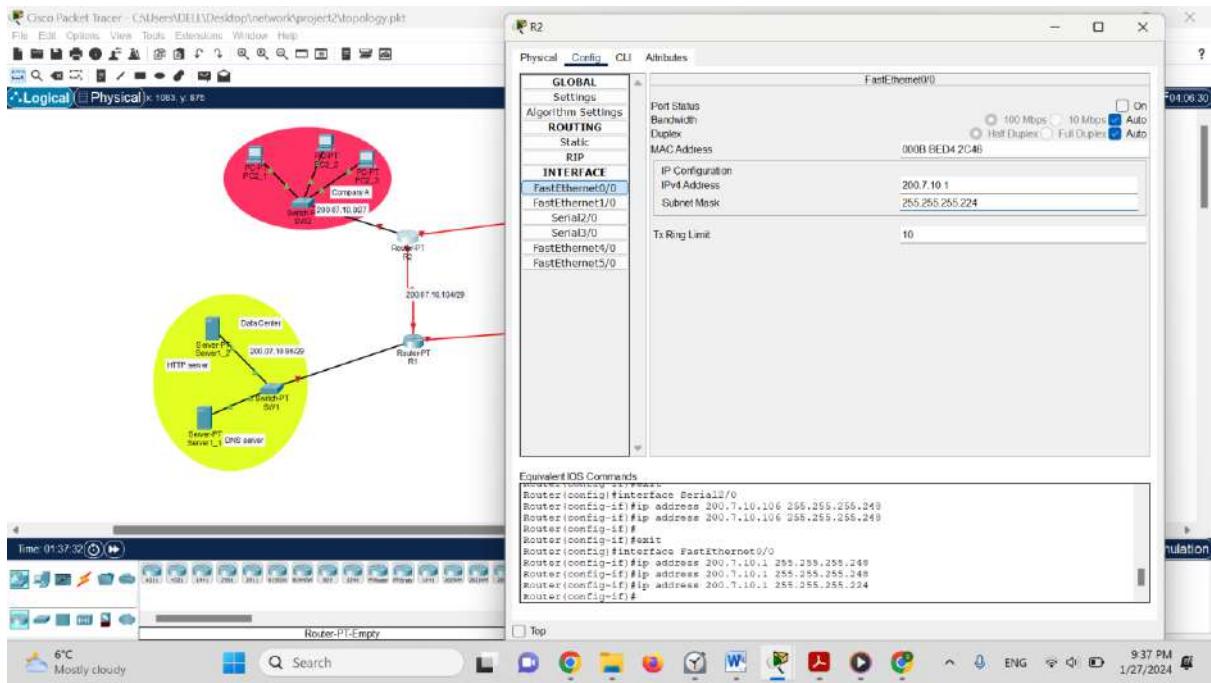


Figure 14: R2 fa

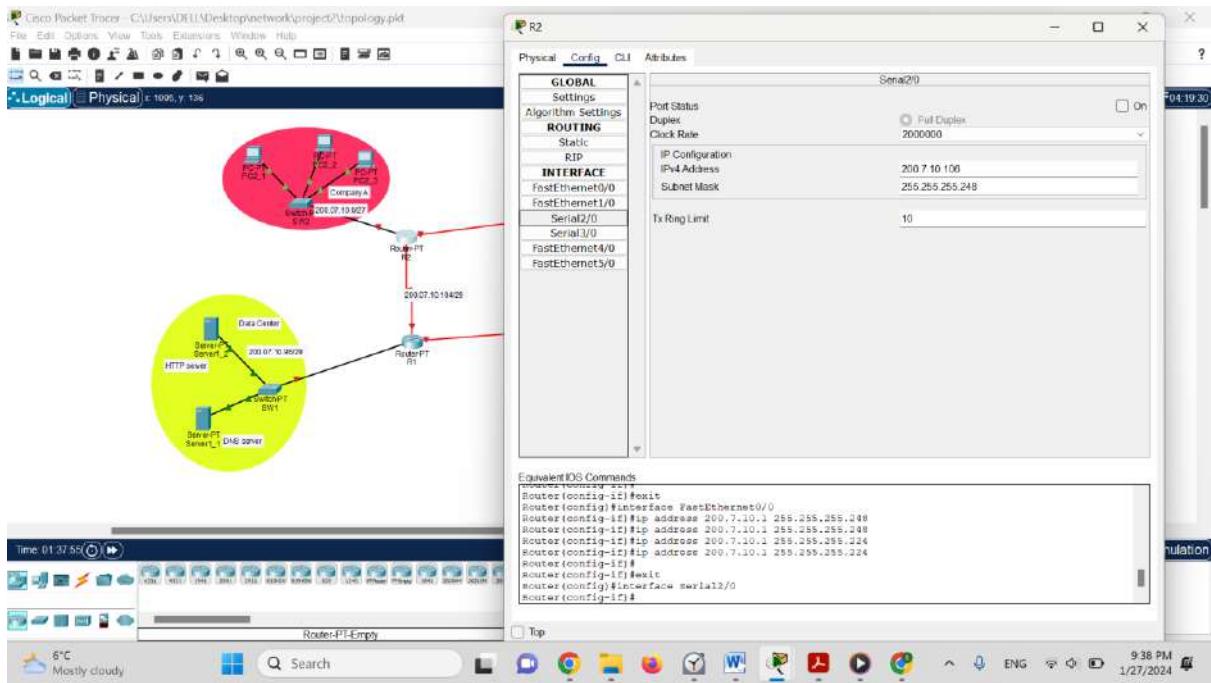


Figure 15: R2 serial

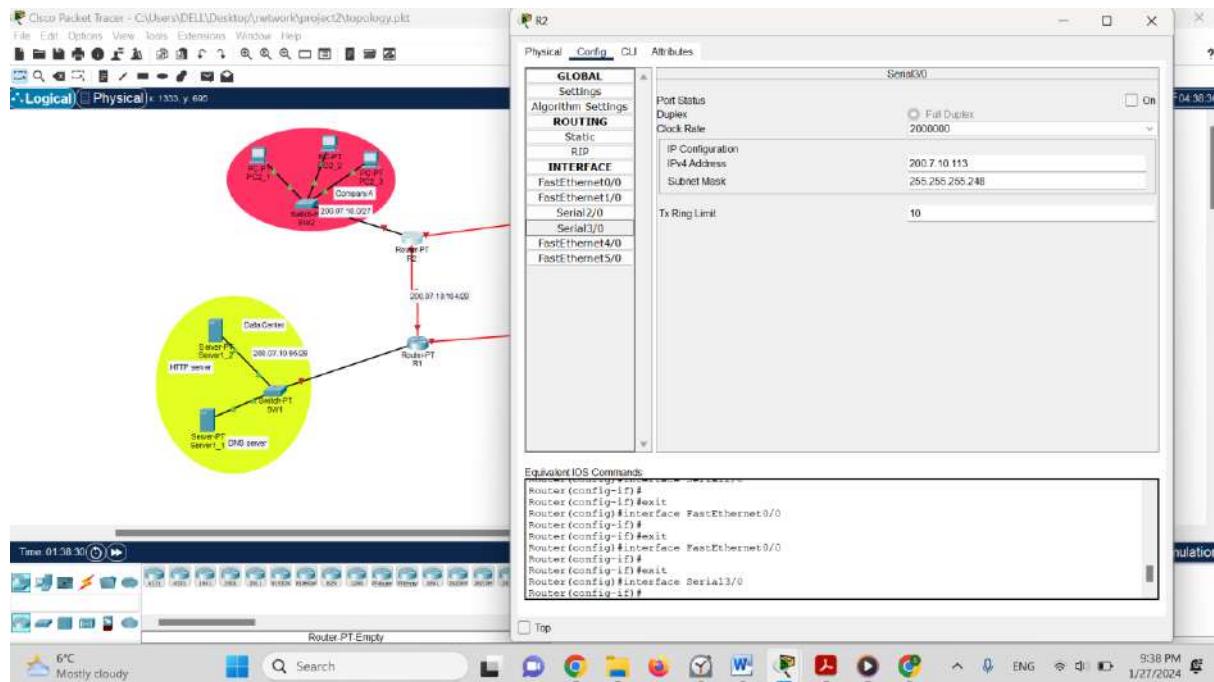


Figure 16: R2 serial

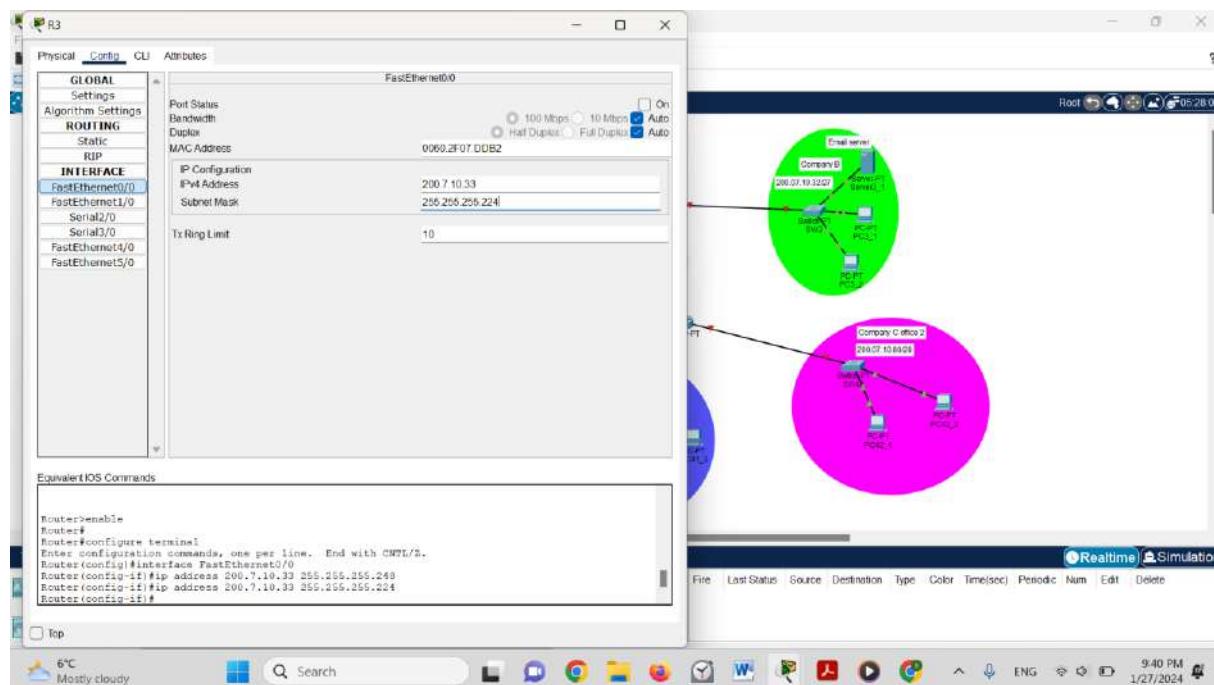


Figure 17: R3 fa

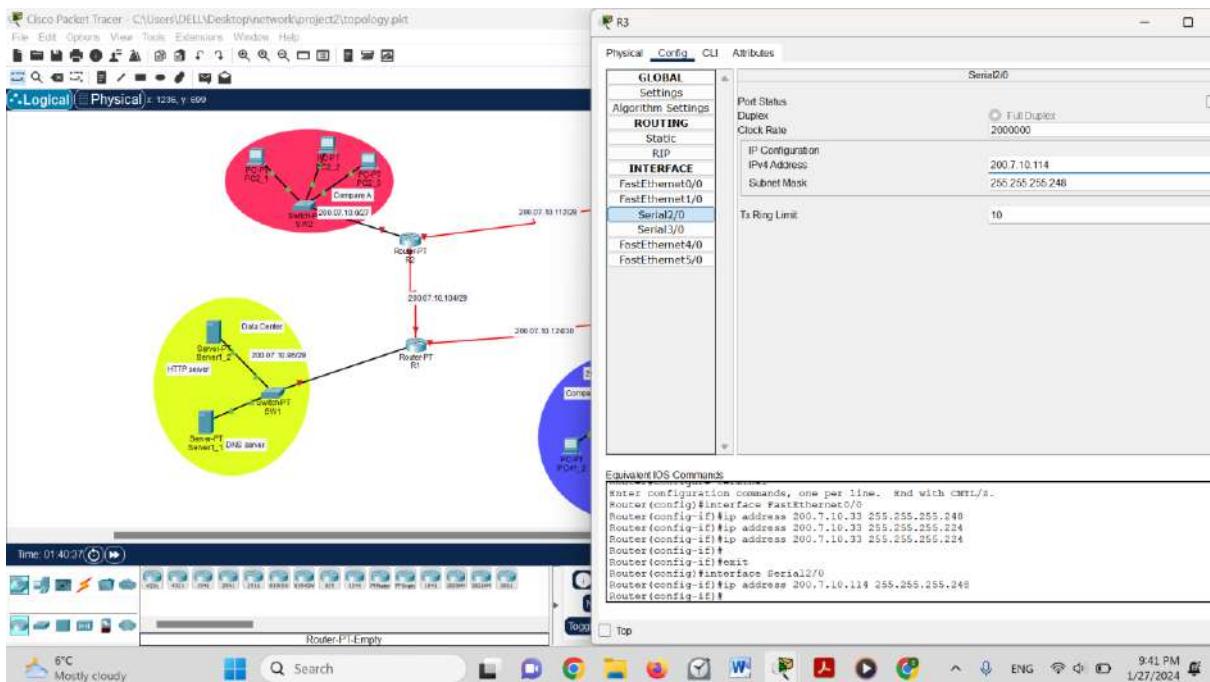


Figure 18: R3 serial2

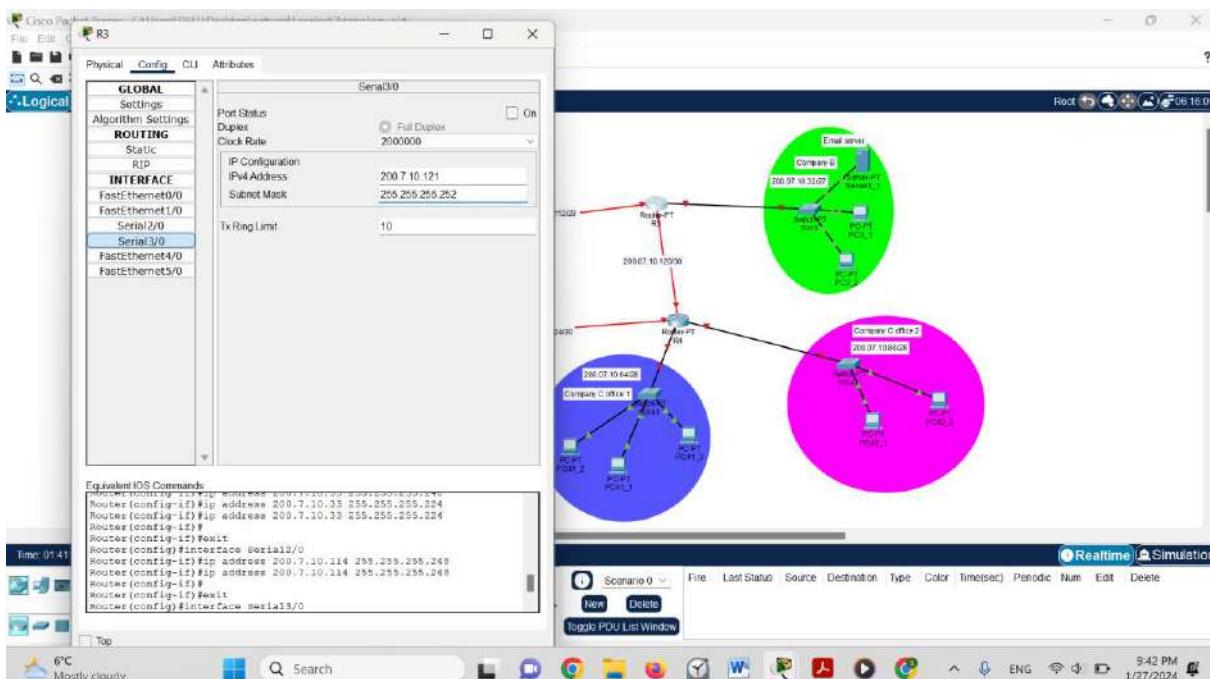


Figure 19: R3 serial3

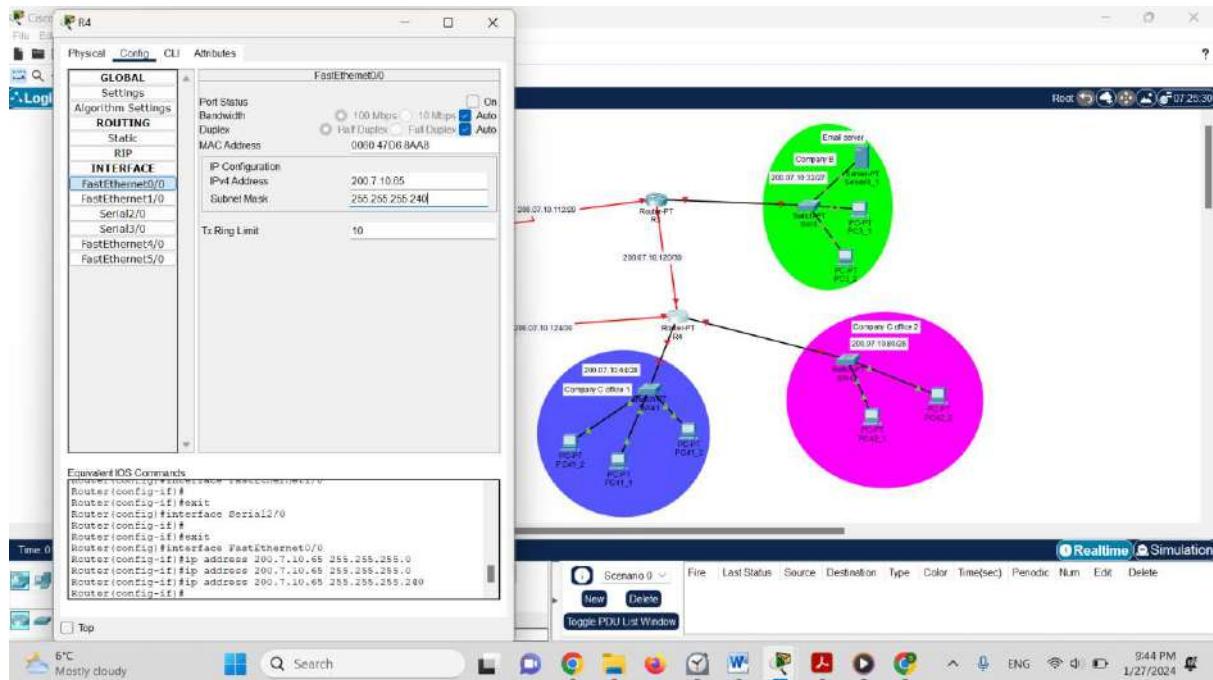


Figure 20: R4 fa0/0

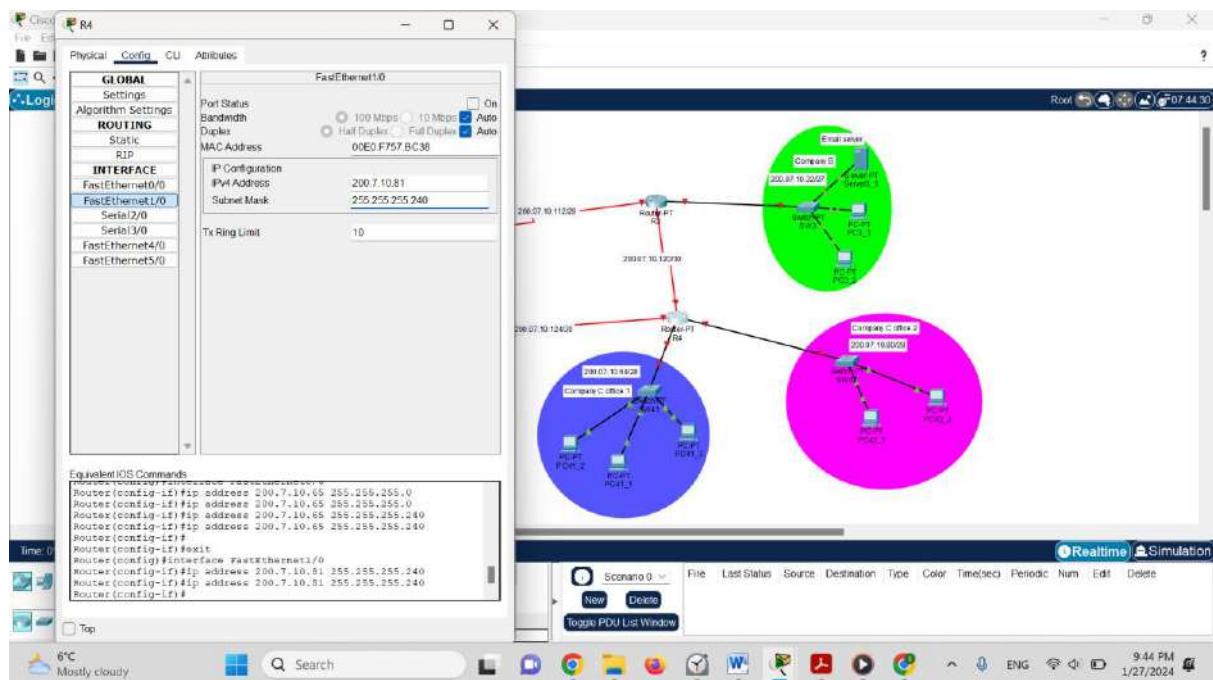


Figure 21: R4 fa1/0

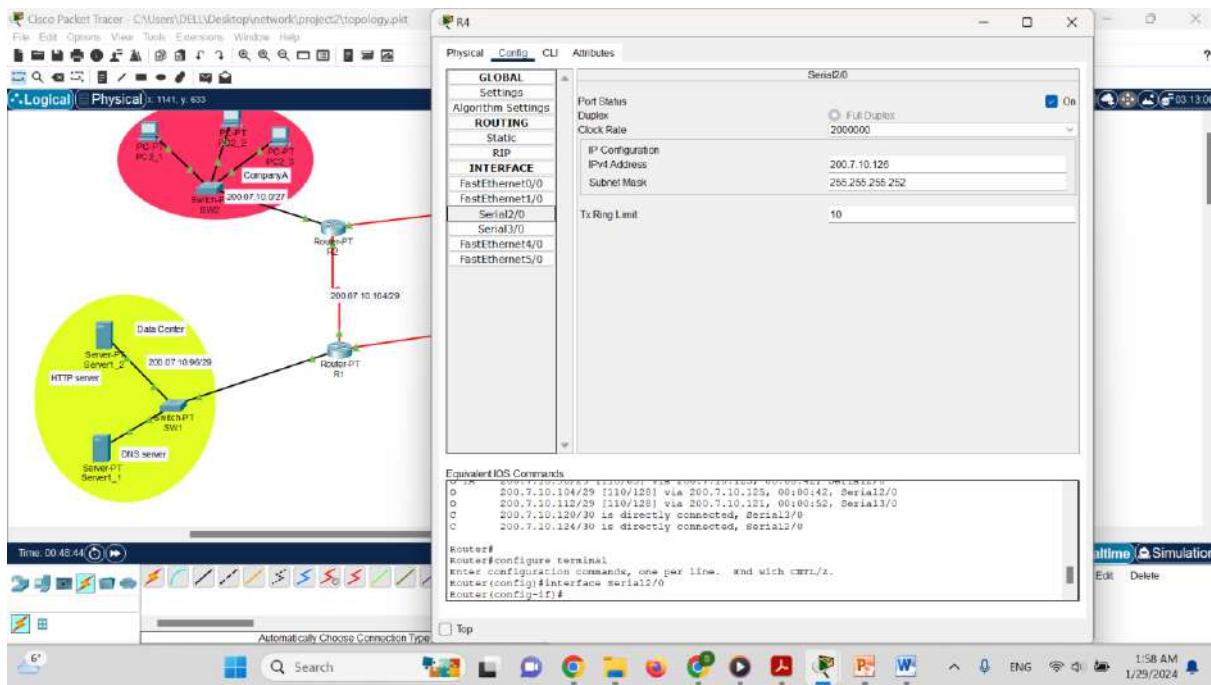


Figure 22: R4 serial2

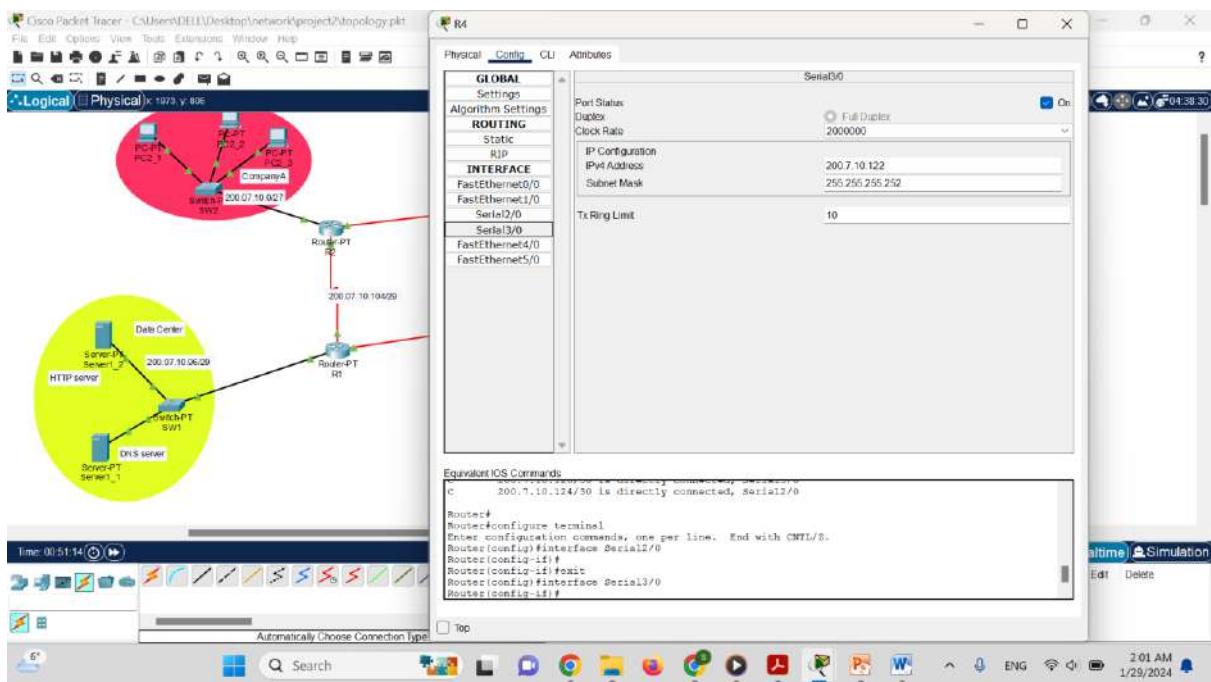


Figure 23: R4 serial3

3. End devices (i.e. PCs and Servers) in the data center and companies networks are getting their IPs in a static manner based on the assigned network IP.

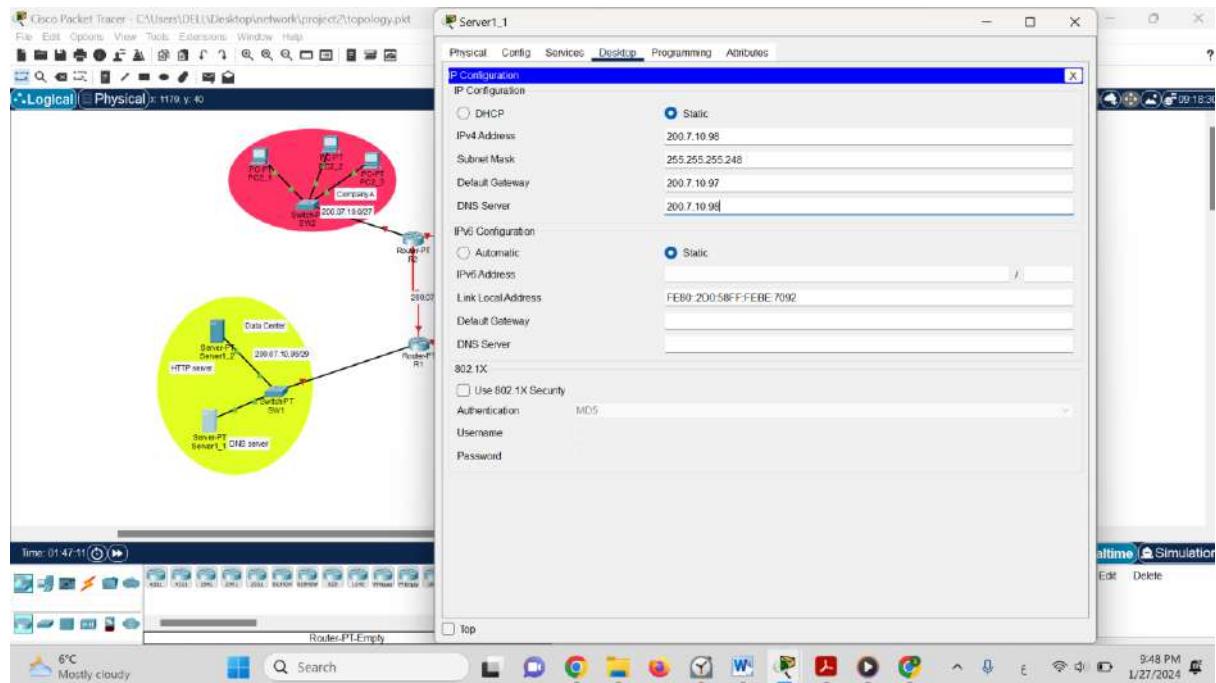


Figure 24: Server1_1 configuration

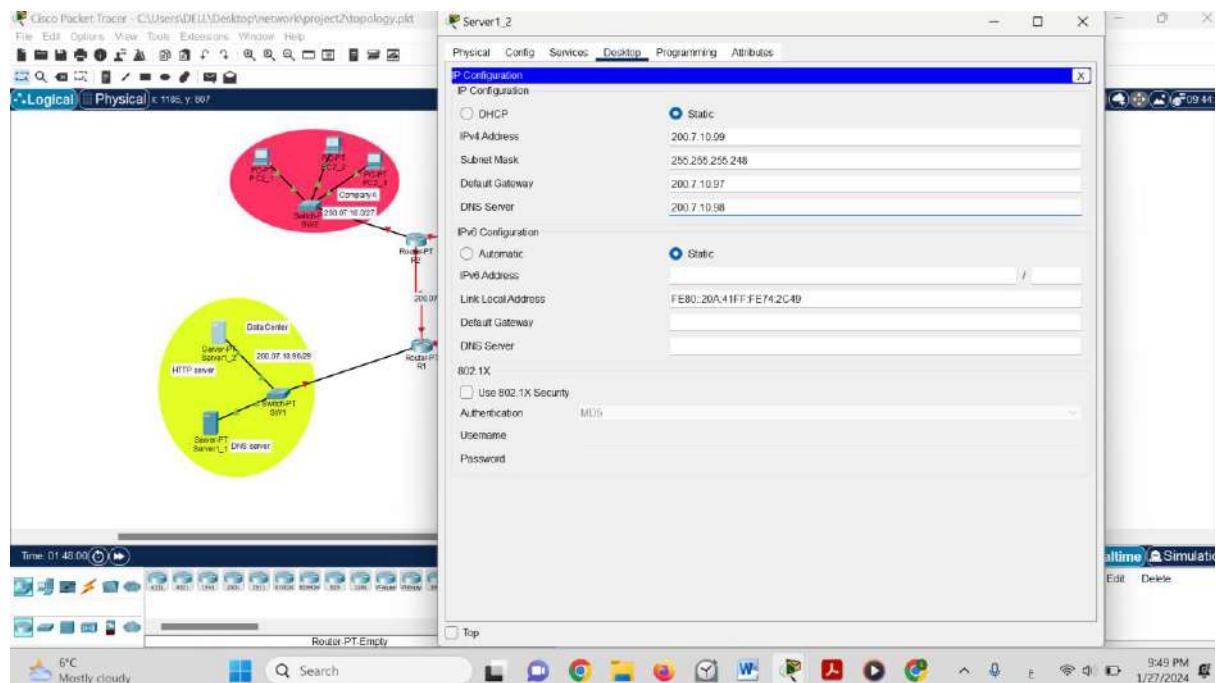


Figure 25: Server1_2 configuration

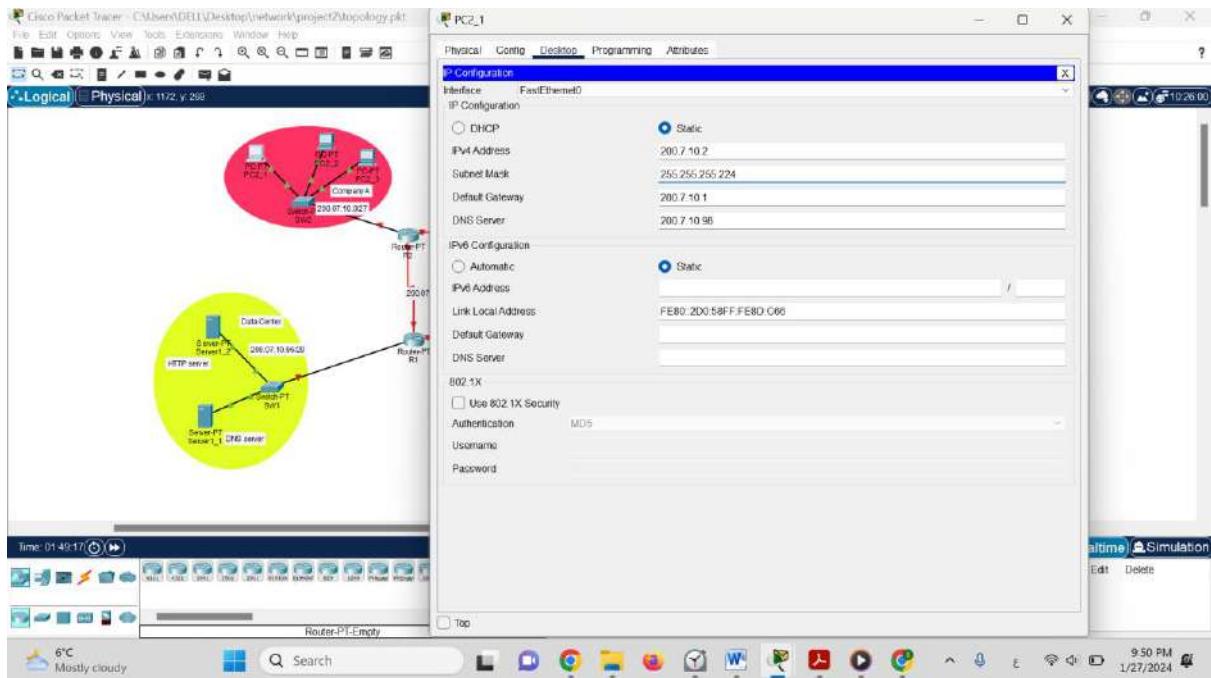


Figure 26: PC2_1 configuration

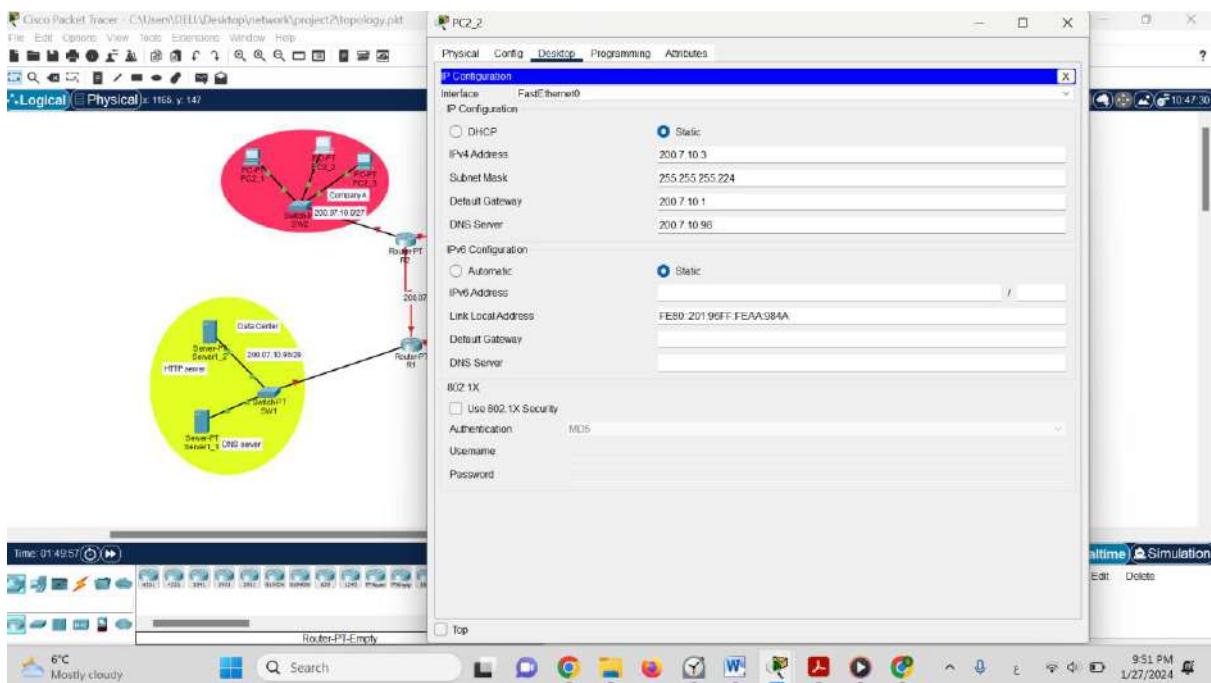


Figure 27: PC2_2 configuration

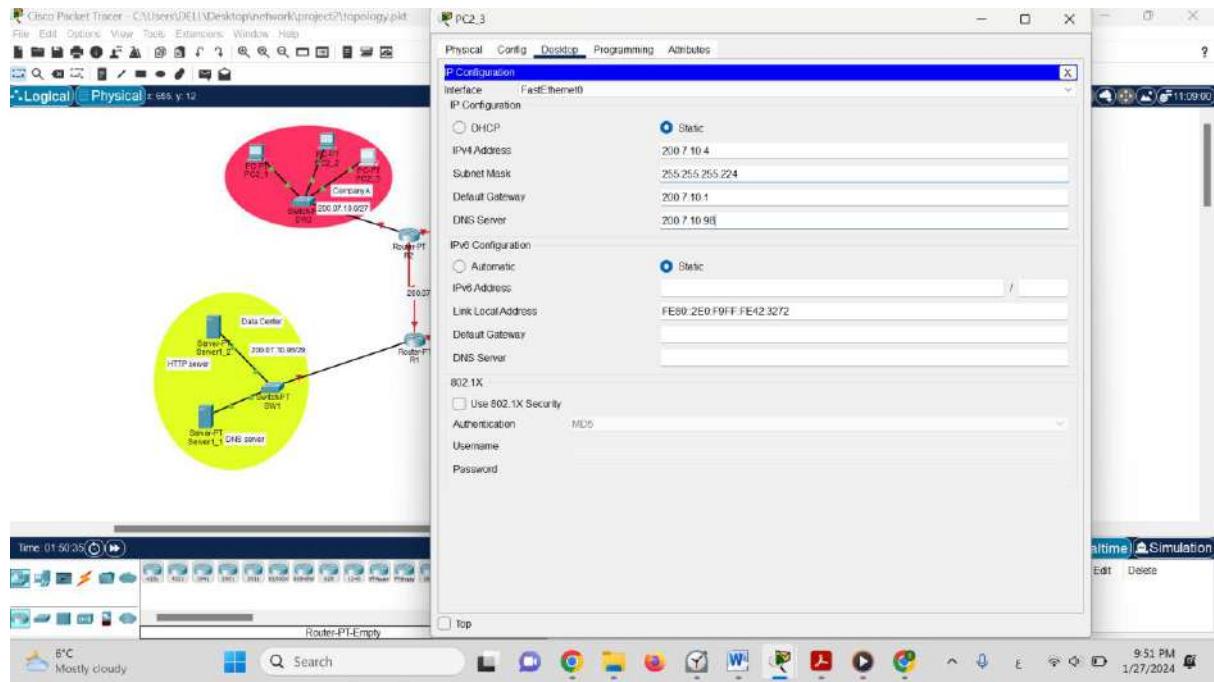


Figure 28: PC2_3 configuration

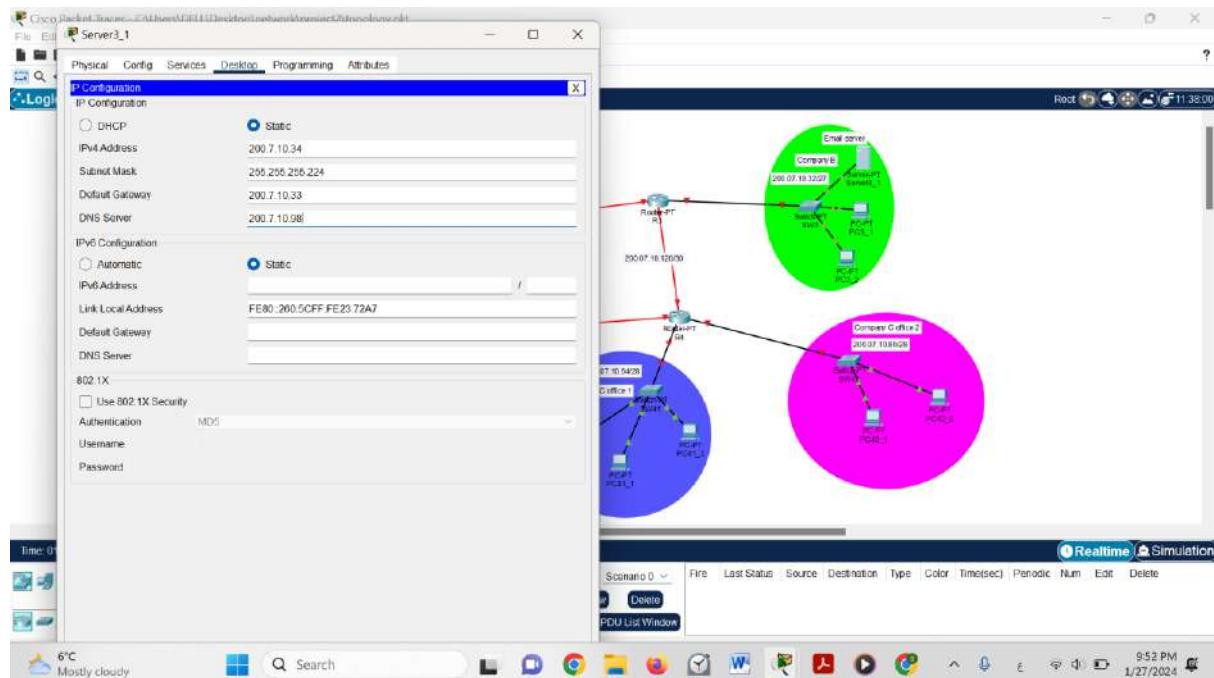


Figure 29: server3_1 configuration

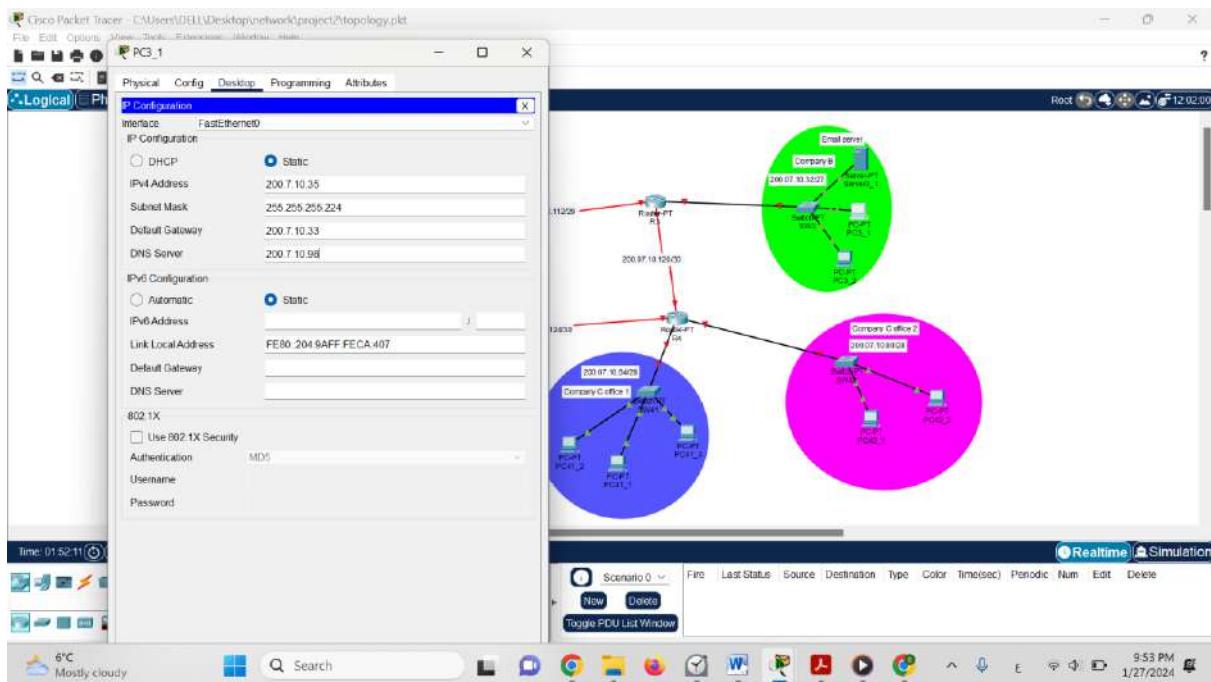


Figure 30: PC3_1 configuration

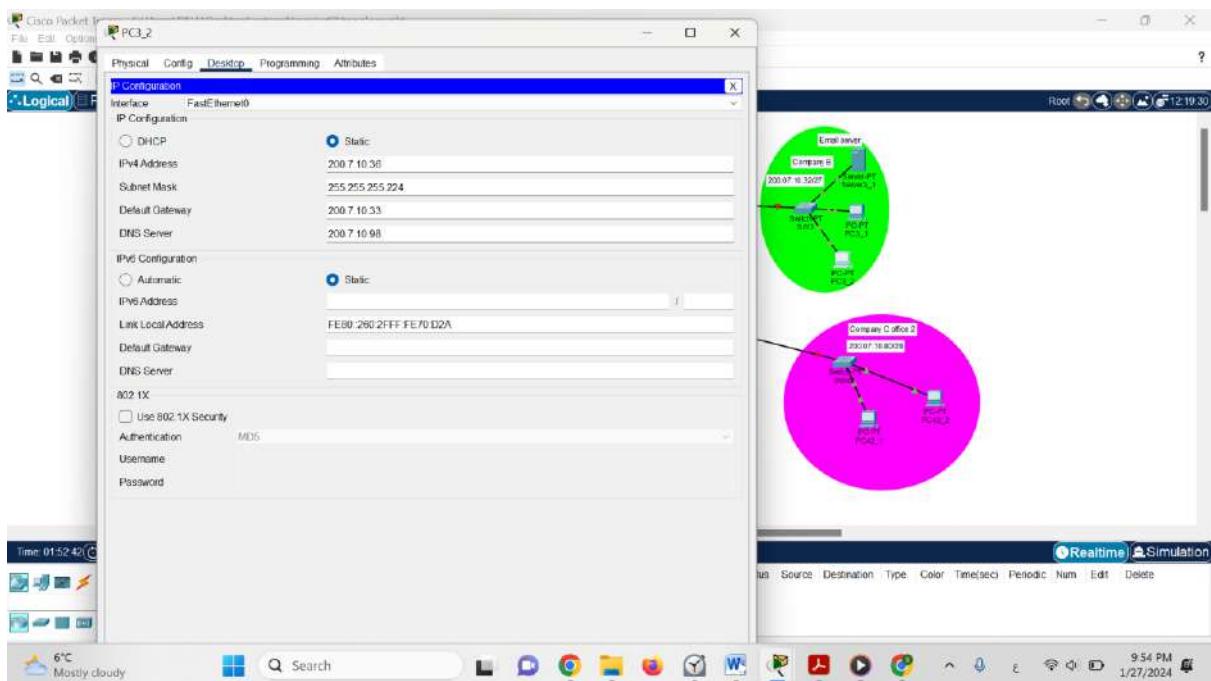


Figure 31: PC3_2 configuration

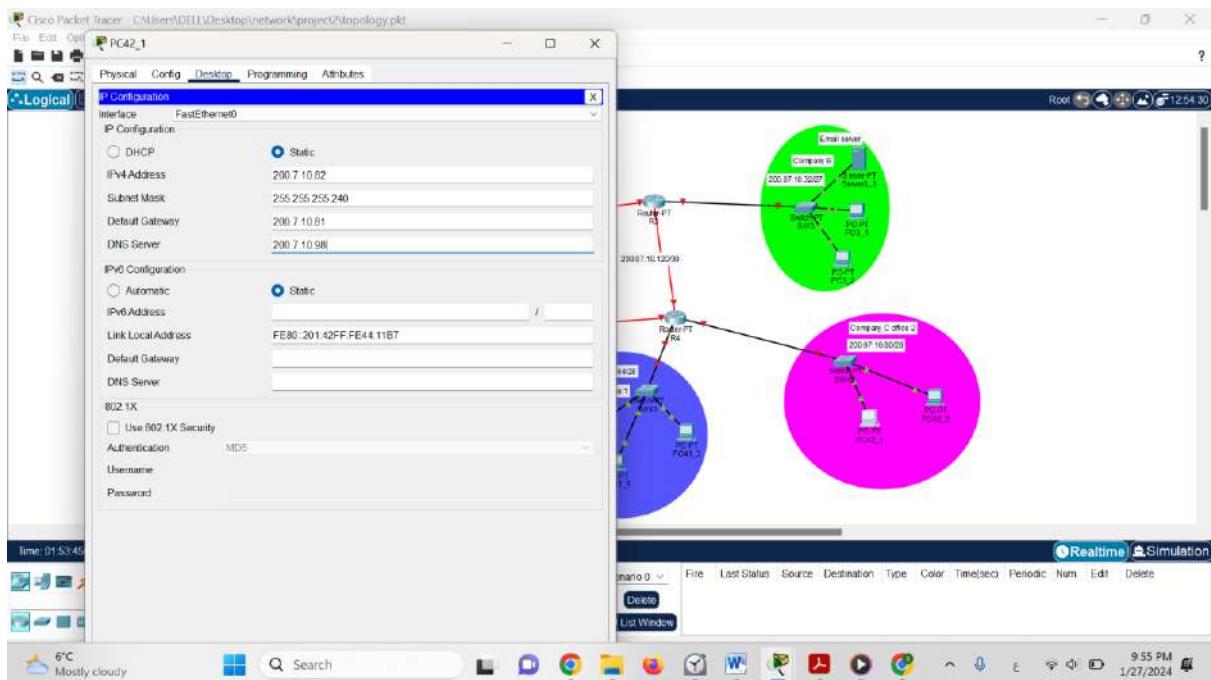


Figure 32: PC42_1 configuration

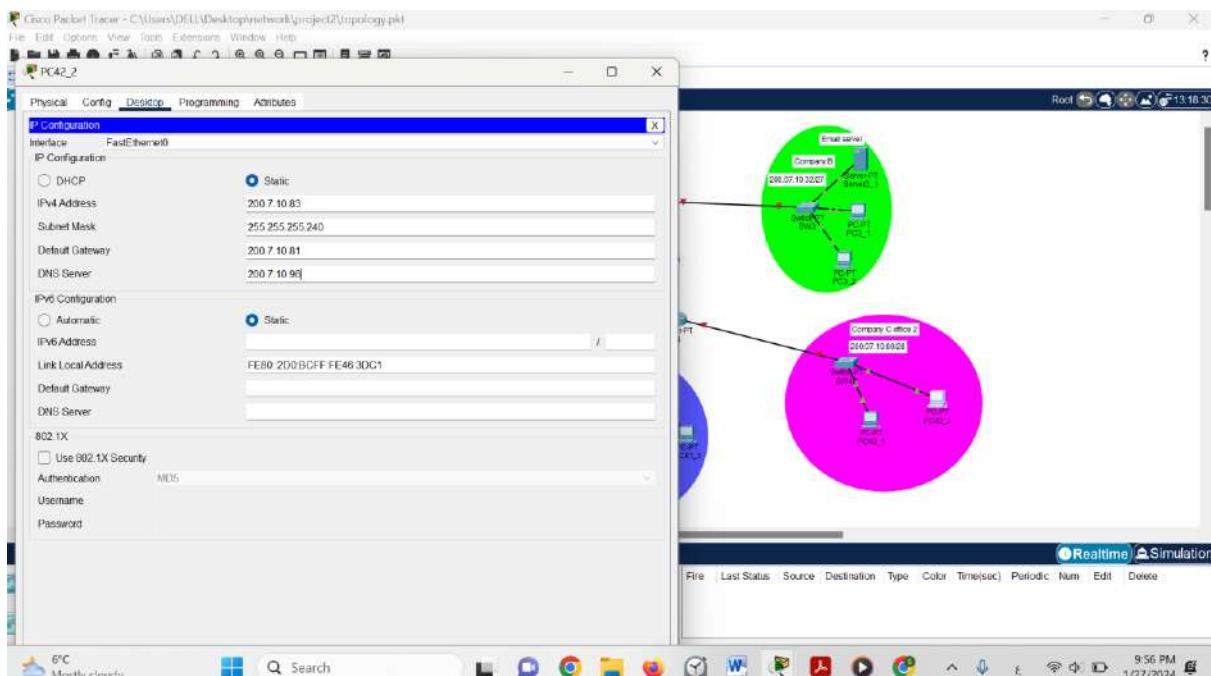


Figure 33: PC42_2 configuration

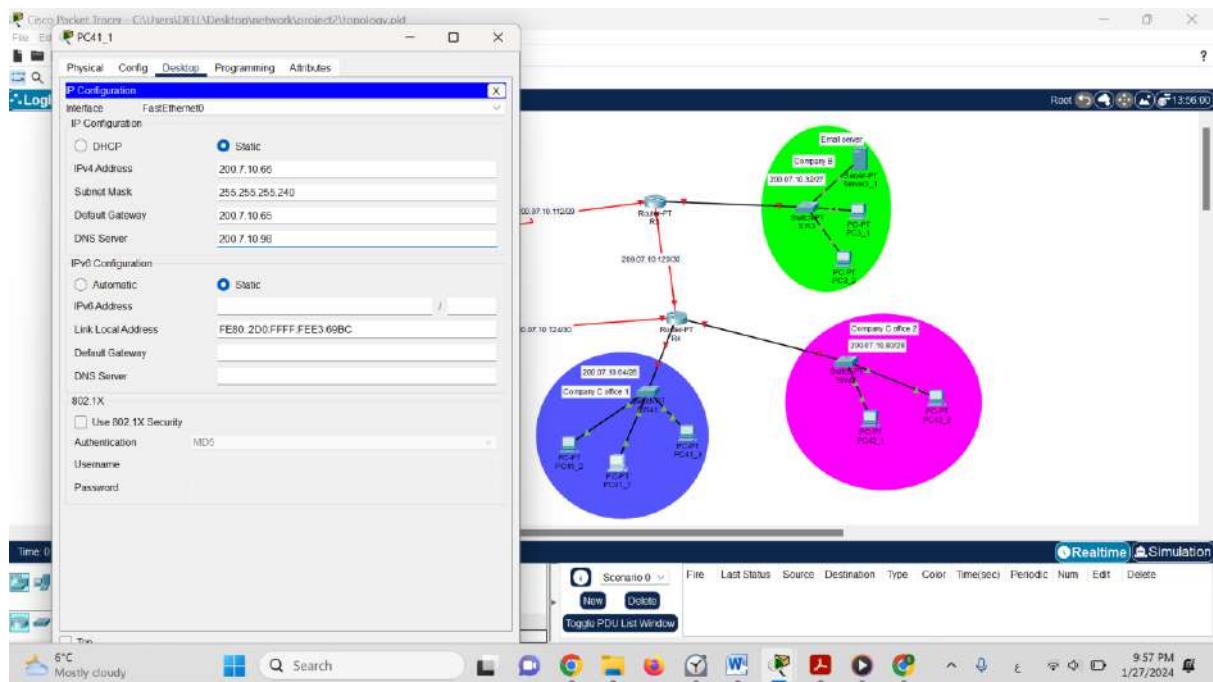


Figure 34: PC41_1 configuration

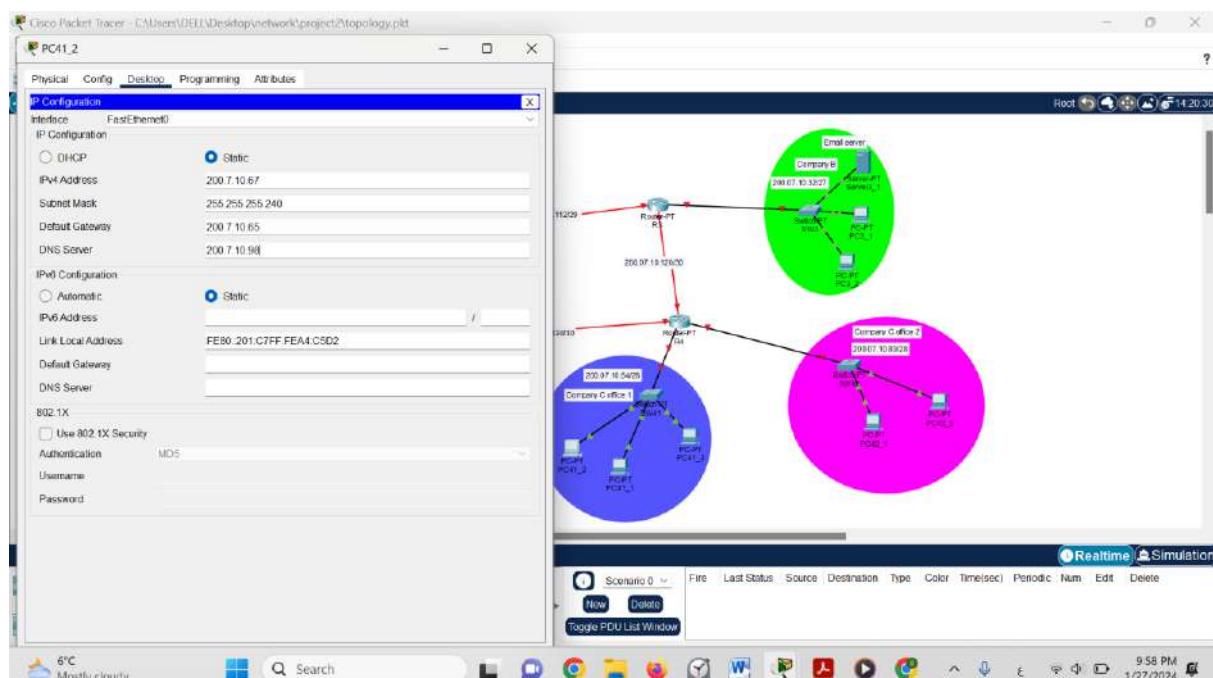


Figure 35: PC41_2 configuration

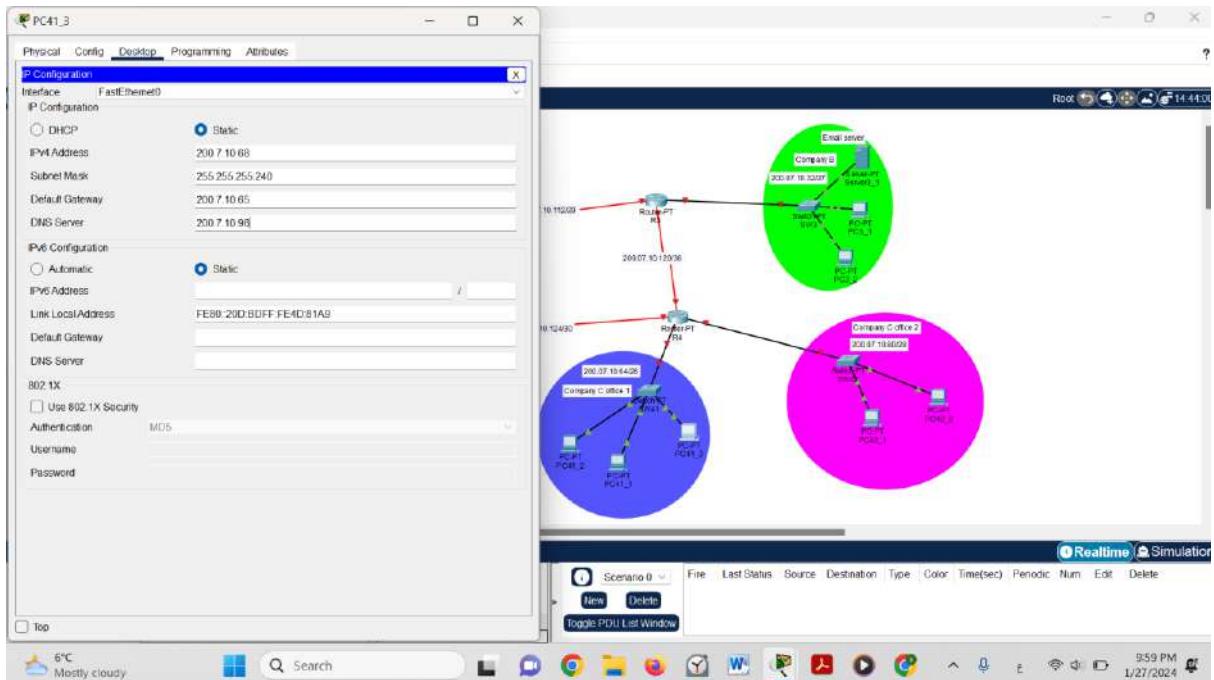


Figure 36: PC41_3 configuration

Part2: Configuring servers

1. Three servers are used in this topology: HTTP/WEB server and DNS server in Data Center network and a mail server in Company B network .
2. Configure the DNS server and WEB server with domain name www.FirstSem2024.com.
3. Create your website by modifying the index.html file in the HTTP server. Your website should contain:
 - “ENCS3320-Course Website” in the title.
 - “Welcome to Computer Networks course” (part of the phrase is in Red).
 - Group members’ names and IDs.
 - Some information about the group members. For instance, projects you have done during different course (programming, electrical, math, etc), skills, hobbies, etc.
 - Try to make the page looks nice.
4. Create usernames/passwords for all PCs (PC2_1, PC3_1, PC41_1, PC42_1) in the email server (ENCS3320.edu). The usernames are the same as device name without underscore (PC21, PC31, PC411, PC421) and their passwords are same for all “A2024”.

2. Configure the DNS server and WEB server with domain name www.FirstSem2024.com.

it is attached to the IP address of HTTP server (200.07.10.99)

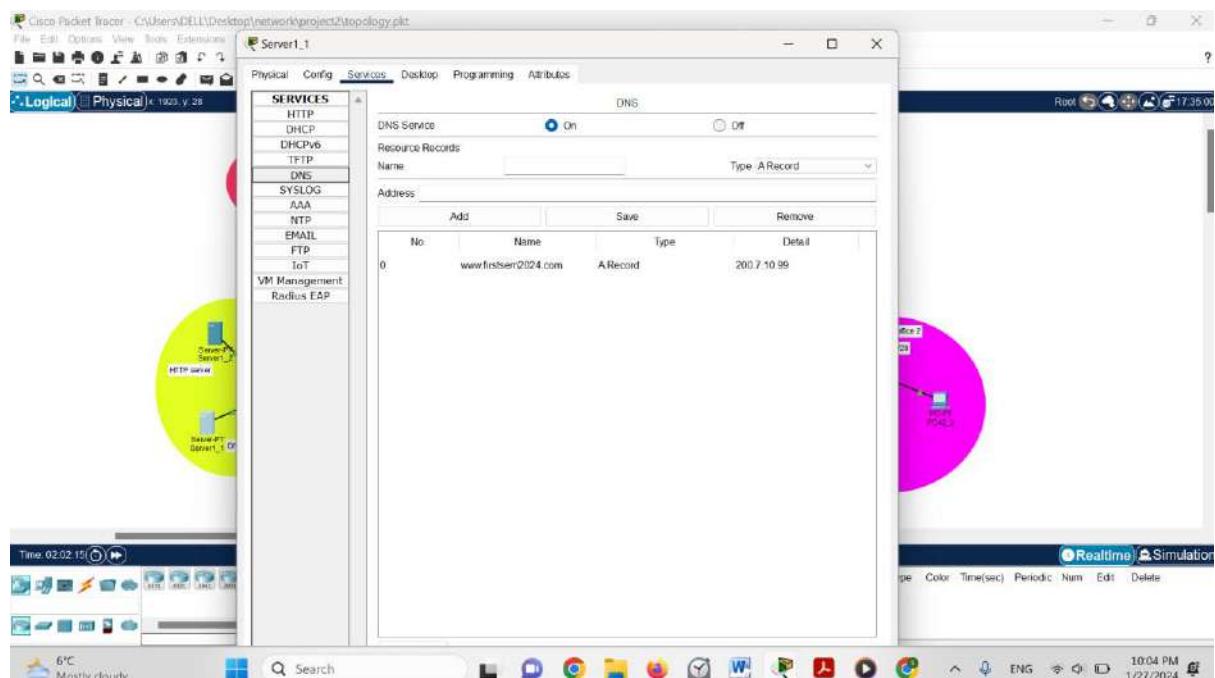


Figure 37: configure the DNS server with domain www.FirstSem2024.com

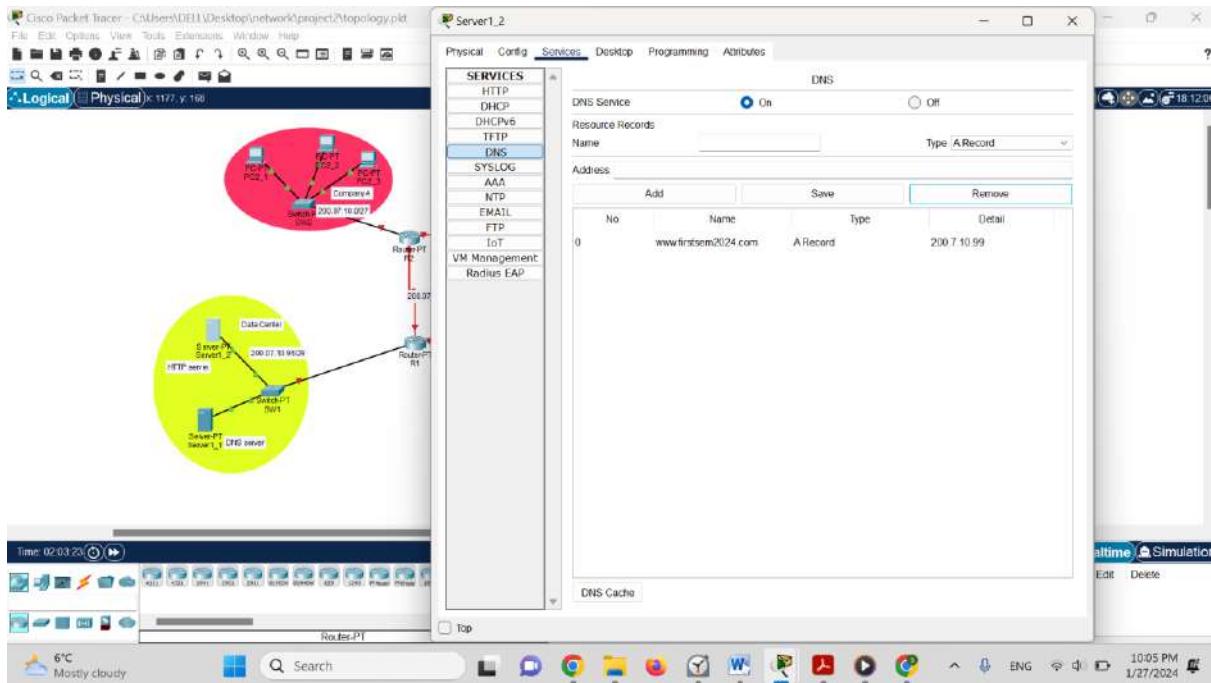


Figure 38: configure the HTTP server with domain www.FirstSem2024.com

3-Our Website

This is our html code:

```
<!DOCTYPE html>
<html>
<head>
<title>ENCS3320-Course Website</title>
<link rel="stylesheet" type="text/css" href="style.css">
</head>
<body>
<h1>Welcome to <samp class="redcolor" > Computer Networks
</samp> course</h1>
<p class="intro">This is our Group member and some information:</p>
<div class="student-box">
    <section>
<h2>Student 1</h2>
<h2>Saja Asfour 1210737</h2>
    <div>
        <p><b>I'm a Third-year Computer Enginnering student. I'm
interested in the software major, I love coding.</b></p>
        <ul>
            <p>My skills</p>
            <li>C programming langauge</li>
            <li>Java</li>
            <li>Python</li>
            <li>C++</li>
            <li>HTML and CSS</li>
        </ul>
    </div>
</div>
```

```
<li>Assembly langauge</li>
    <li>Data structure and algorithems</li>
</ul>
<ul>
    <p>My projects</p>
    <li>Data structure and algorithems projects</li>
    <li>Digital systems project</li>
    <li>ARM Assembly projects</li>
    <li>C programming projects</li>
    <li>java projects</li>
    <li>Circuit analysis projects</li>
    <li>Signal and Systems project</li>
</ul>
<ul>
    <p>My hobbies</p>
    <li>reading book</li>
    <li>running</li>
</ul>
</section>
</div>
<div class="student-box">
    <section>
        <h2>Student 2</h2>
        <h2>Shahd shreteh 1210444</h2>
        <div>
            <p><b>I'm a Third-year Computer Enginnering student. I'm interested in the software major, I love coding.</b></p>
            <ul>
                <p>My skills</p>
                <li>C programming langauge</li>
                <li>Java</li>
                <li>Python</li>
                <li>C++</li>
                <li>HTML and CSS</li>
                <li>Assembly langauge</li>
                <li>Data structure and algorithems</li>
            </ul>
            <ul>
                <p>My projects</p>
                <li>Data structure and algorithems projects</li>
                <li>Digital systems project</li>
                <li>ARM Assembly projects</li>
                <li>C programming projects</li>
                <li>java projects</li>
                <li>Circuit analysis projects</li>
            </ul>
            <ul>
                <p>My hobbies</p>
```

```

        <li>swimming</li>
        <li>singing</li>
        <li>ride horses</li>
    </ul>
</section>
</div>
<div class="student-box">
<section>
<h2>Student 3</h2>
<h2>Rouand Bawatneh 1211403</h2>
<div>
    <p><b>I'm a Third-year Computer Engineering student. I'm interested in the software major, I love coding.</b></p>
    <ul>
        <p>My skills</p>
        <li>C programming language</li>
        <li>Java</li>
        <li>Python</li>
        <li>C++</li>
        <li>HTML and CSS</li>
        <li>Assembly language</li>
    </ul>
    <ul>
        <p>My projects</p>
        <li>Digital systems project</li>
        <li>ARM Assembly projects</li>
        <li>C programming projects</li>
        <li>java projects</li>
        <li>Circuit analysis projects</li>
    </ul>
    <ul>
        <p>My hobbies</p>
        <li>swimming</li>
        <li>listening to music</li>
    </ul>
</section>
</div>
</body>
</html>
```

And this is the style.css code:

```

/* Set the background gradient */
body {
    background: linear-gradient(to bottom, #FCA5F1, #B5FFFF);
    margin: 0;
    padding: 0;
    font-family: Arial, sans-serif;
}
```

```
/* Style the student boxes */
.student-box {
background-color: #fff;
border-radius: 10px;
padding: 10px;
margin: 20px;
box-shadow: 0px 0px 10px rgba(0, 0, 0, 0.2);
transition: transform 0.2s ease-in-out;
}
.student-box:hover {
transform: scale(1.05);
}

/* Style the text inside the boxes */
.student-box h2 {
color: #FCA5F1;
}
.student-box p {
margin: 5px 0;
color: #333;
}
/* Style the "Welcome to our course" heading */
h1 {
background-color: #fff;
padding: 10px;
border-radius: 10px;
text-align: center;
}
/* Style the "Computer Networks" text */
.redcolor {
color: red;
}
/* Style the introductory paragraph */
.intro {
font-style: italic;
text-align: center;
color: #333;
}
```

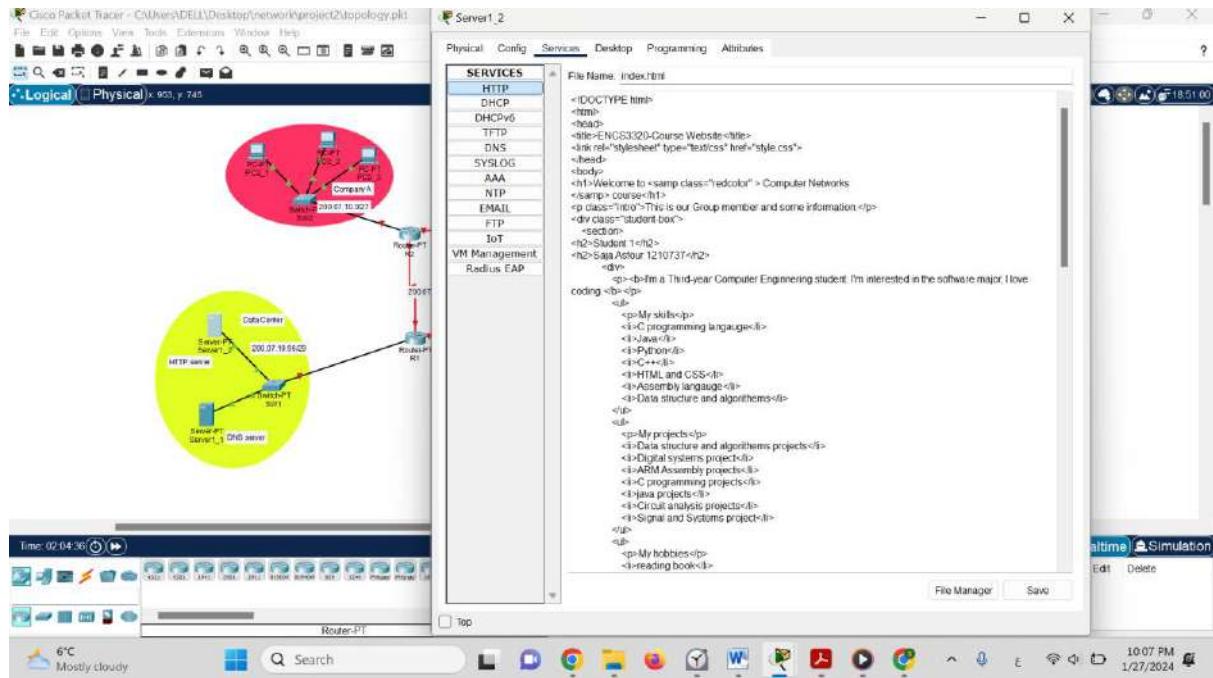


Figure 39: html code for HTTP server

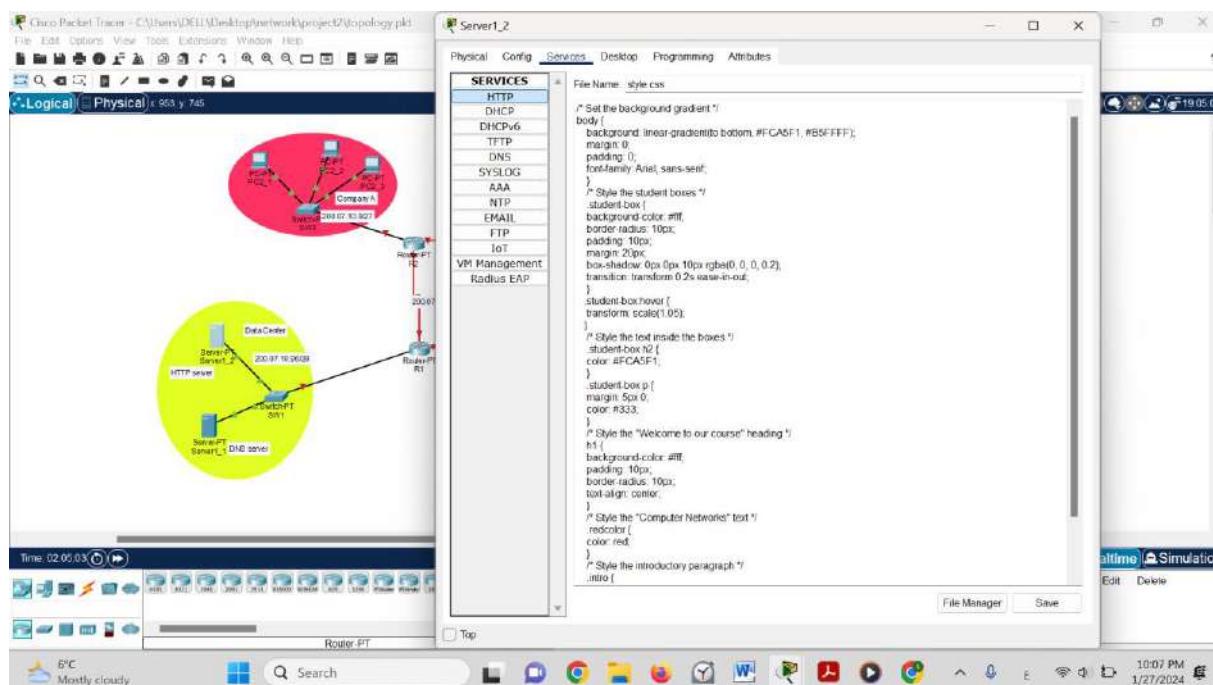


Figure 40: css file for HTTP server

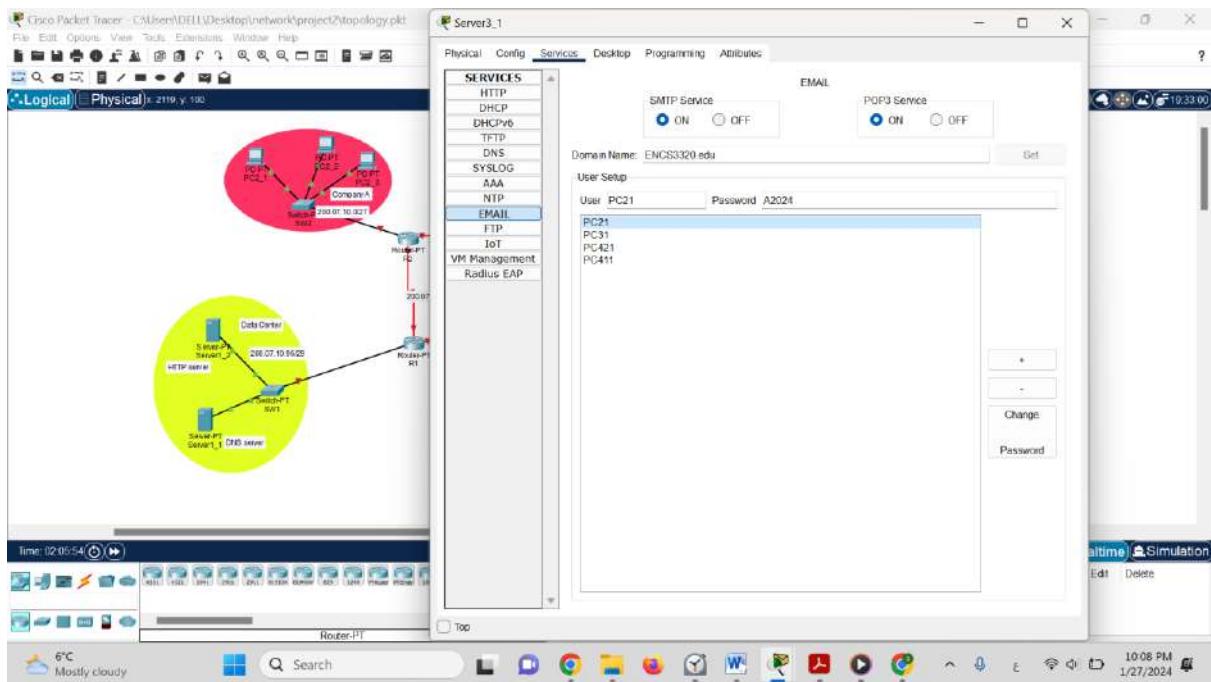


Figure 41: add users with A2024 password

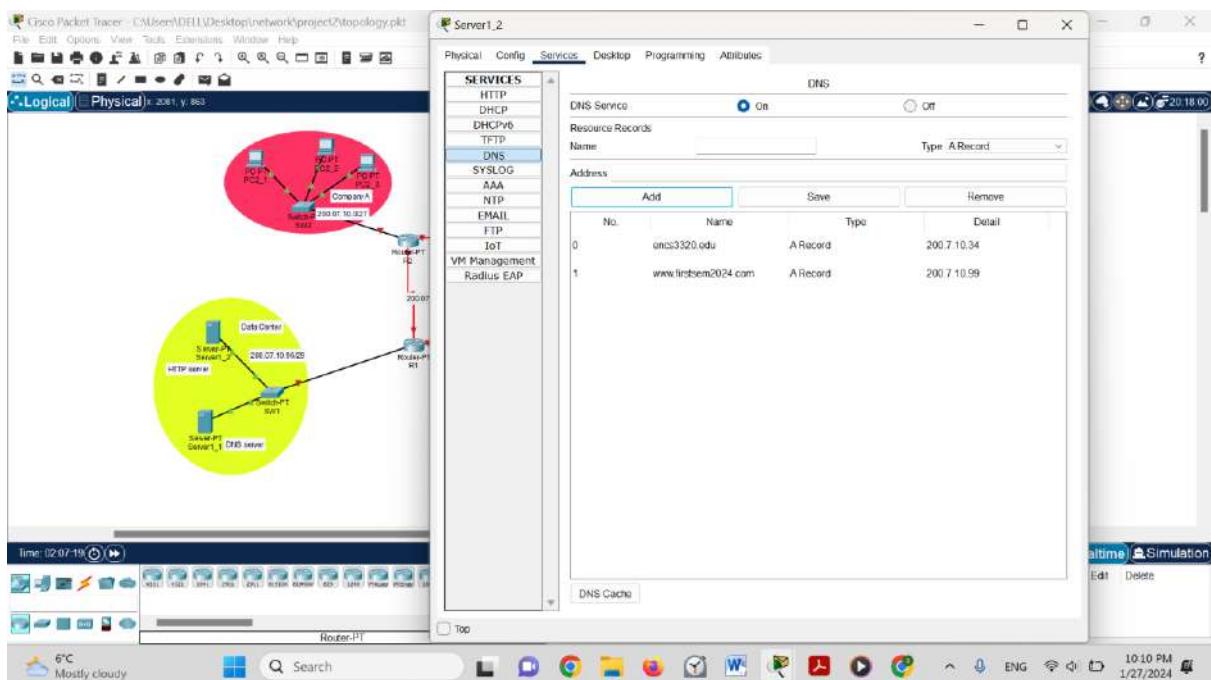


Figure 42: connect the HTTP server with email Encs3320.edu

Part3: Applying routing protocol

You need to use open shortest path protocol (OSPF) on all routers given that the process id is 10 and the areas as follows: Data center (Yellow): area 1, Company 1 (Red): area 2, Company 2 (Green): area 3. Company 3 (Purple and Pink): area 4. Core: area 0.

Ospf 10 because the process id =10

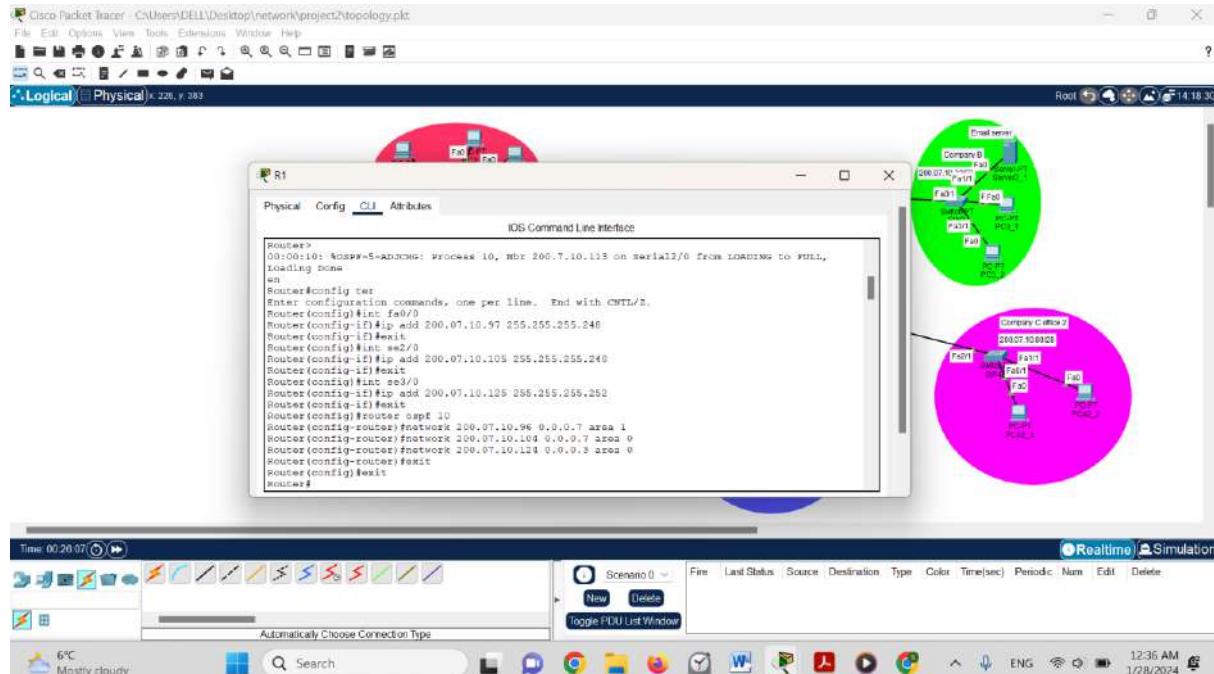


Figure 43:CLI for R1 before show

```
R1
Physical Config CLI Attributes
IOS Command Line Interface

Router>
00:00:10: %OSPF-5-ADJCHG: Process 10, nbr 200.7.10.113 on serial2/0 from LOADING to FULL.
Router> Loading done
Router> 
Router>config ter
Enter configuration commands, one per line. End with CNTL/Z.
Router>config#int fa0/0
Router(config-if)#ip add 200.7.10.97 255.255.255.248
Router(config-if)#no shutdown
Router(config-if)#int se2/0
Router(config-if)#ip add 200.7.10.105 255.255.255.248
Router(config-if)#exit
Router(config-if)#int se3/0
Router(config-if)#ip add 200.7.10.125 255.255.255.252
Router(config-if)#exit
Router(config)#router ospf 10
Router(config-router)#network 200.7.10.96 0.0.0.7 area 1
Router(config-router)#network 200.7.10.104 0.0.0.7 area 0
Router(config-router)#network 200.7.10.124 0.0.0.3 area 0
Router(config-router)#exit
Router>#exit
Router>#exit

!
interface FastEthernet0/0
 ip address 200.7.10.97 255.255.255.248
 duplex auto
 speed auto
!
interface FastEthernet1/0
 no ip address
 duplex auto
 speed auto
 shutdown
!
interface Serial1/0
 ip address 200.7.10.105 255.255.255.248
 clock rate 2000000
!
interface Serial3/0
 ip address 200.7.10.125 255.255.255.252
 clock rate 2000000
!
interface FastEthernet4/0
 no ip address
 shutdown
!
interface FastEthernet5/0
 no ip address
 shutdown
!
router ospf 10
 log-adjacency-changes
 network 200.7.10.96 0.0.0.7 area 1
 network 200.7.10.104 0.0.0.7 area 0
 network 200.7.10.124 0.0.0.3 area 0
!
ip classless
!
ip flow-export version 9
!
!
```

Figure 44:ospf for R1

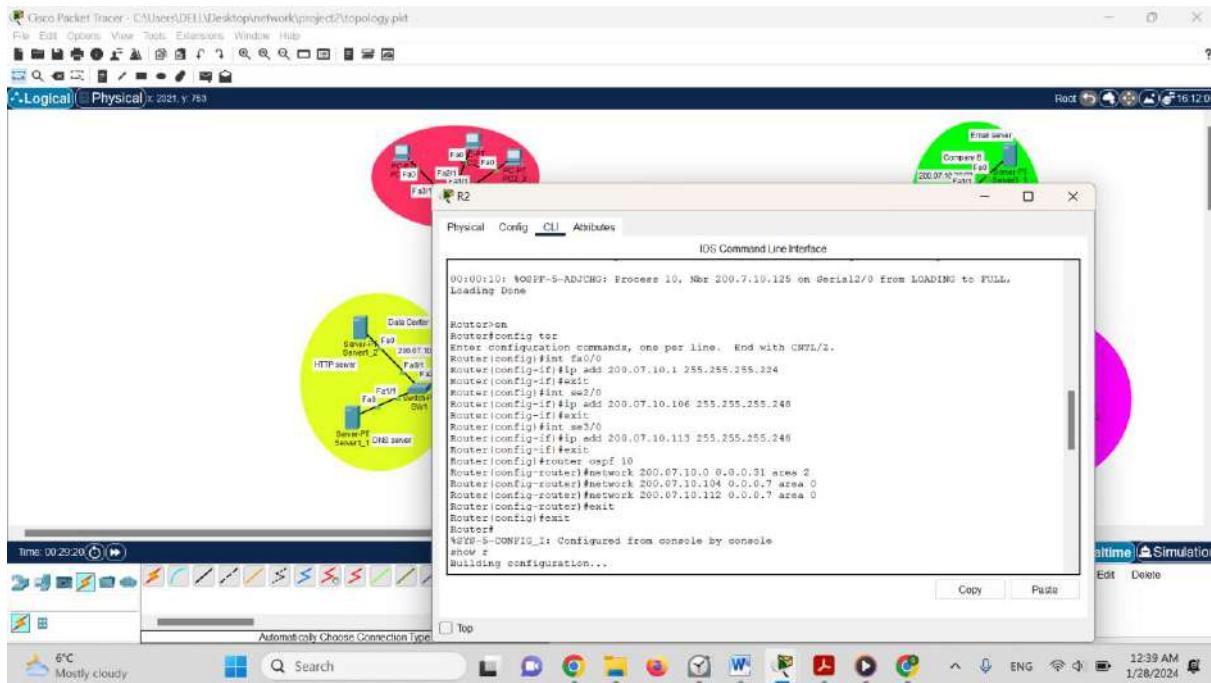


Figure 45:CLI for R2 before show

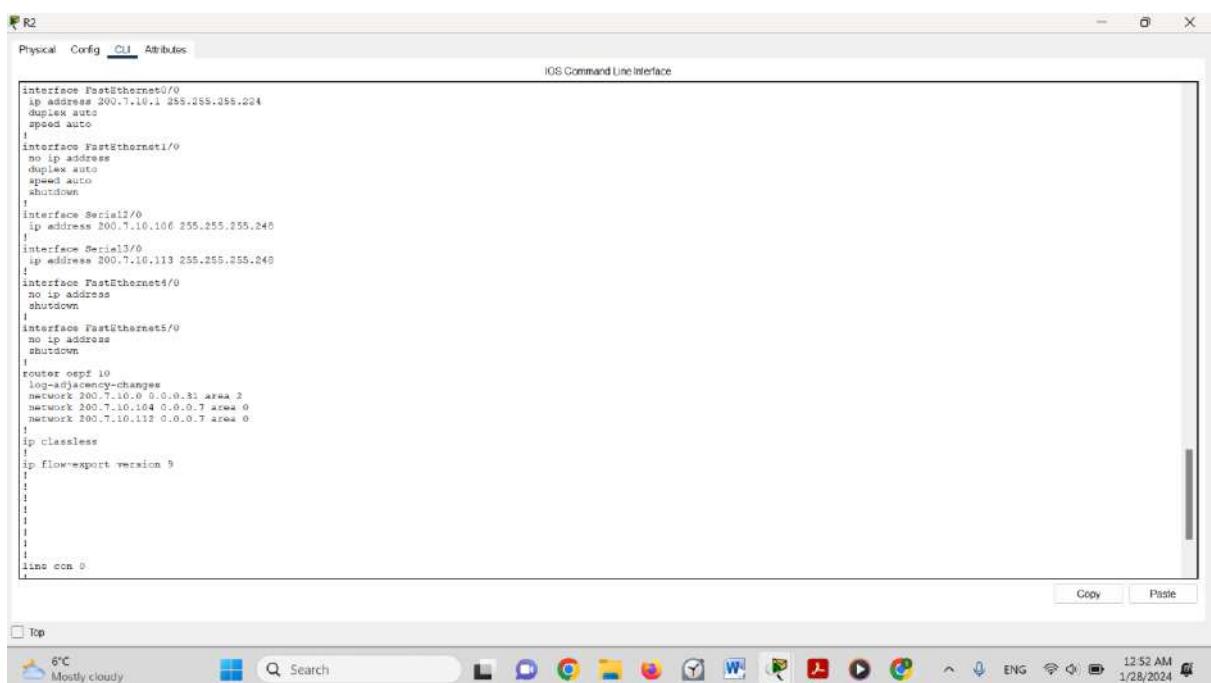


Figure 46:ospf for R2

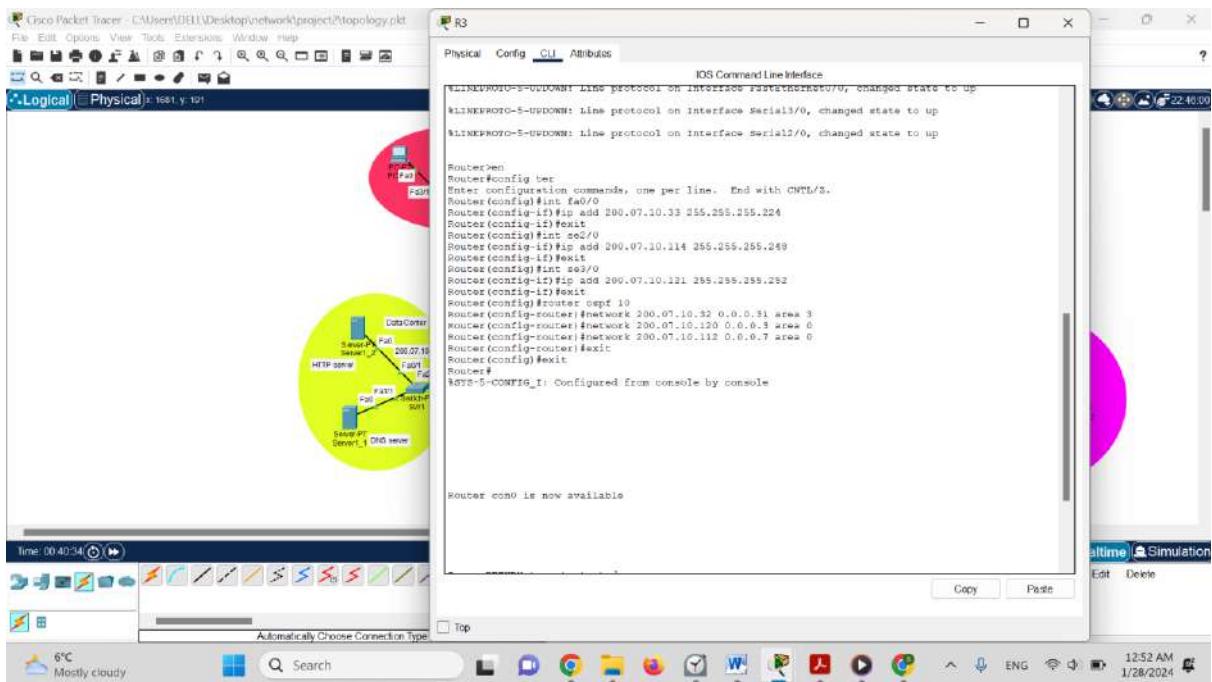


Figure 47:CLI for R3 before show

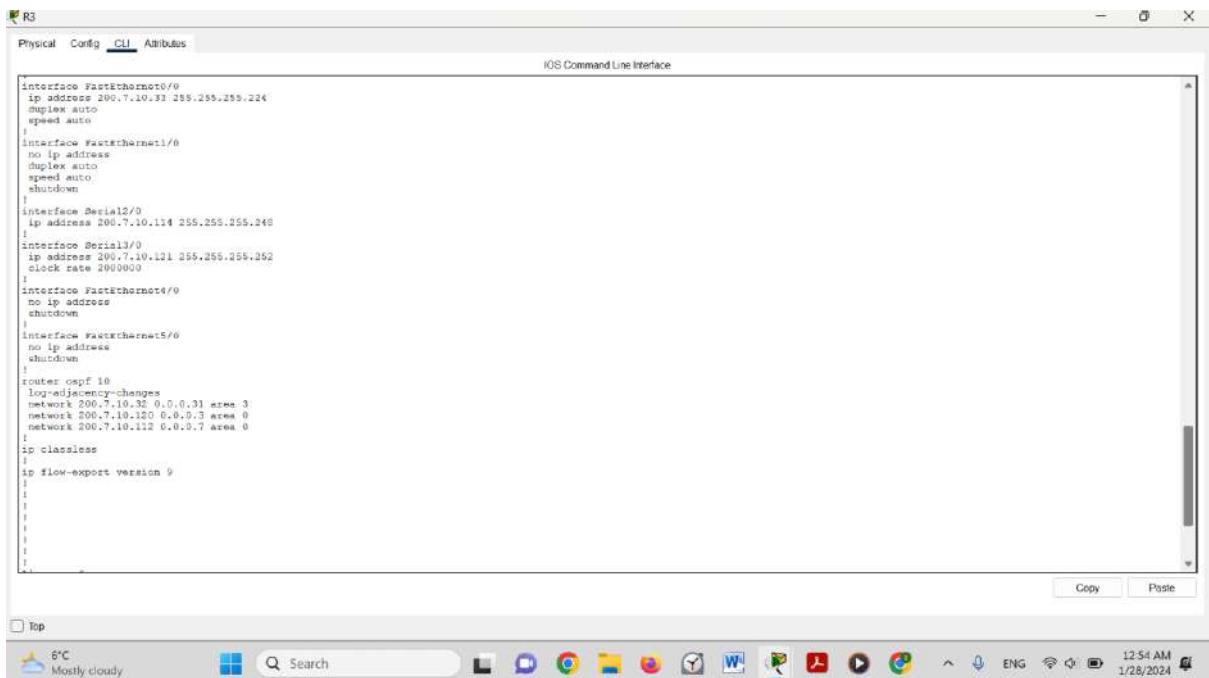


Figure 48:ospf for R3

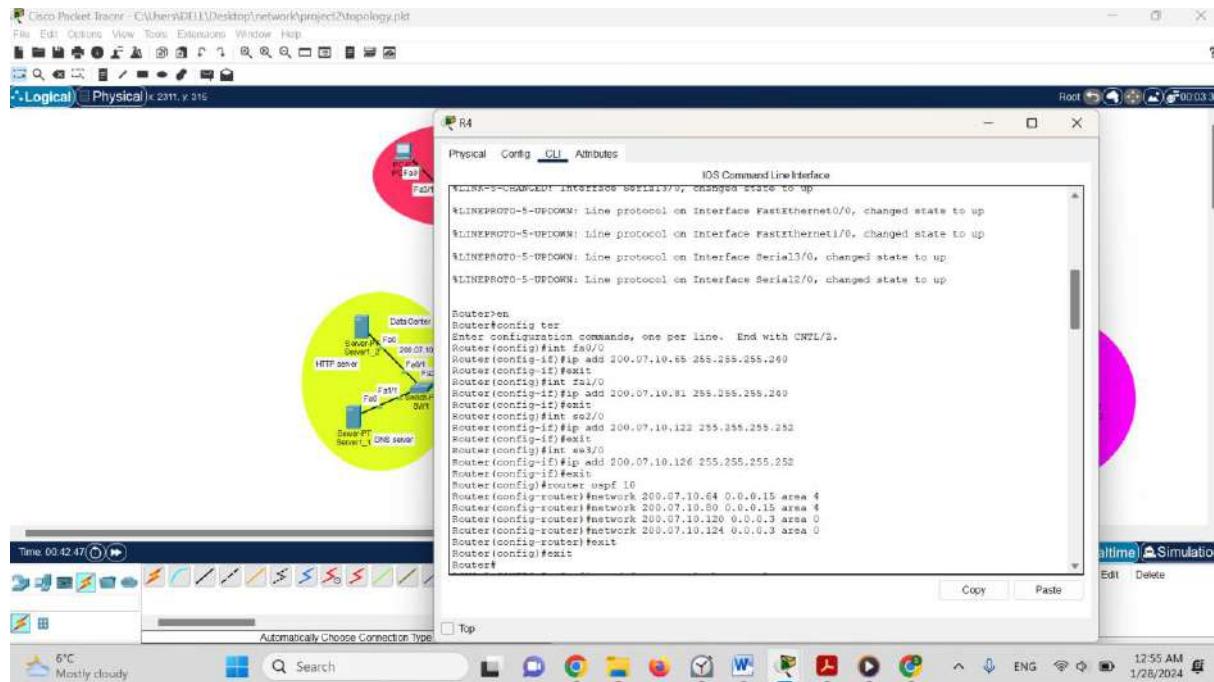


Figure 49:CLI for R4 before show

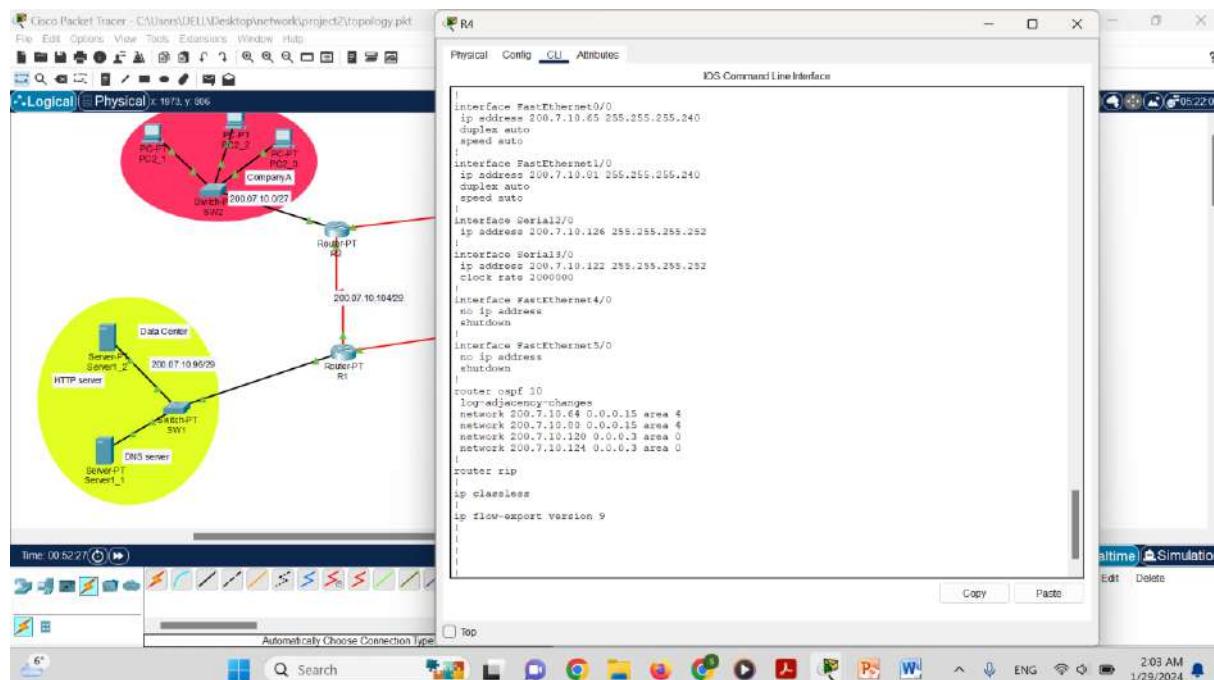


Figure 50:ospf for R4

Part4: Testing connectivity, routes, and website:

1. Test the connectivity between all PCs. You need to take **snapshots** of the results for ping and tracert commands between all PCs.
2. Access www. FirstSem2024.com from all PCs, take **snapshots** for all cases.
3. Show the outputs of 1 and 2 as **snapshots** and record them in your report with detailed explanations.

1. Pcs pinging each other and tracert in the same subnet:

All pcs here could ping and tracert other pcs in their subnets:

Company A:

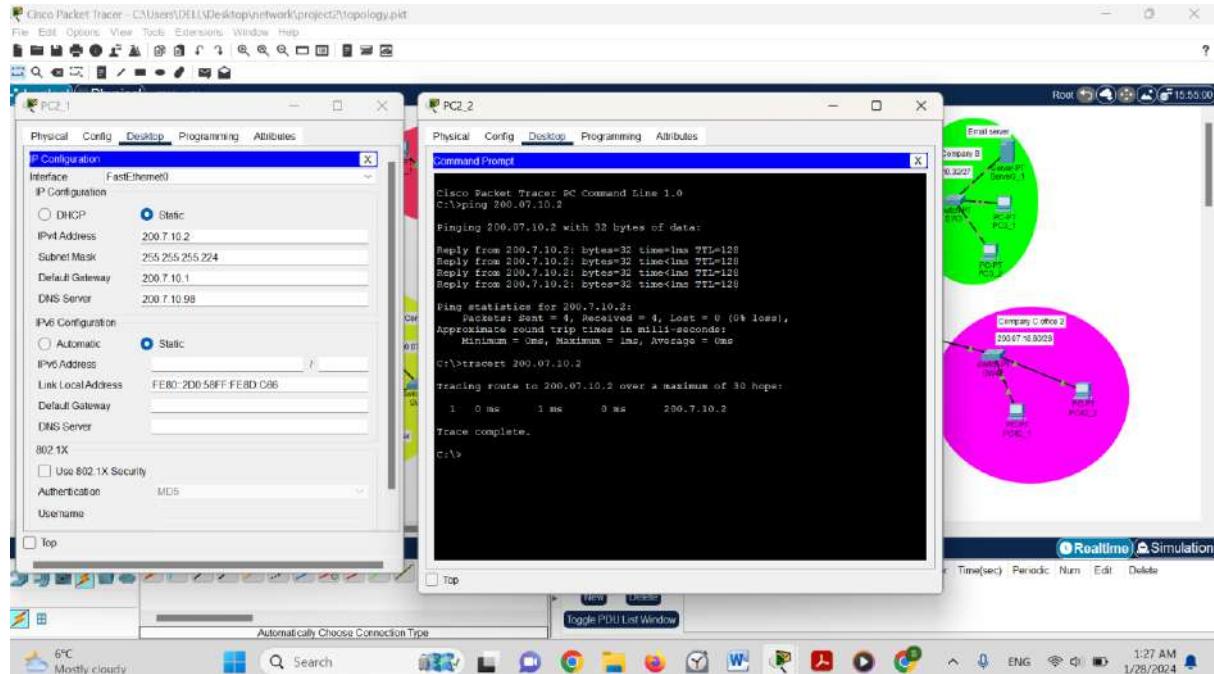


Figure 51:PC2_2 pinging and tracert to PC2_1

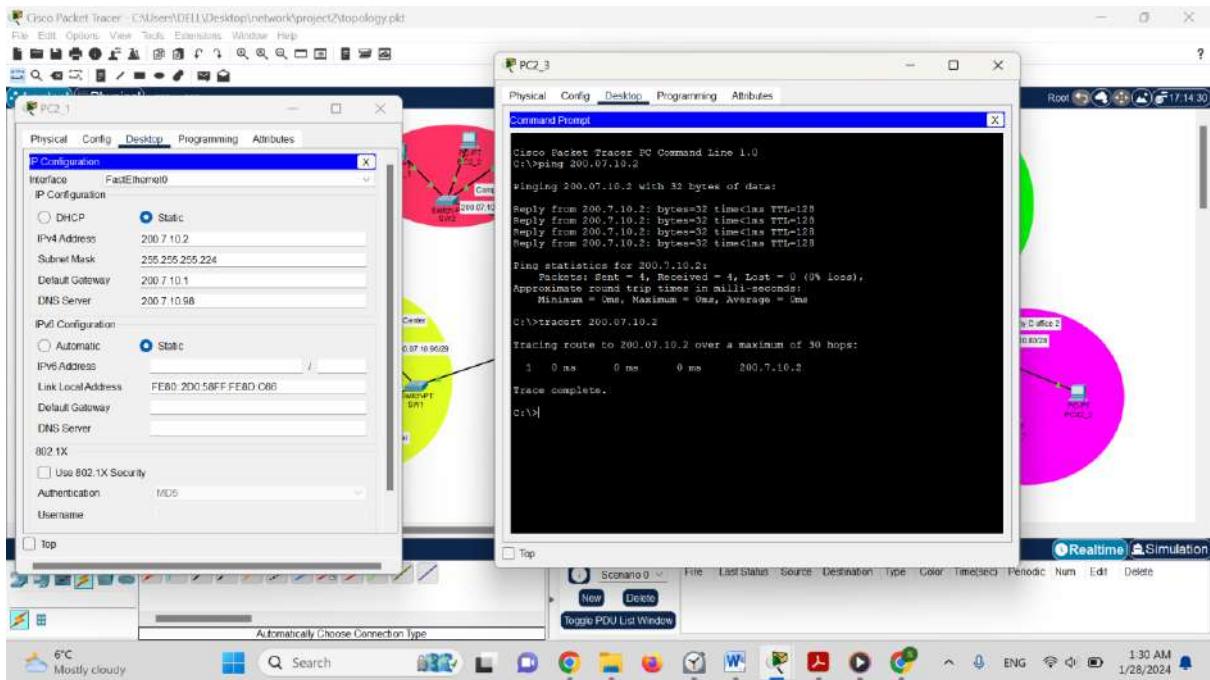


Figure 52:PC2_3 pinging and tracert to PC2_1

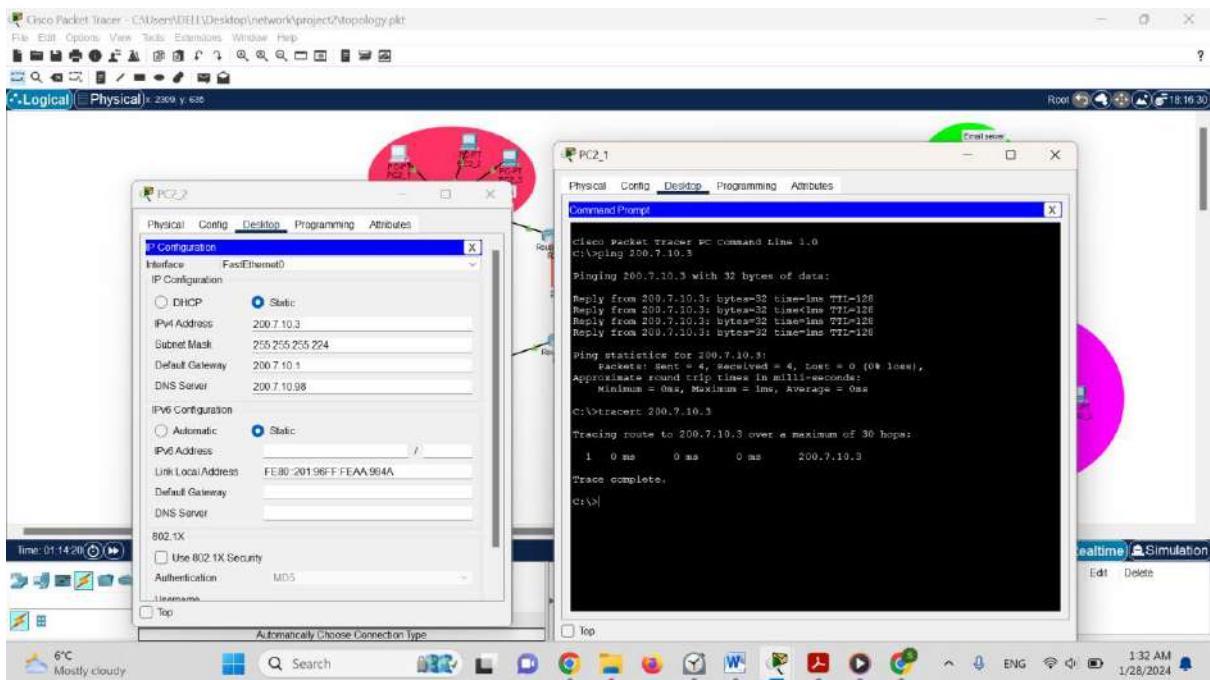


Figure 53:PC2_1 pinging and tracert to PC2_2

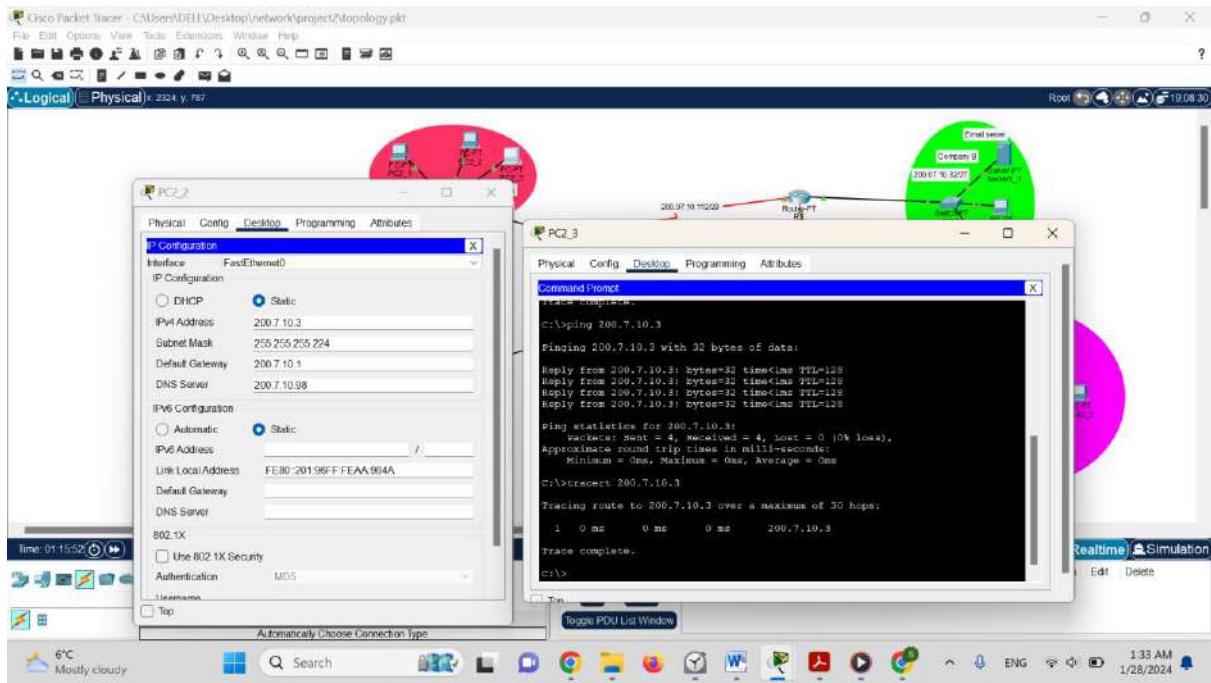


Figure 54:PC2_3 pinging and tracert to PC2_2

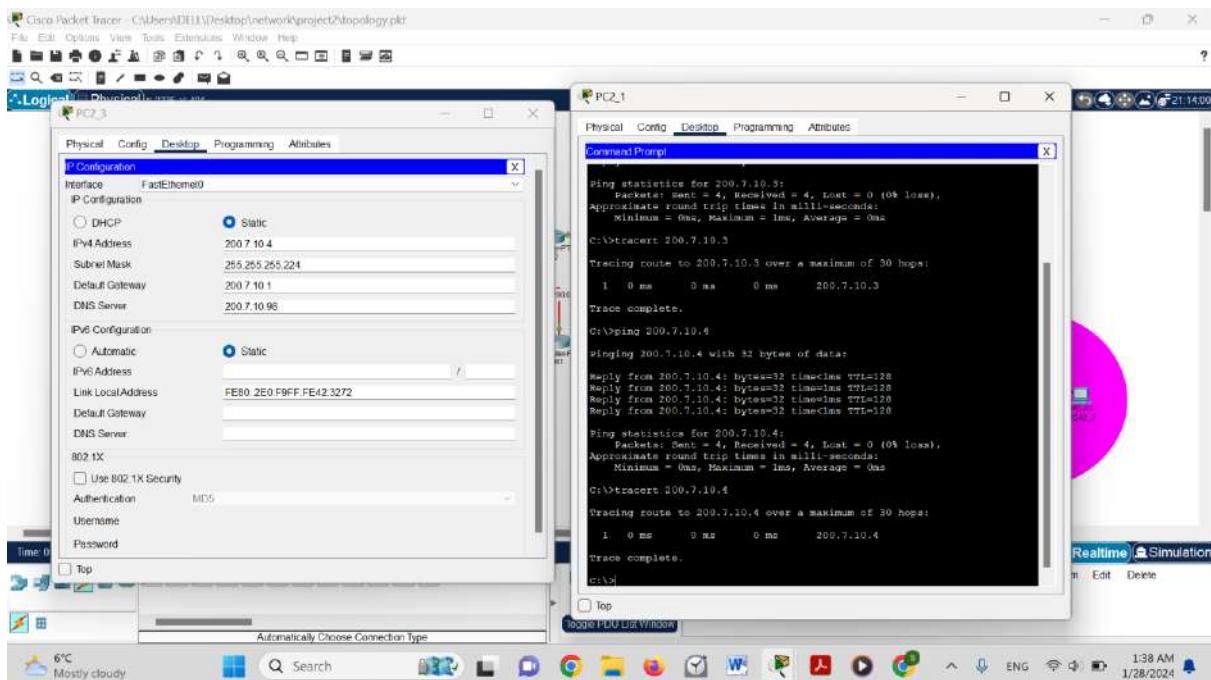


Figure 55:PC2_1 pinging and tracert to PC2_3

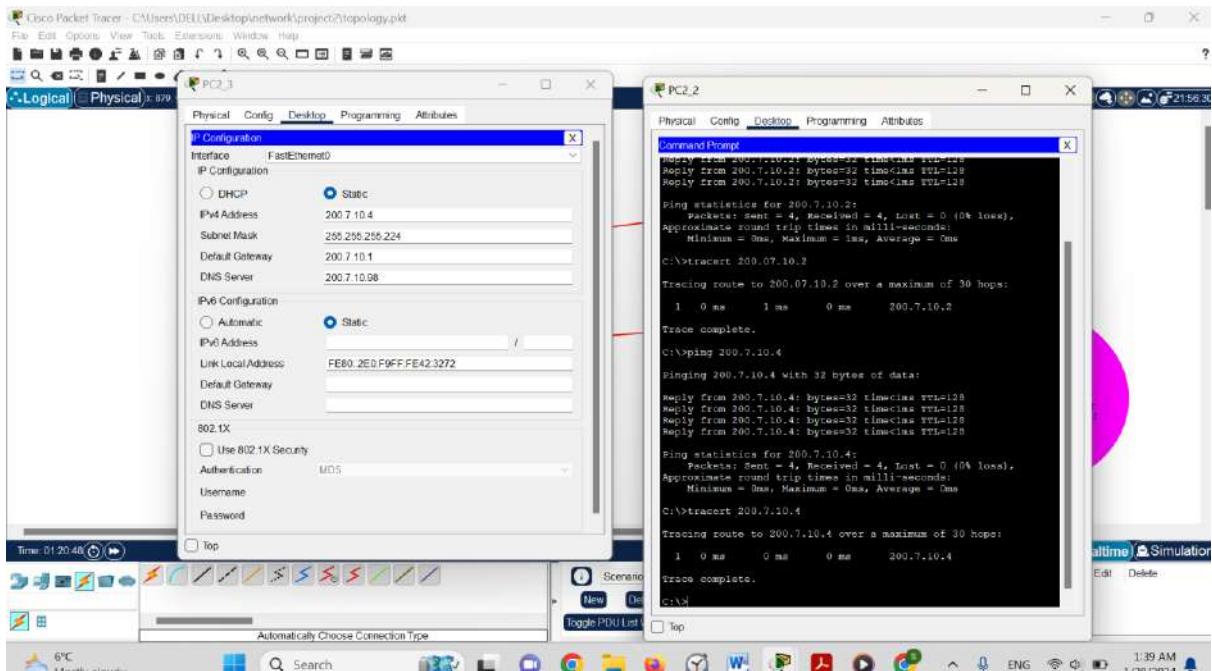


Figure 56:PC2_2 pinging and tracert to PC2_3

Company B:

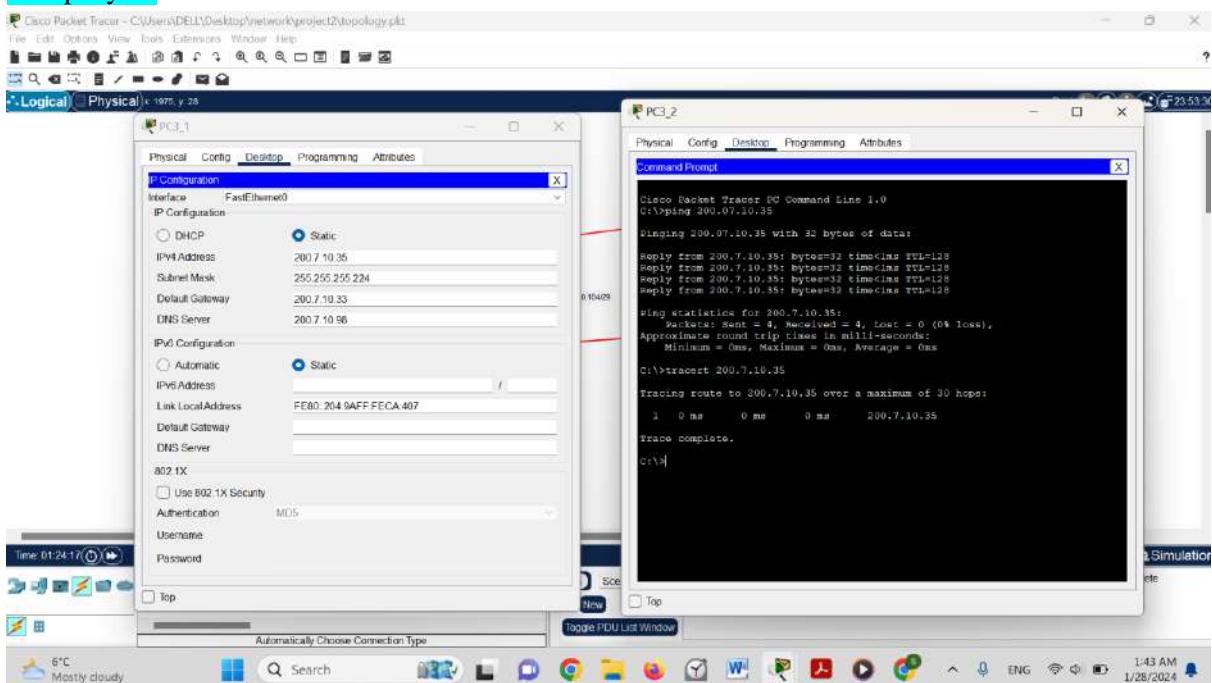


Figure 57:PC3_2 pinging and tracert to PC3_1

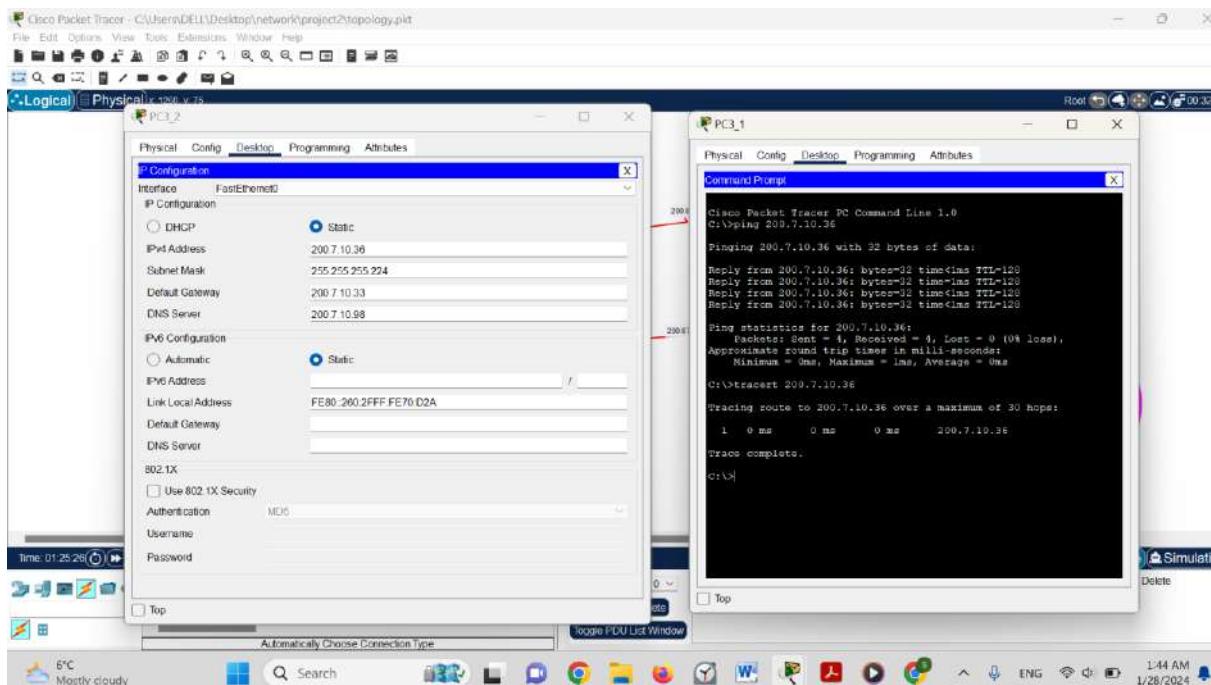


Figure 58:PC3_1 pinging and tracert to PC3_2

Company C office2:

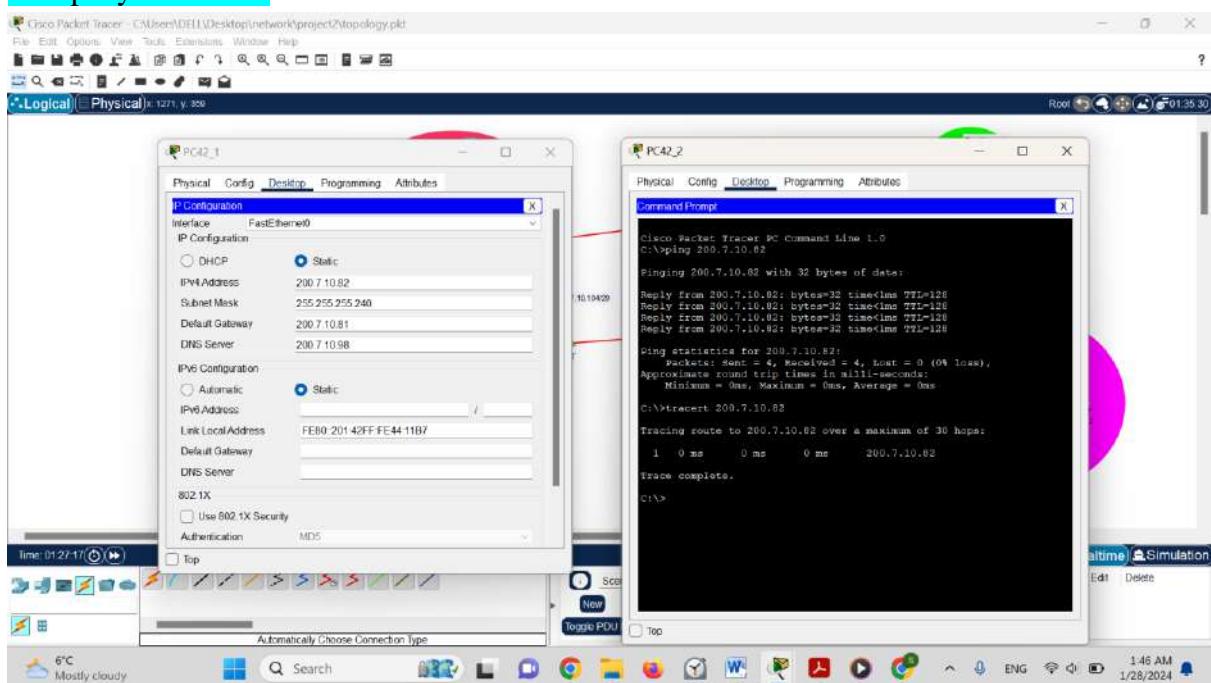


Figure 59:PC42_2 pinging and tracert to PC42_1

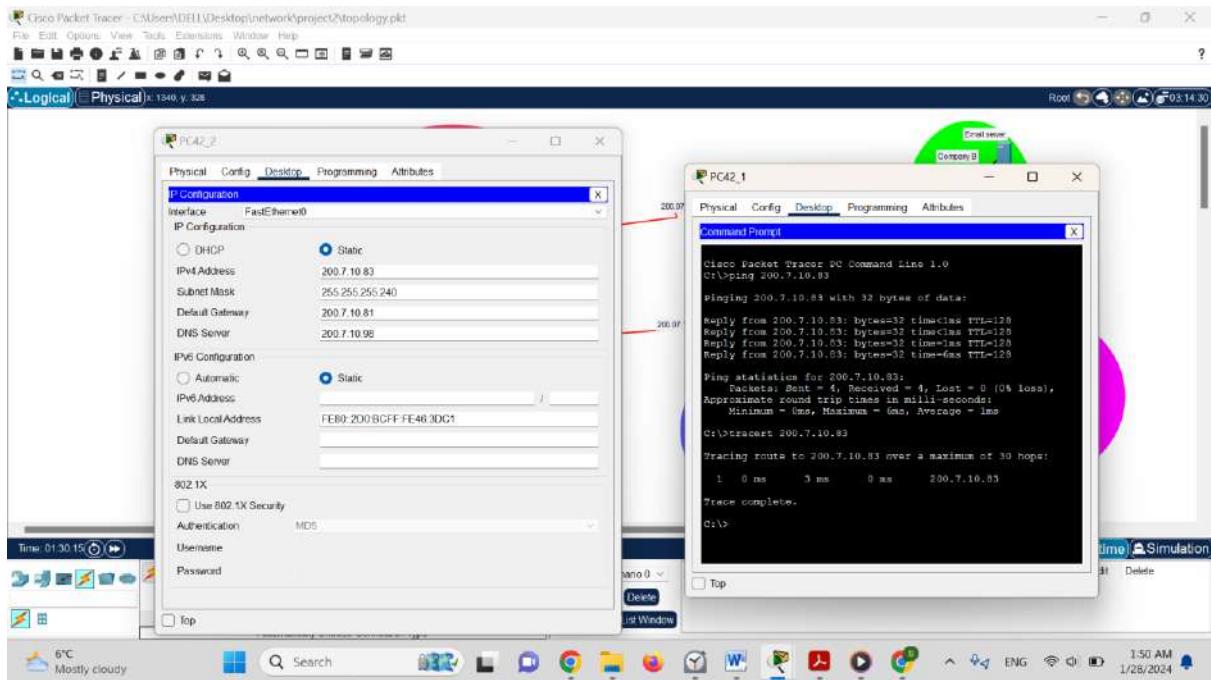


Figure 60:PC42_1 pinging and tracert to PC42_2

Company C office1:

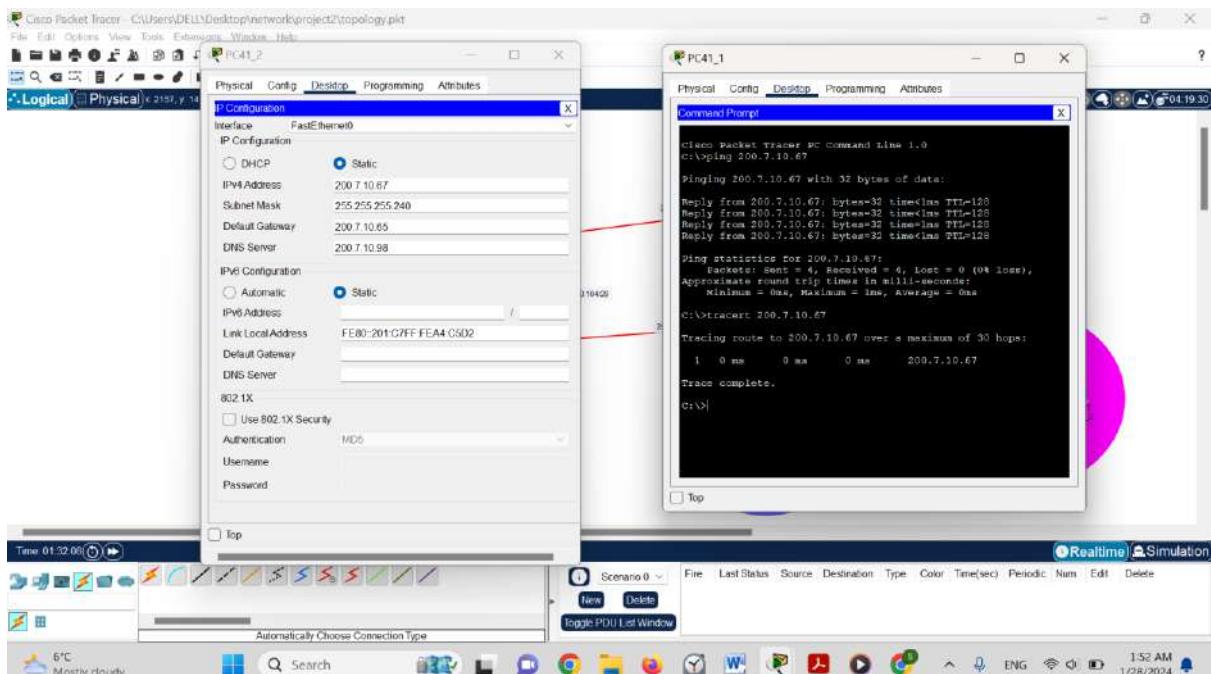


Figure 61:PC41_1 pinging and tracert to PC41_2

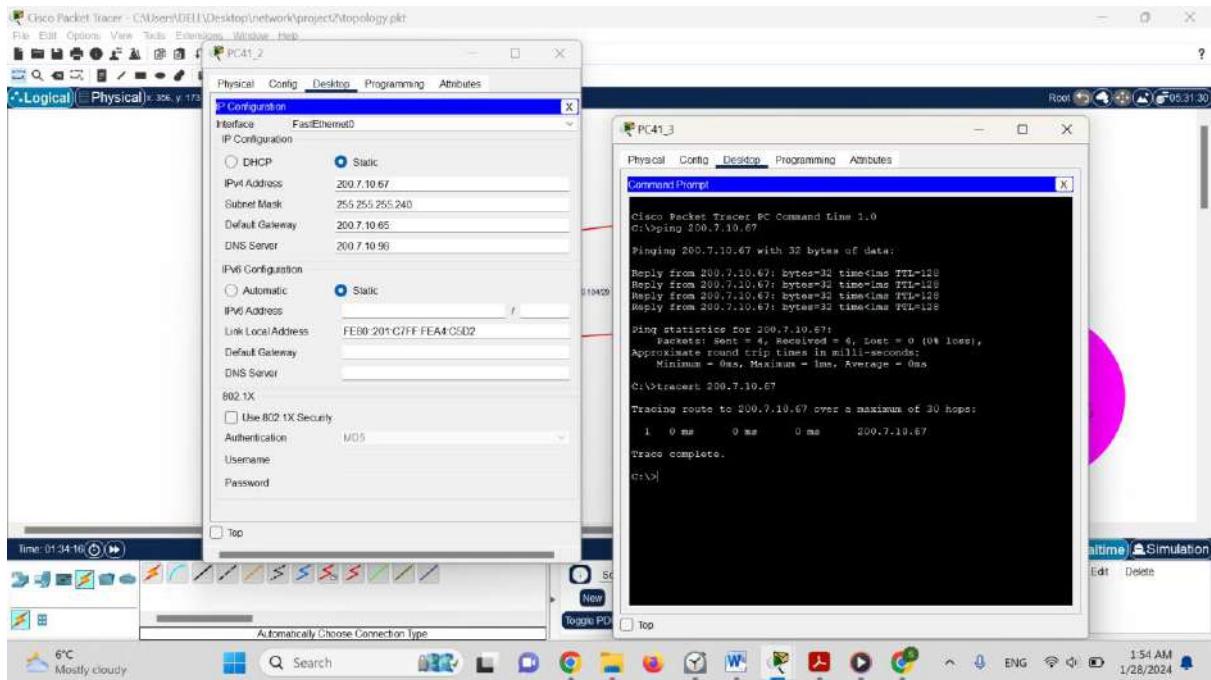


Figure 62:PC41_3 pinging and tracert to PC41_2

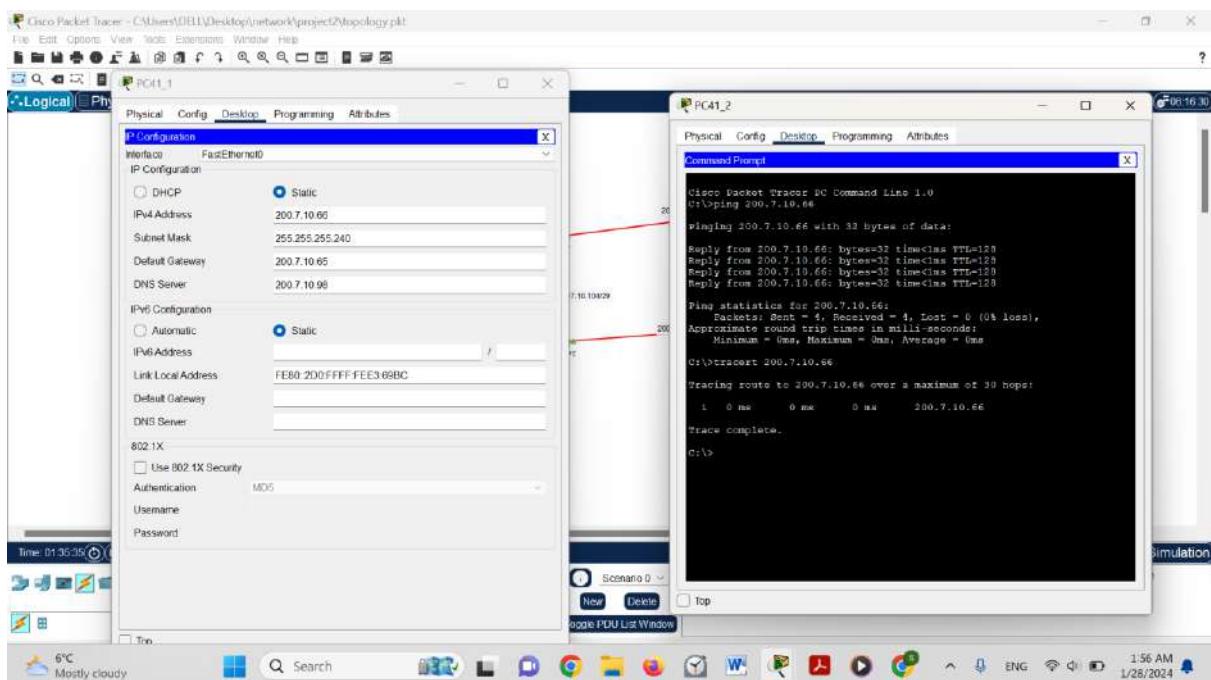


Figure 63:PC41_2 pinging and tracert to PC41_1

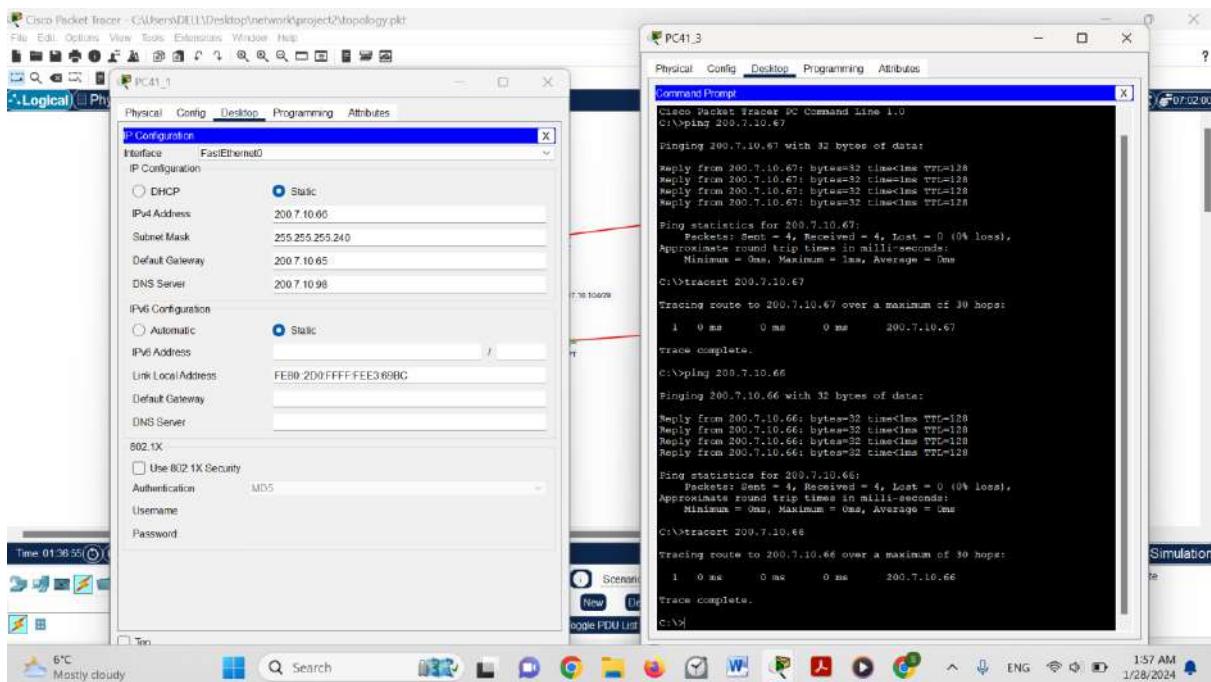


Figure 64:PC41_3 pinging and tracert to PC41_1

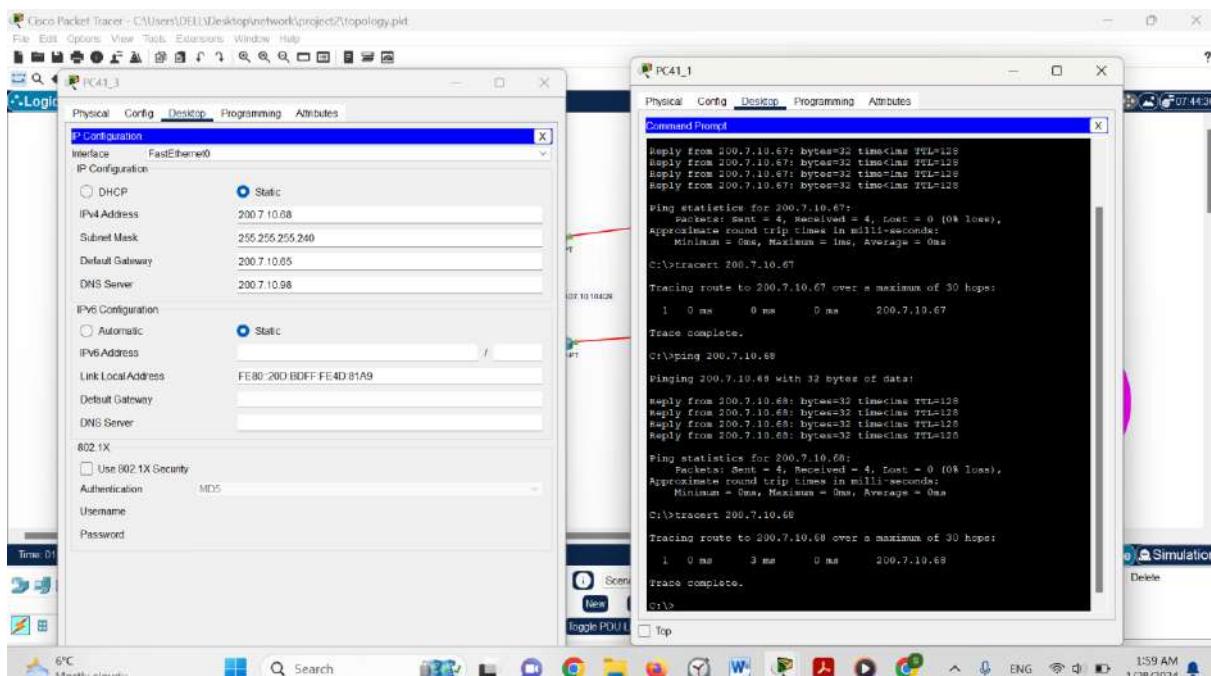


Figure 65:PC41_1 pinging and tracert to PC41_3

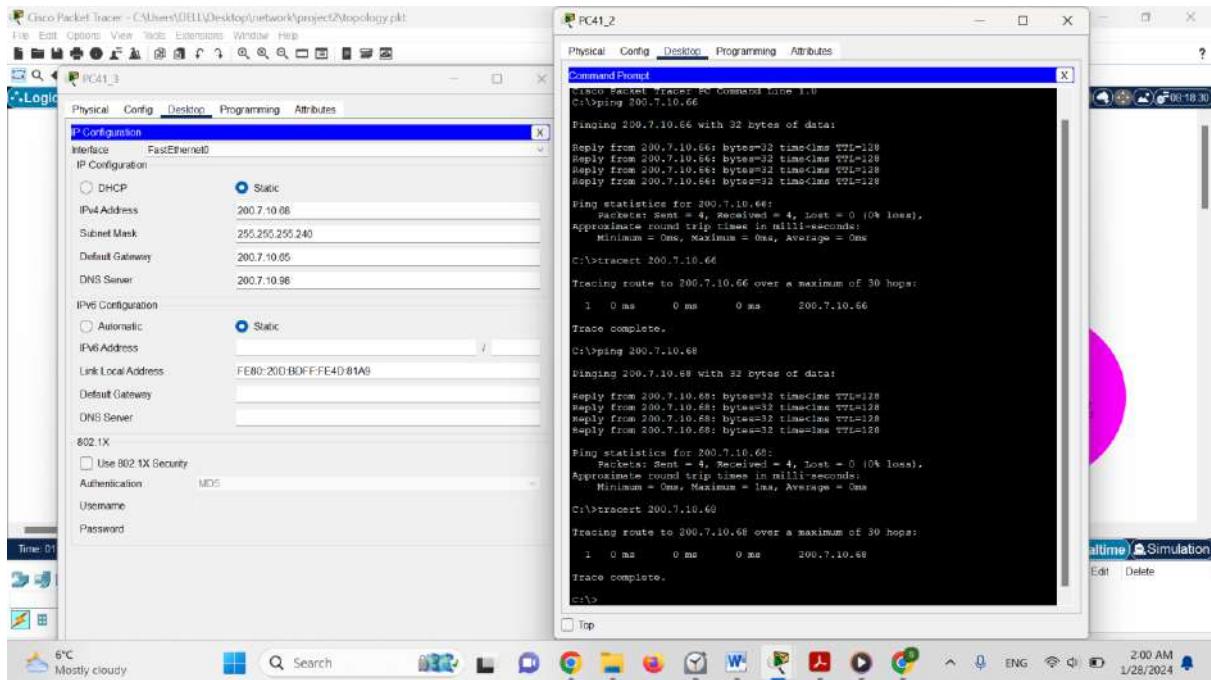


Figure 66:PC41_2 pinging and tracert to PC41_3

2. Pcs pinging each other and tracert in the different subnet:

We have tried all pcs pinging and tracert to other pcs from different subnets around and all of our tried are successfully :

Company C office 1 and Company C office 2:

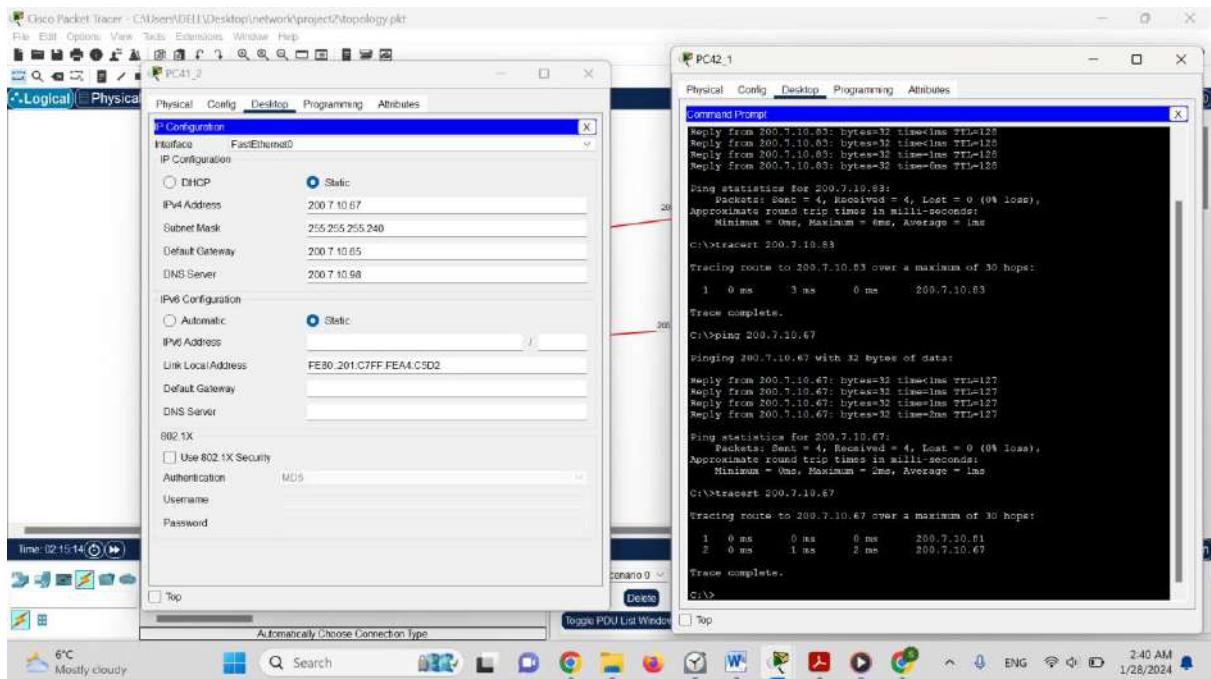


Figure 67:PC42_1 pinging and tracert to PC41_2(different subnets)

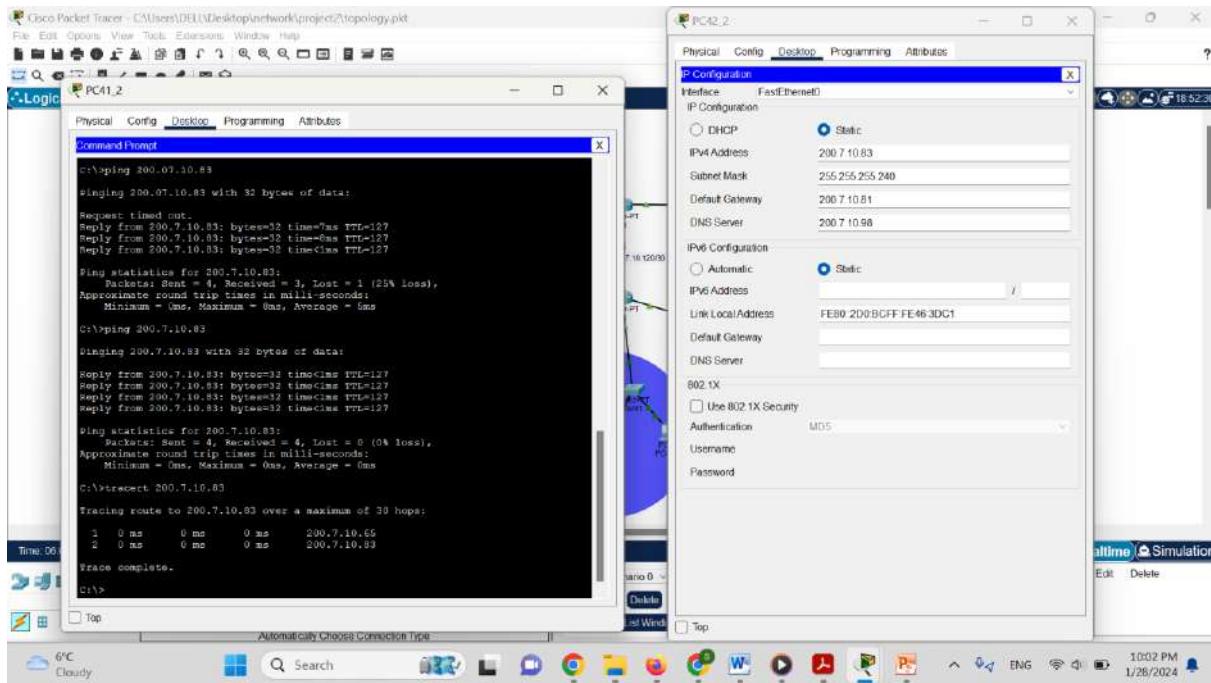


Figure 68:PC41_2 pinging and traceret to PC42_2(different subnets)

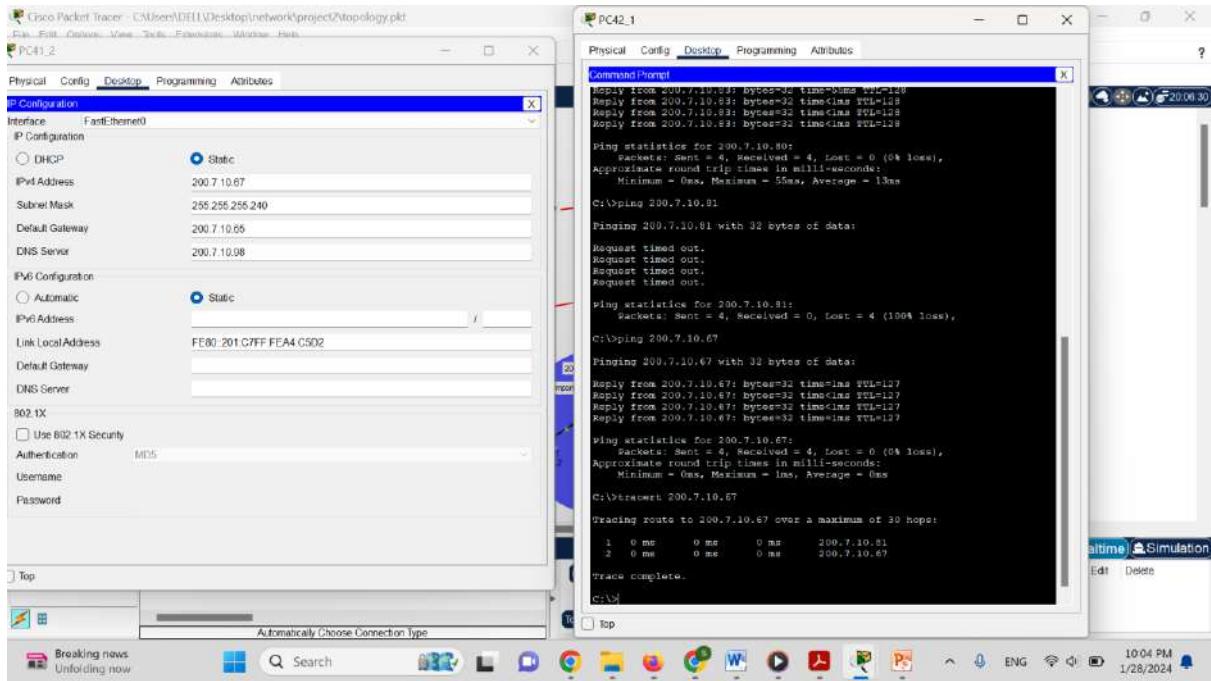


Figure 69:PC42_1 pinging and traceret to PC41_2(different subnets)

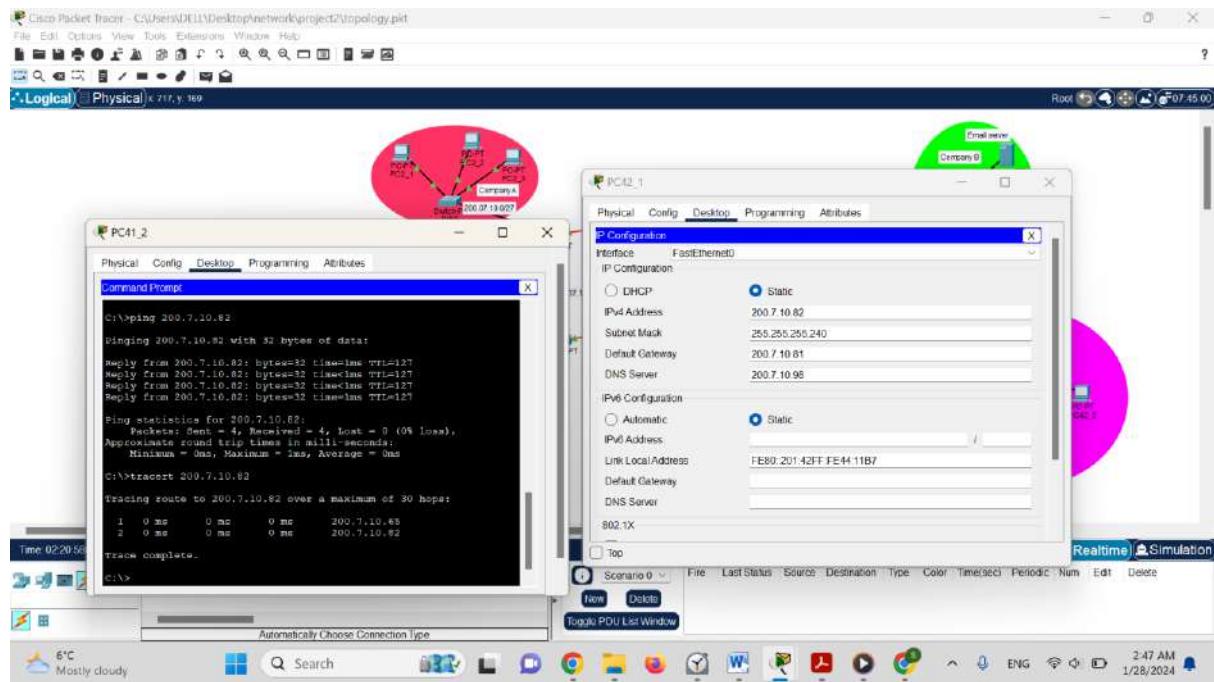


Figure 70:PC41_2 pinging and tracerert to PC42_1(different subnets)

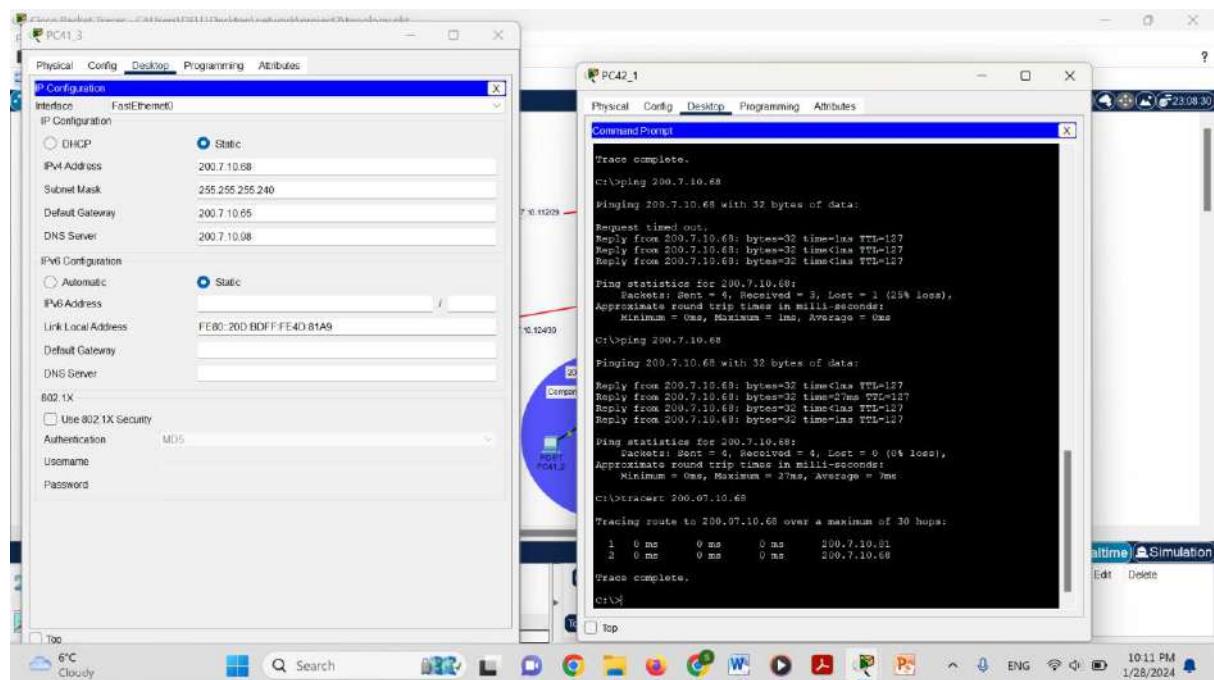


Figure 71:PC42_1 pinging and tracerert to PC41_3(different subnets)

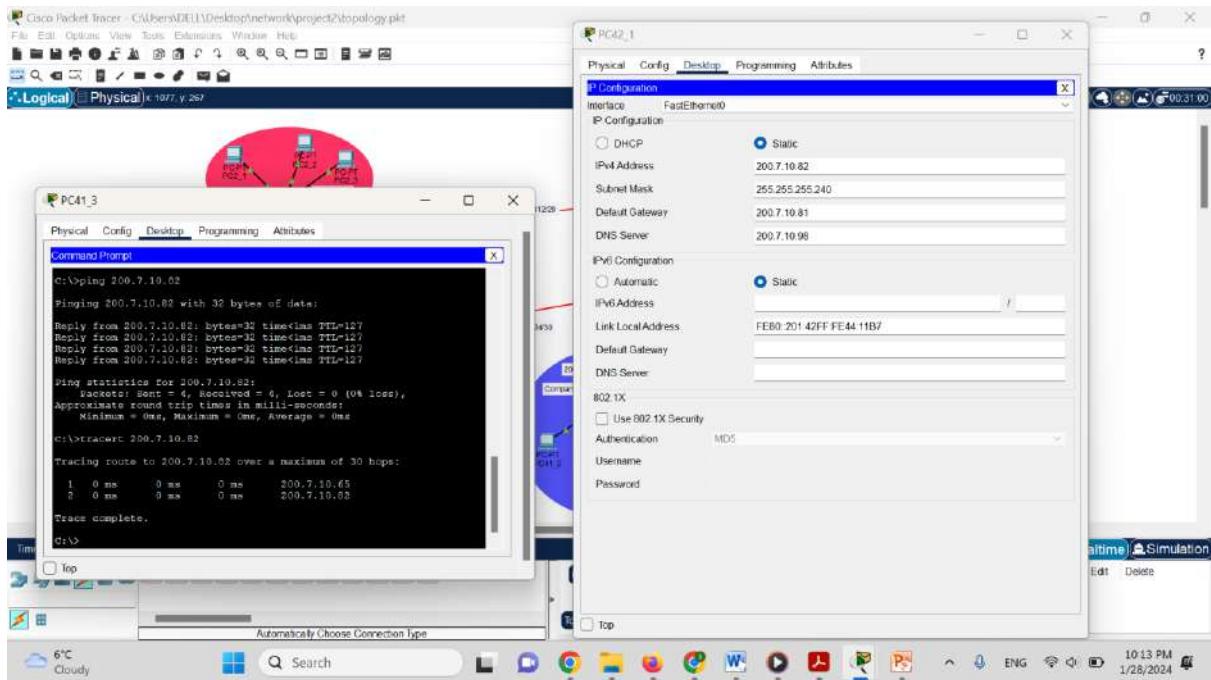


Figure 72:PC41_3 pinging and tracert to PC42_1(different subnets)

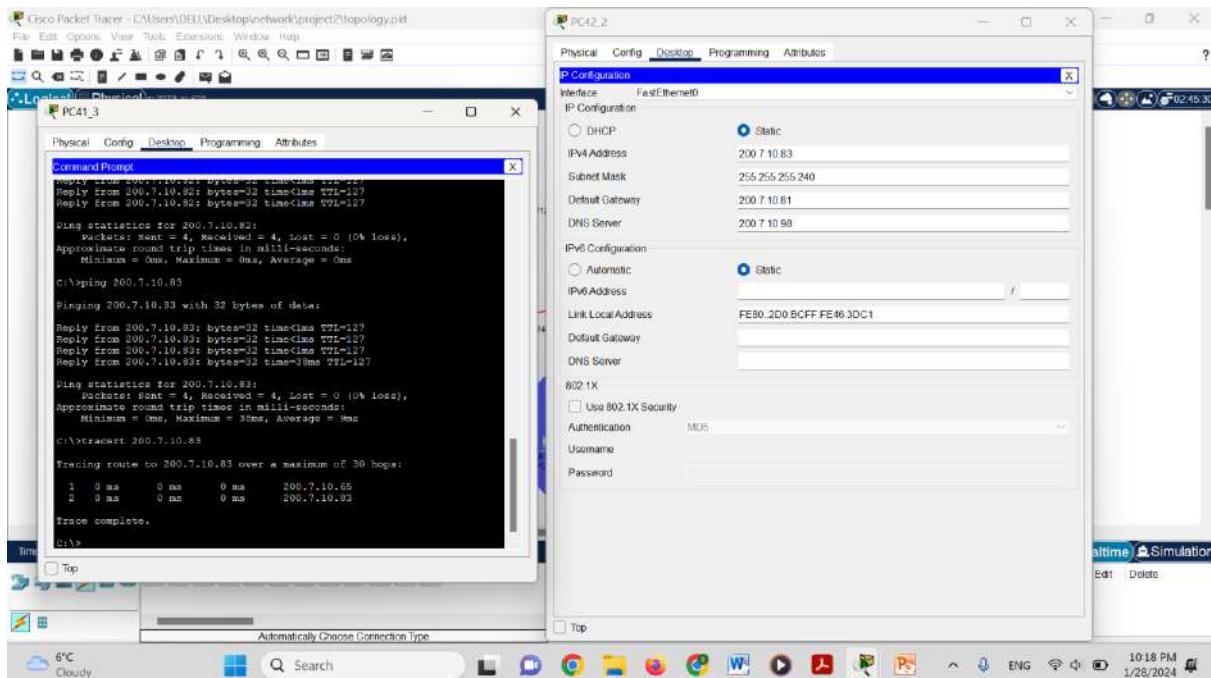


Figure 73:PC41_3 pinging and tracert to PC42_2(different subnets)

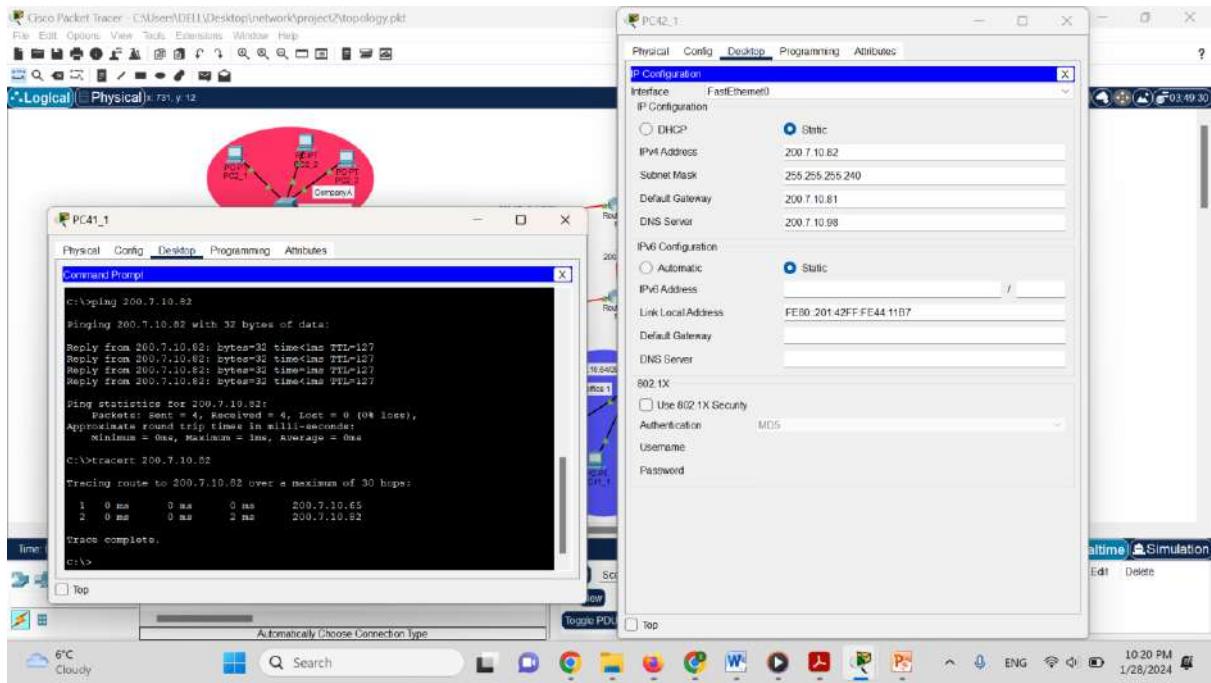


Figure 74:PC41_1 pinging and tracert to PC42_1(different subnets)

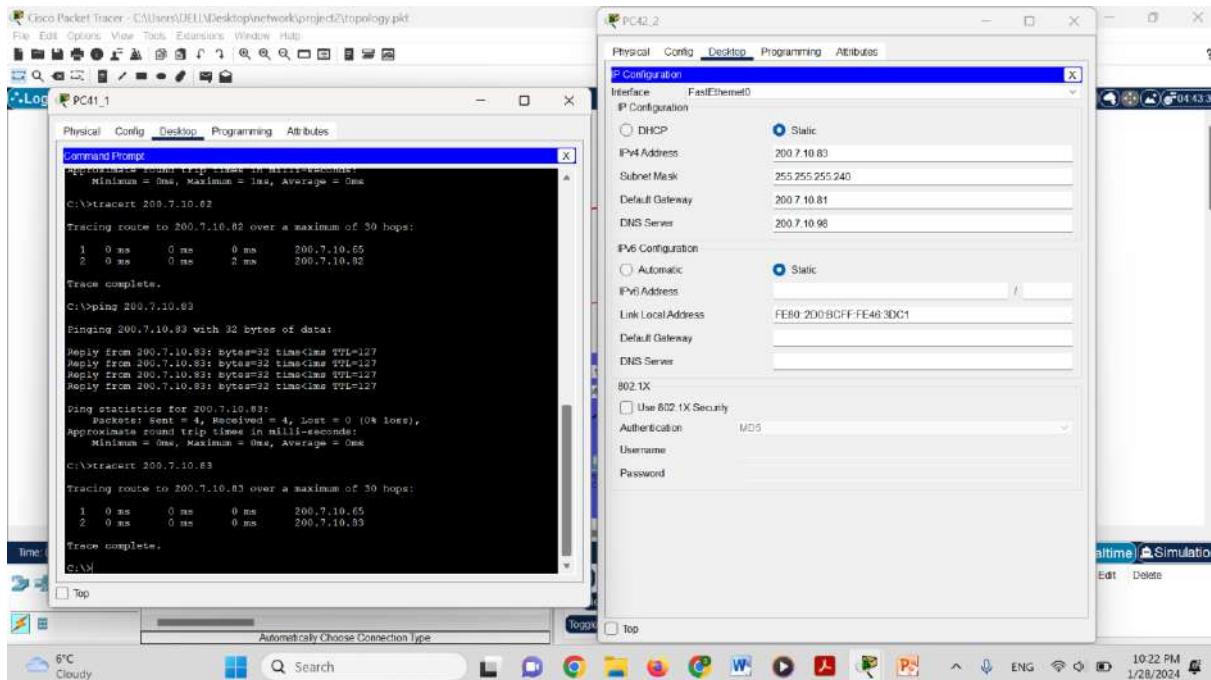


Figure 75 :PC41_1 pinging and tracert to PC42_2(different subnets)

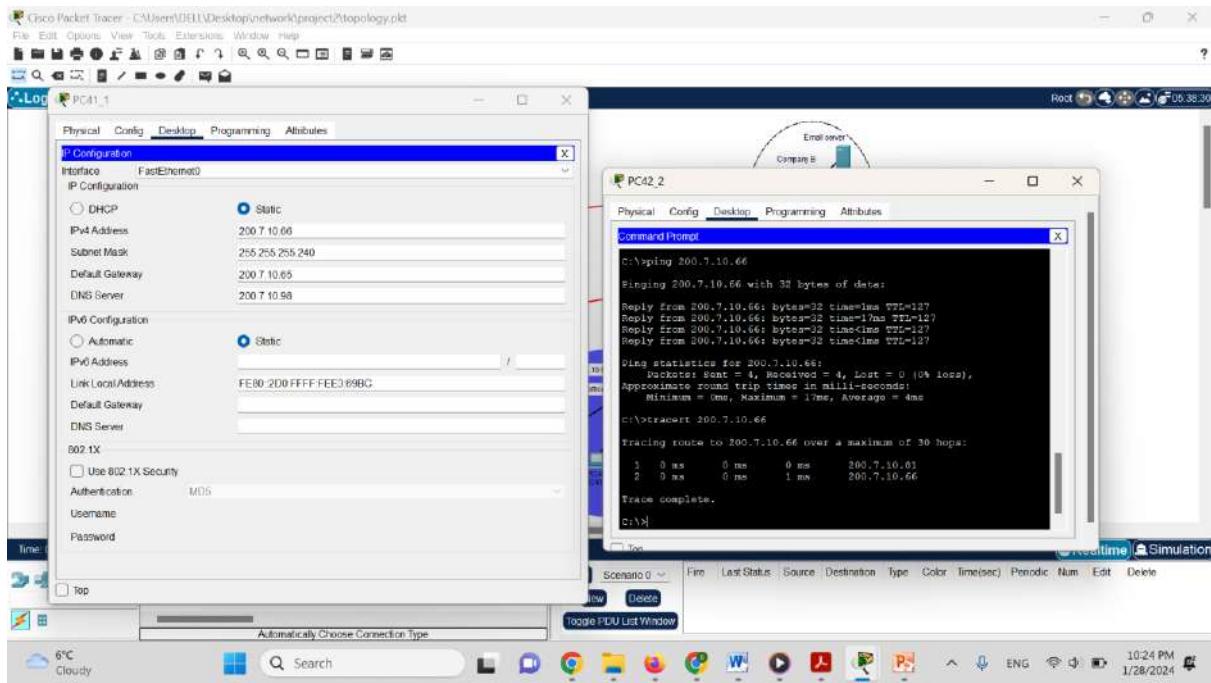


Figure 76 :PC42_2 pinging and tracert to PC41_1(different subnets)

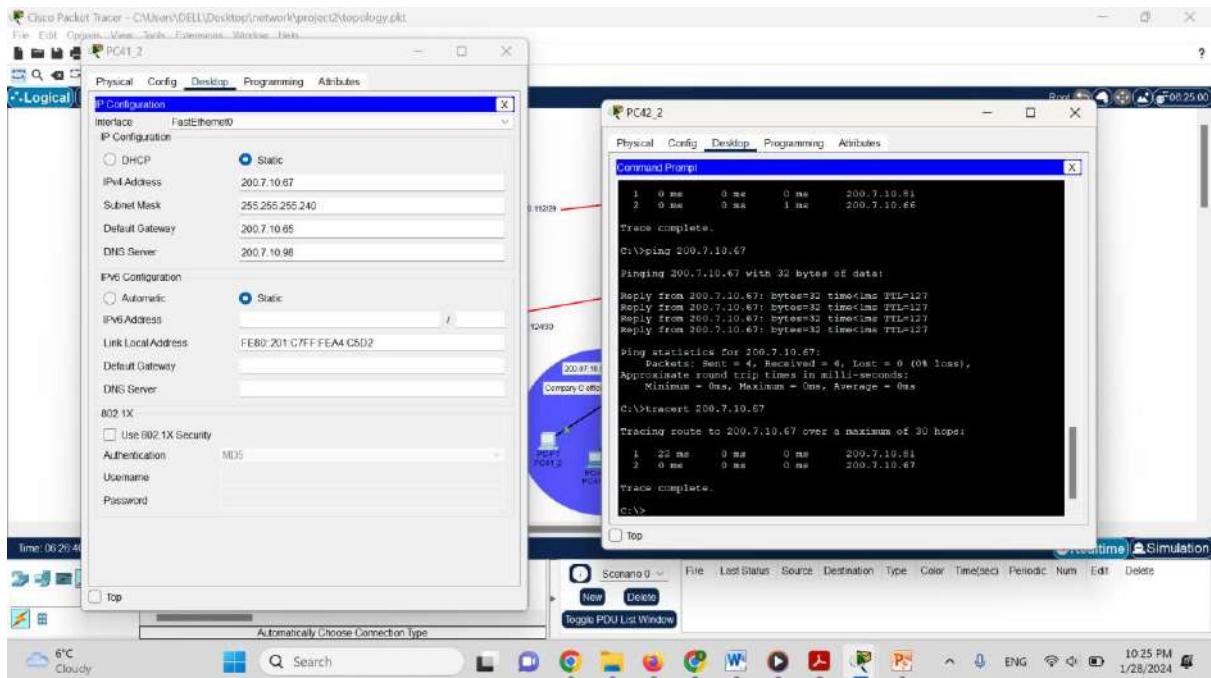


Figure 77:PC42_2 pinging and tracert to PC41_2(different subnets)

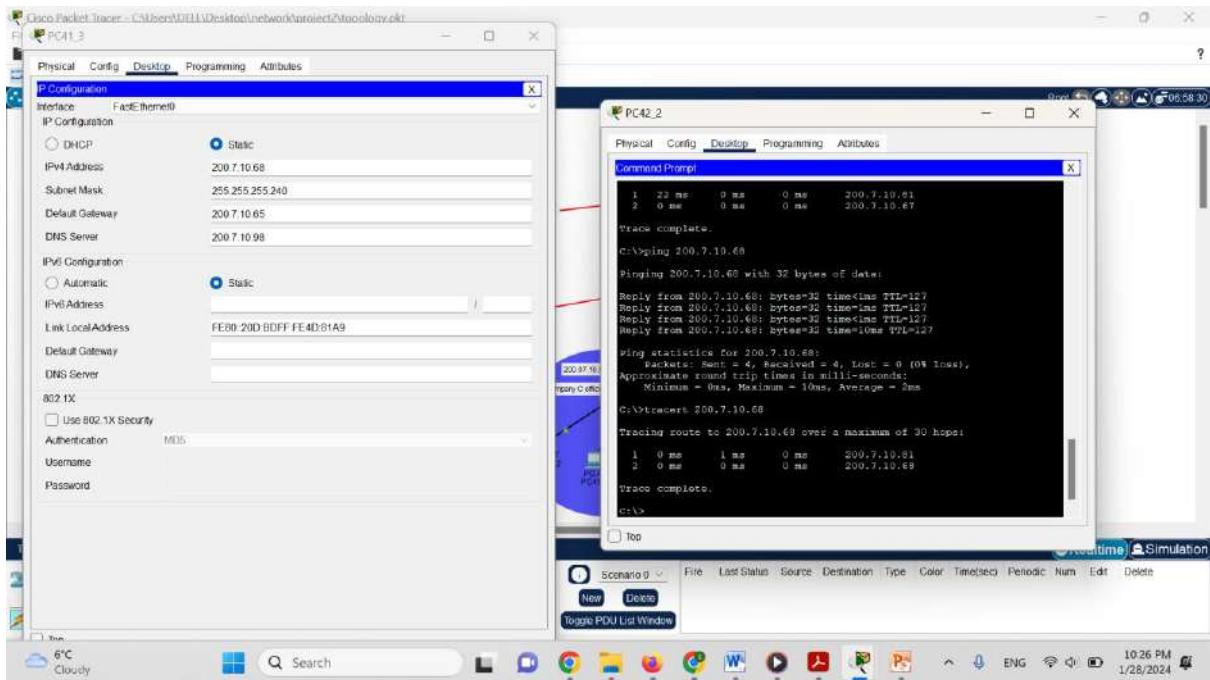


Figure 78:PC42_2 pinging and tracert to PC41_3(different subnets)

company A to Company B :

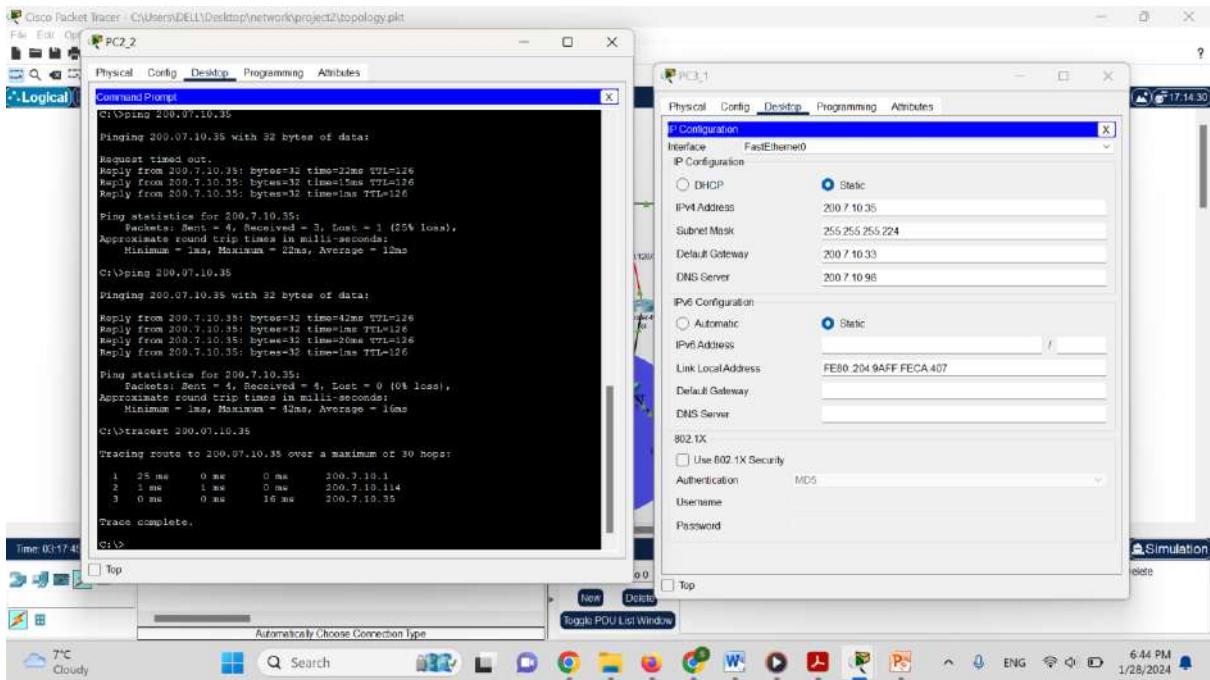


Figure 79:PC2_2 pinging and tracert to PC3_1(different subnets)

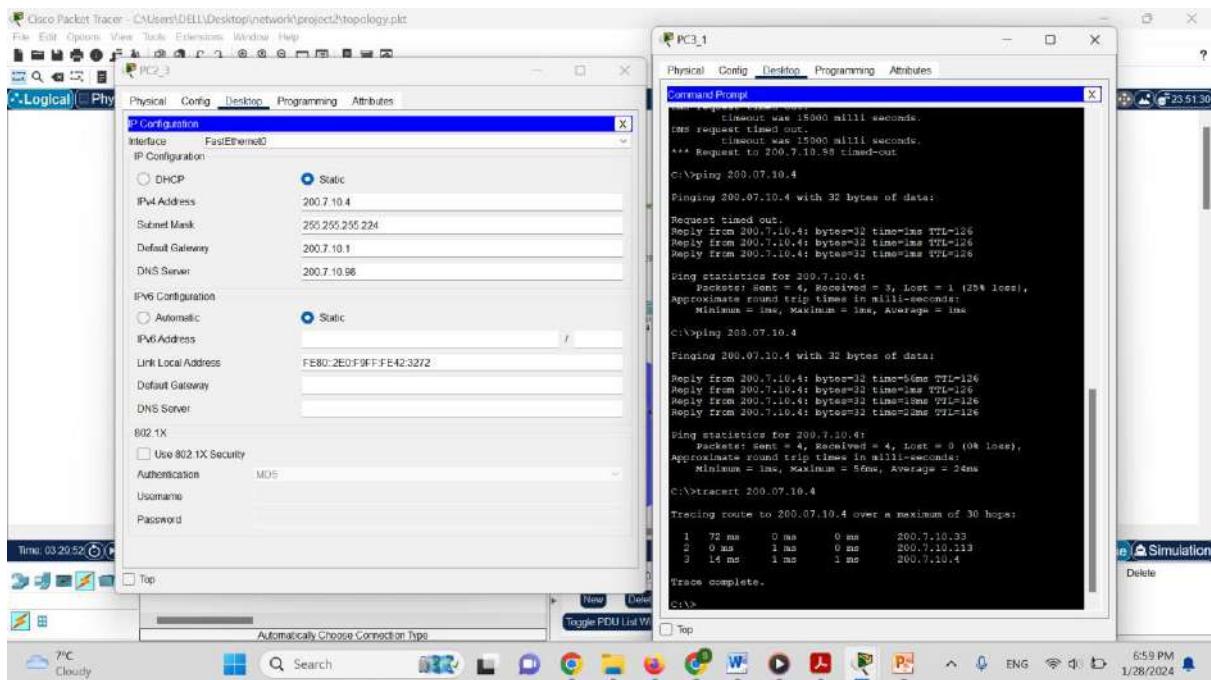


Figure 80:PC3_1 pinging and tracert to PC2_3(different subnets)

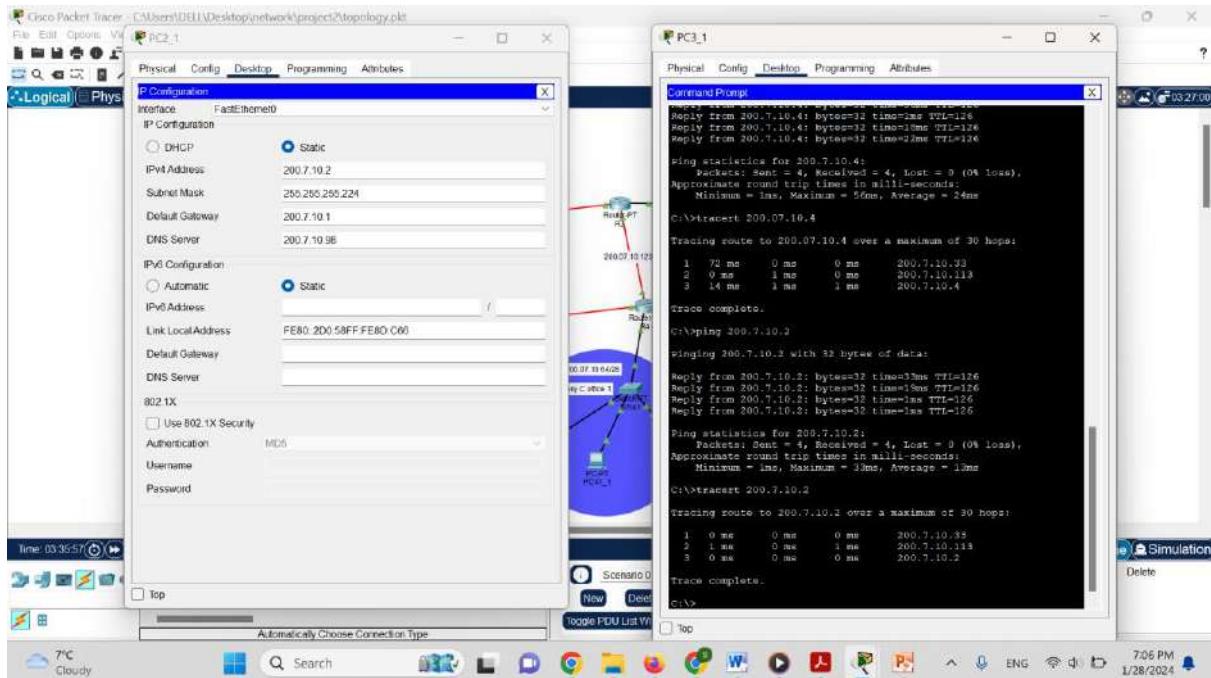


Figure 81:PC3_1 pinging and tracert to PC2_1(different subnets)

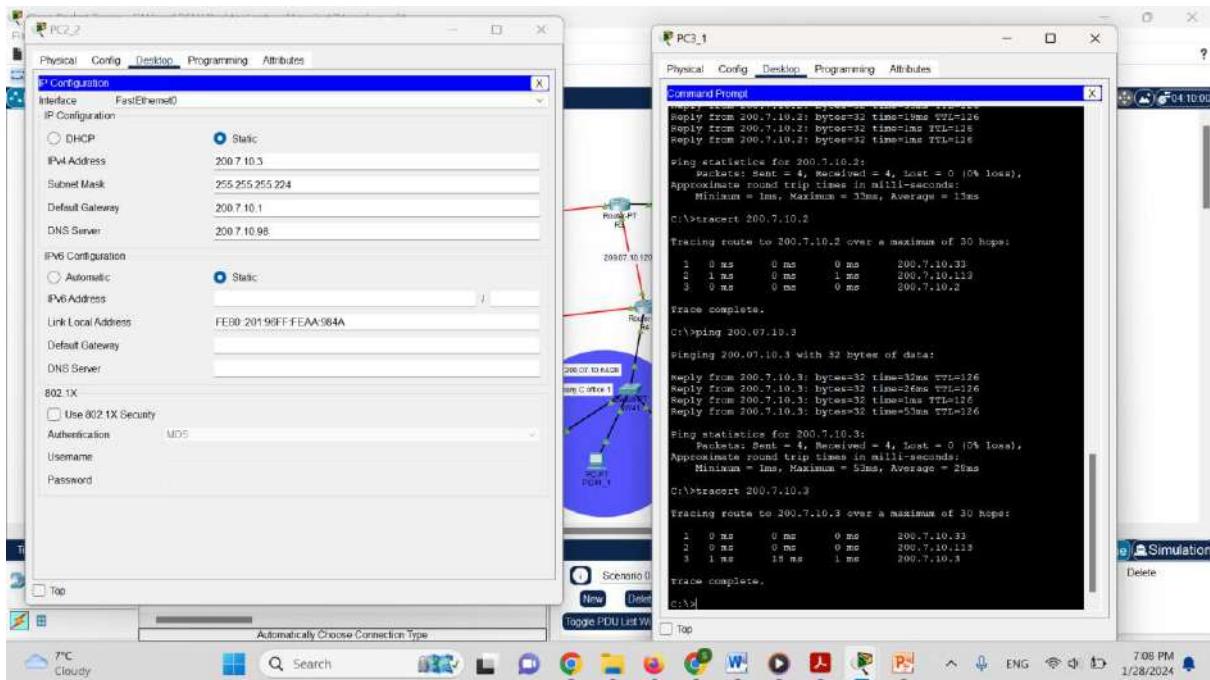


Figure 82:PC3_1 pinging and tracert to PC2_2(different subnets)

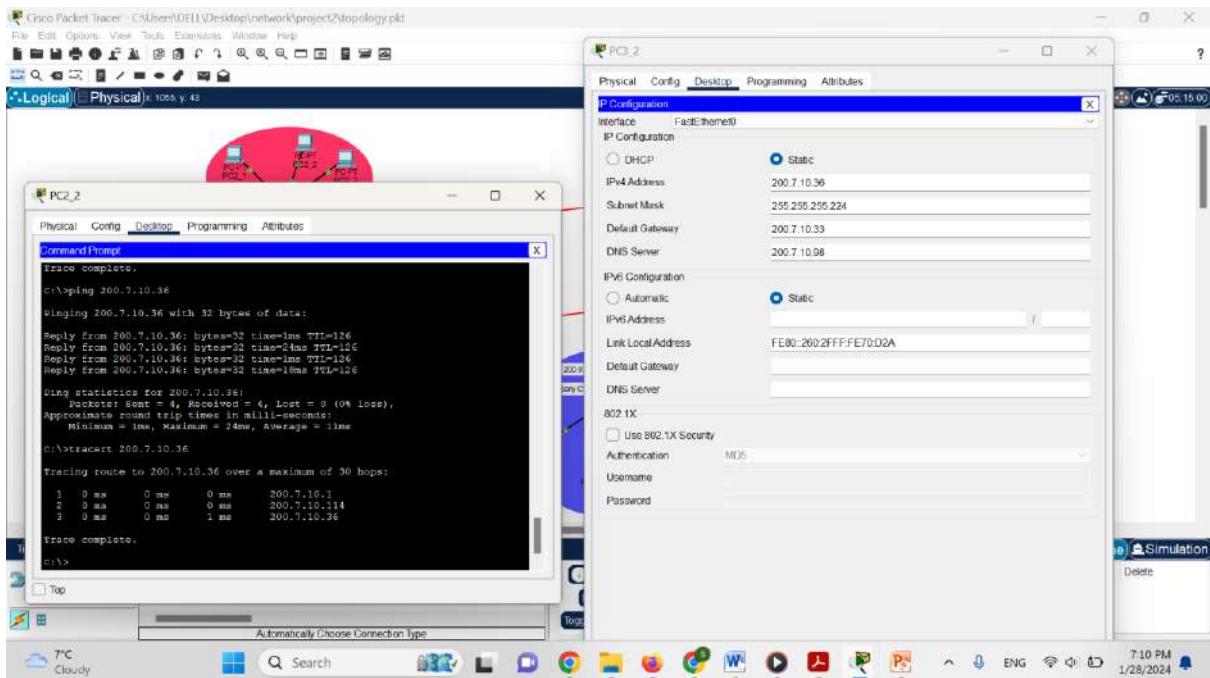


Figure 83:PC2_2 pinging and tracert to PC3_2(different subnets)

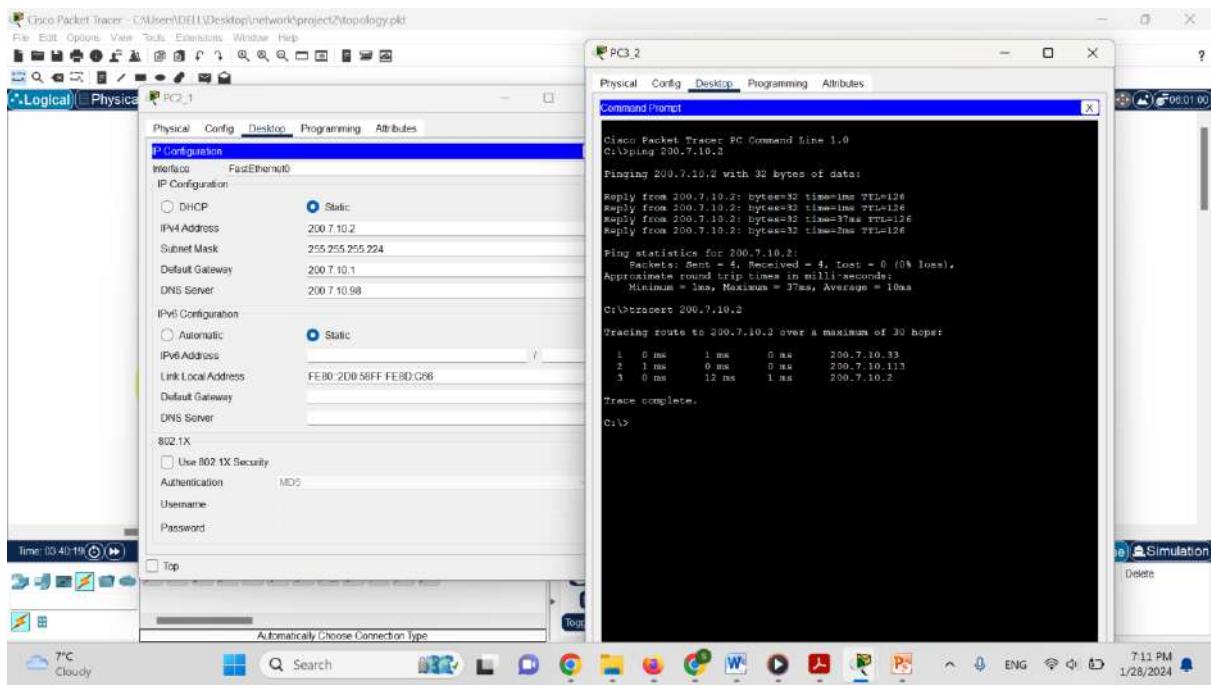


Figure 84:PC3_2 pinging and tracert to PC2_1(different subnets)

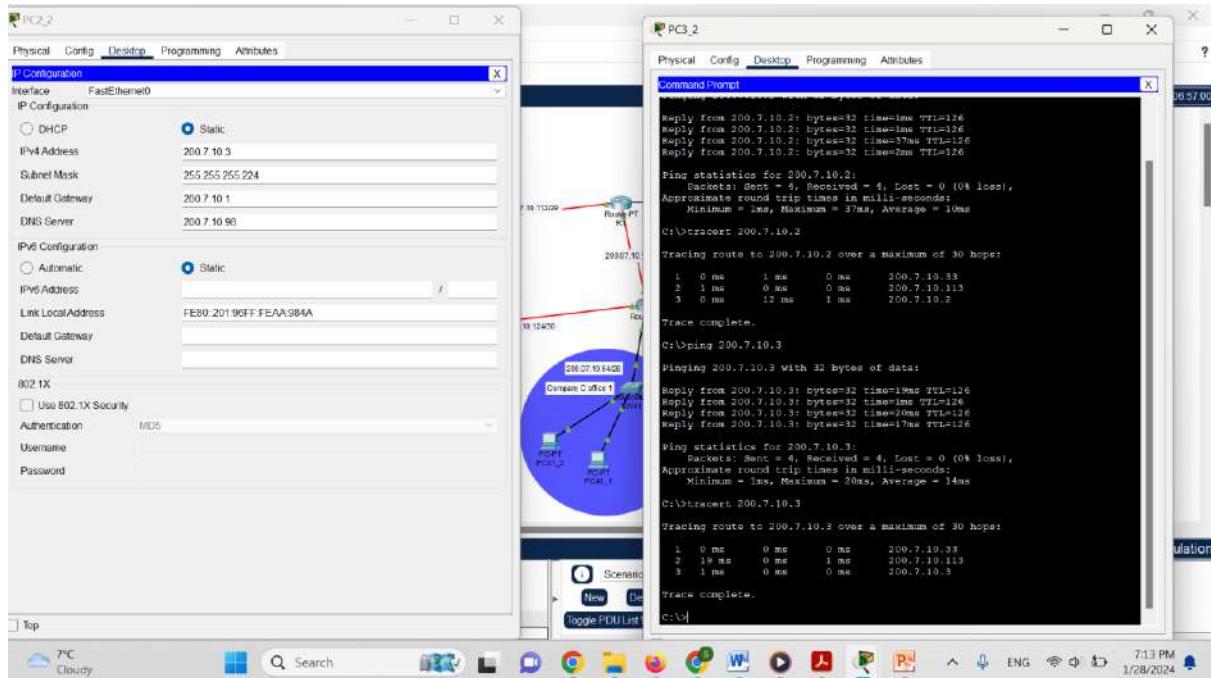


Figure 85:PC3_2 pinging and tracert to PC2_2(different subnets)

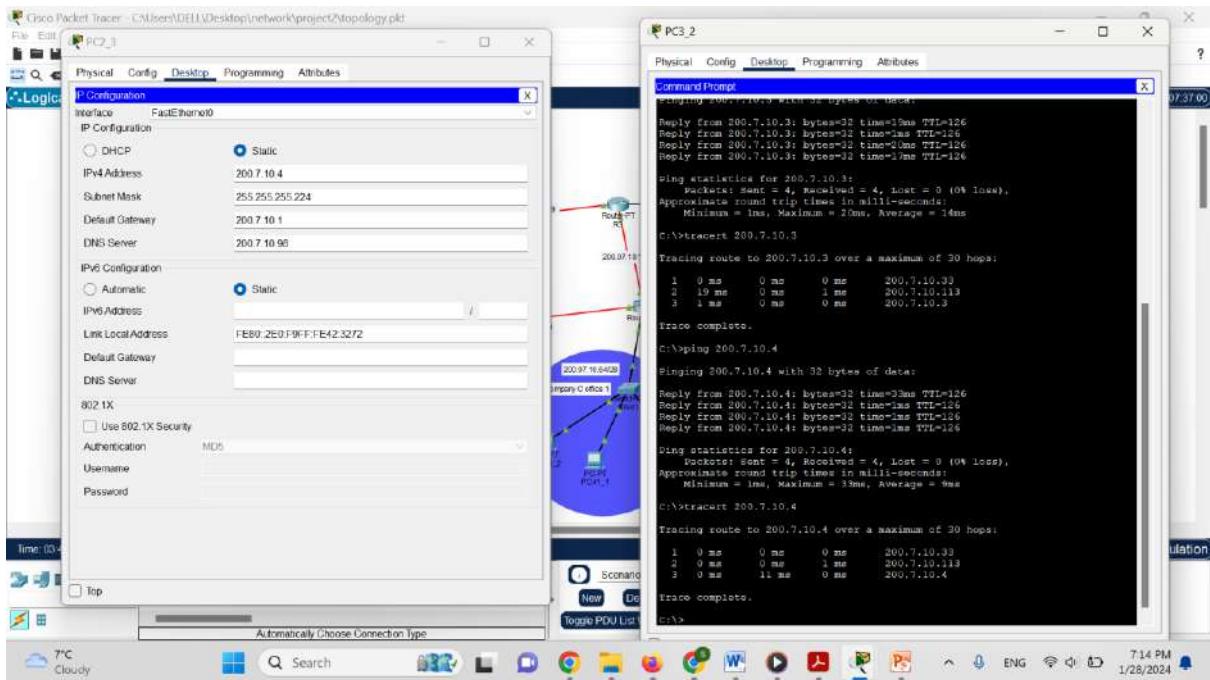


Figure 86:PC3_2 pinging and tracert to PC2_3(different subnets)

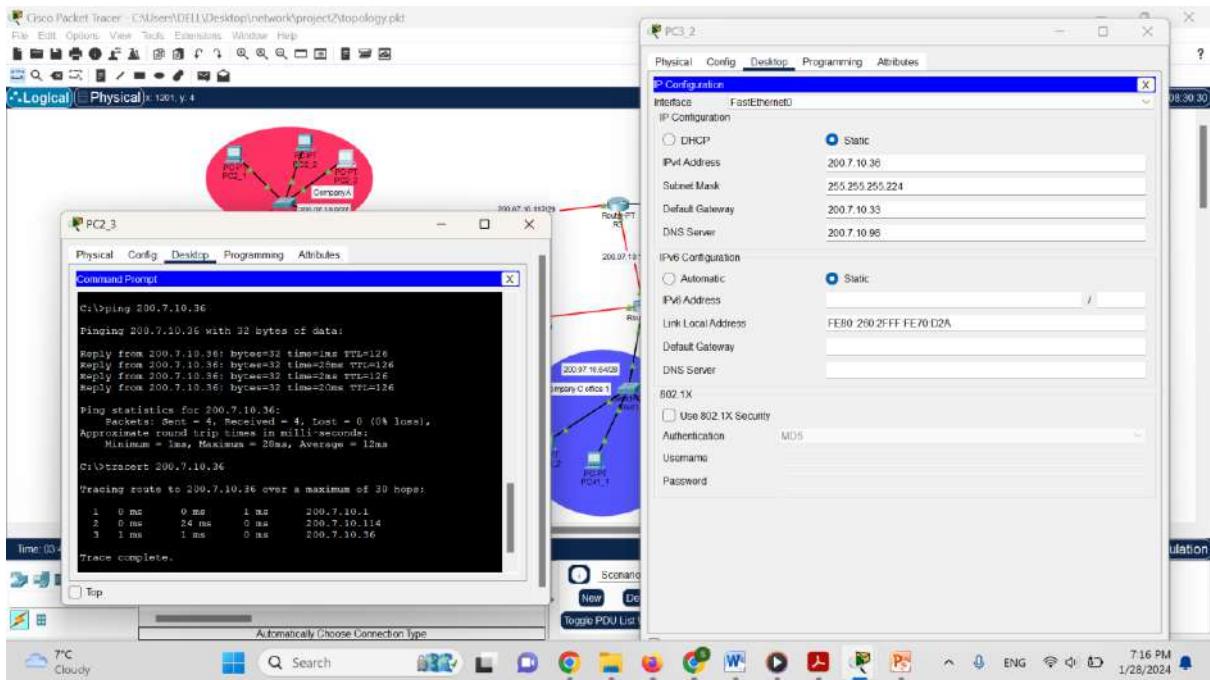


Figure 87:PC2_3 pinging and tracert to PC3_2(different subnets)

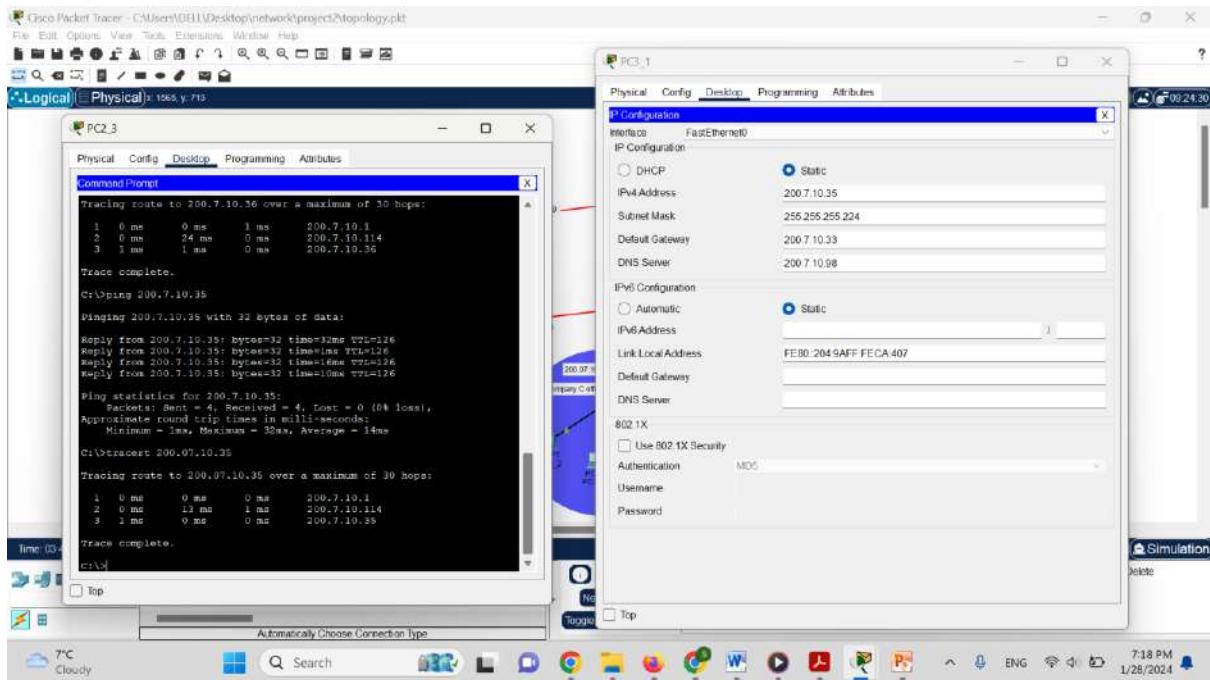


Figure 88:PC2_3 pinging and tracert to PC3_1(different subnets)

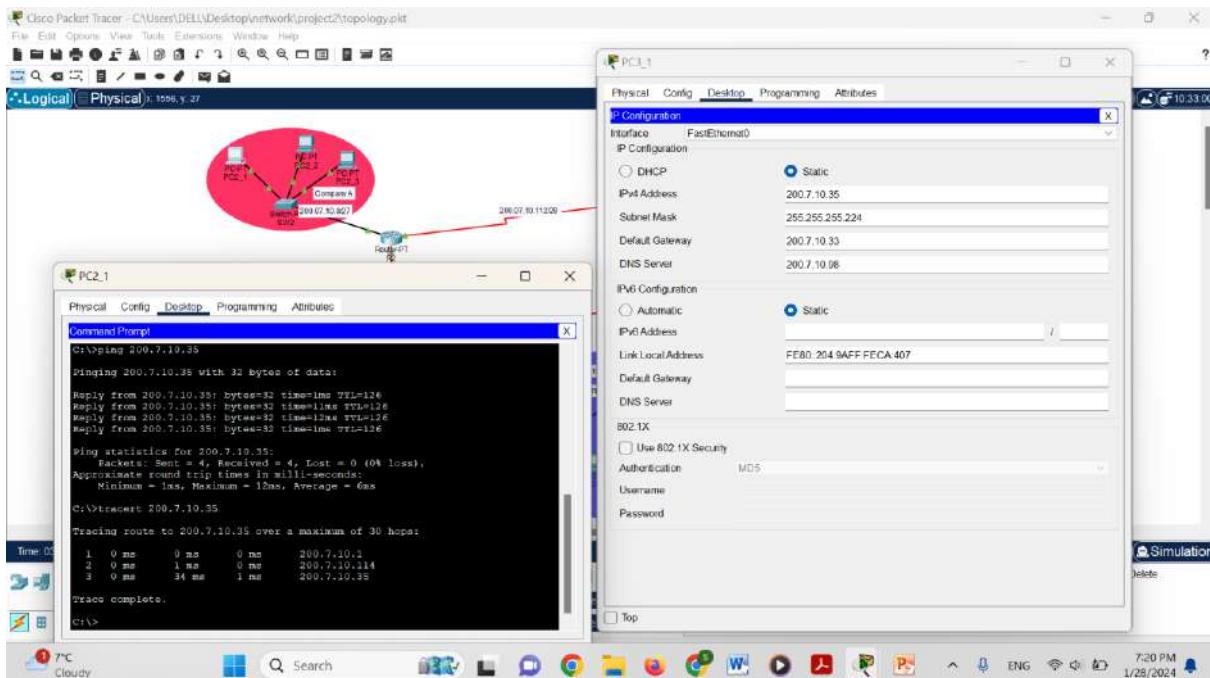


Figure 89:PC2_1 pinging and tracert to PC3_1(different subnets)

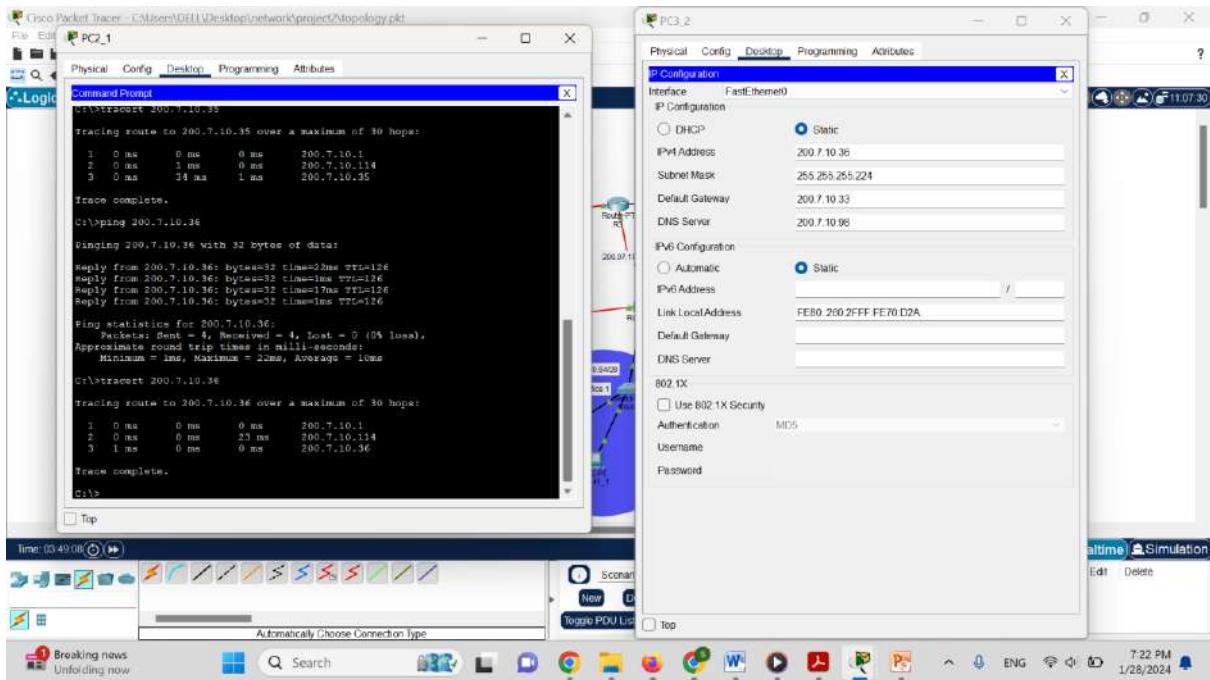


Figure 90:PC2_1 pinging and tracert to PC3_2(different subnets)

company A and Company C office 1 :

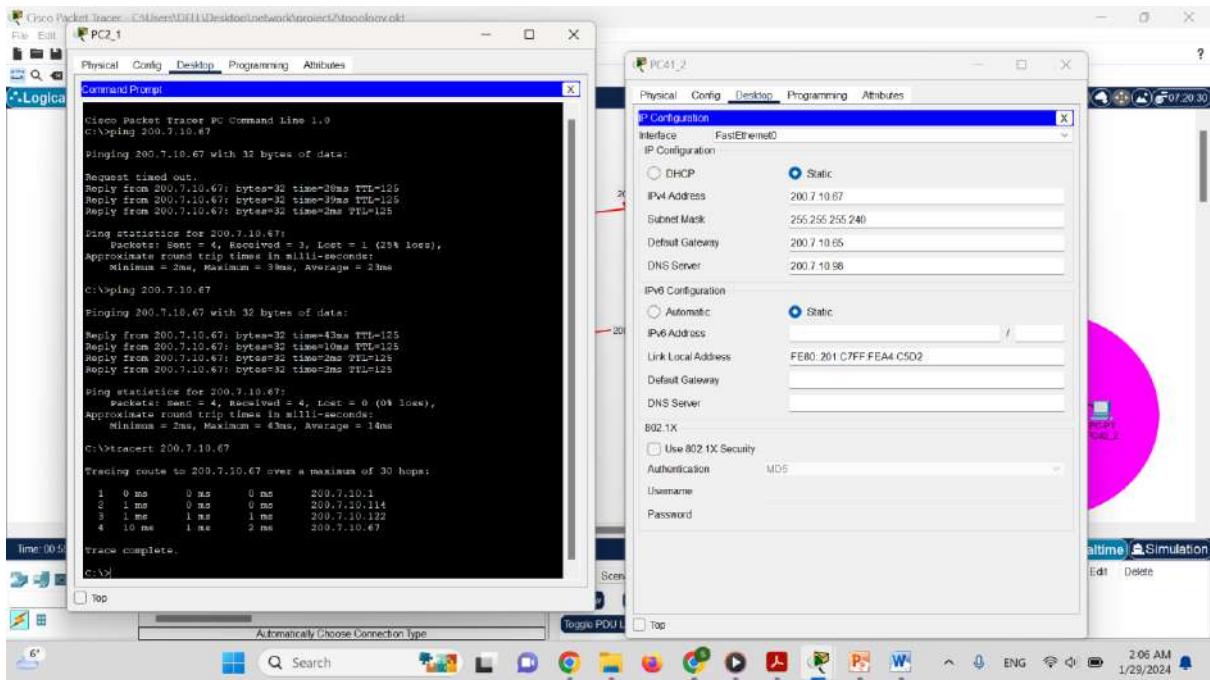


Figure 91:PC2_1 pinging and tracert to PC41_2(different subnets)

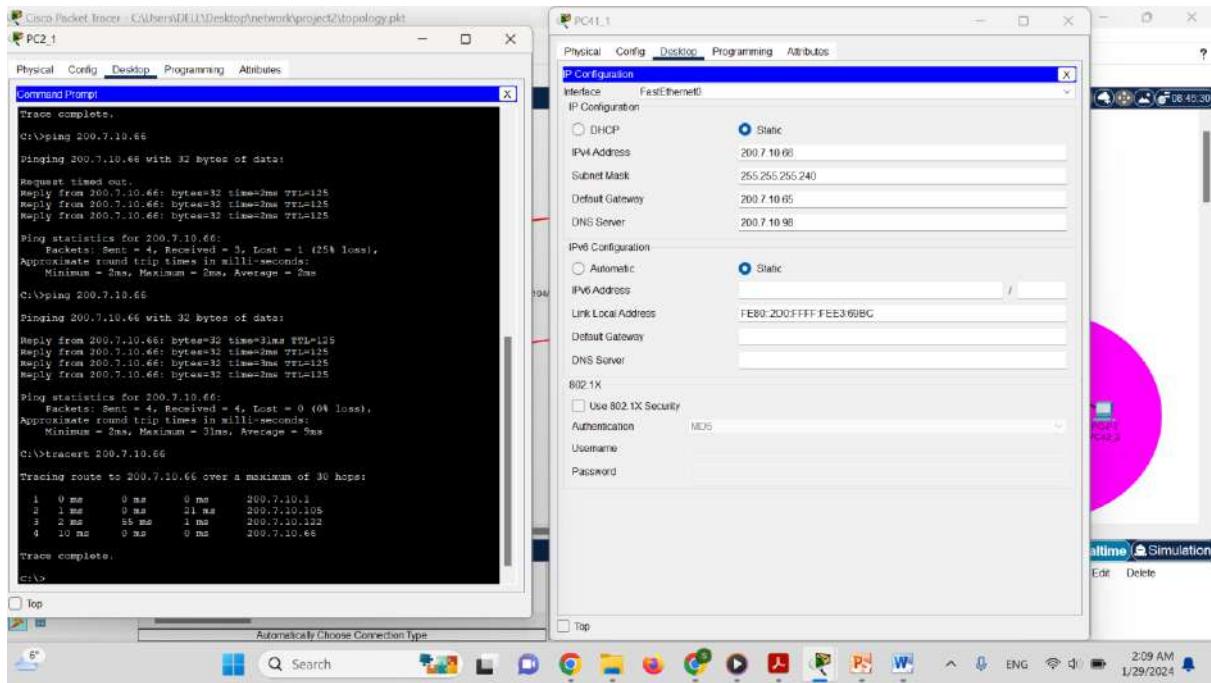


Figure 92:PC2_1 pinging and tracert to PC41_1(different subnets)

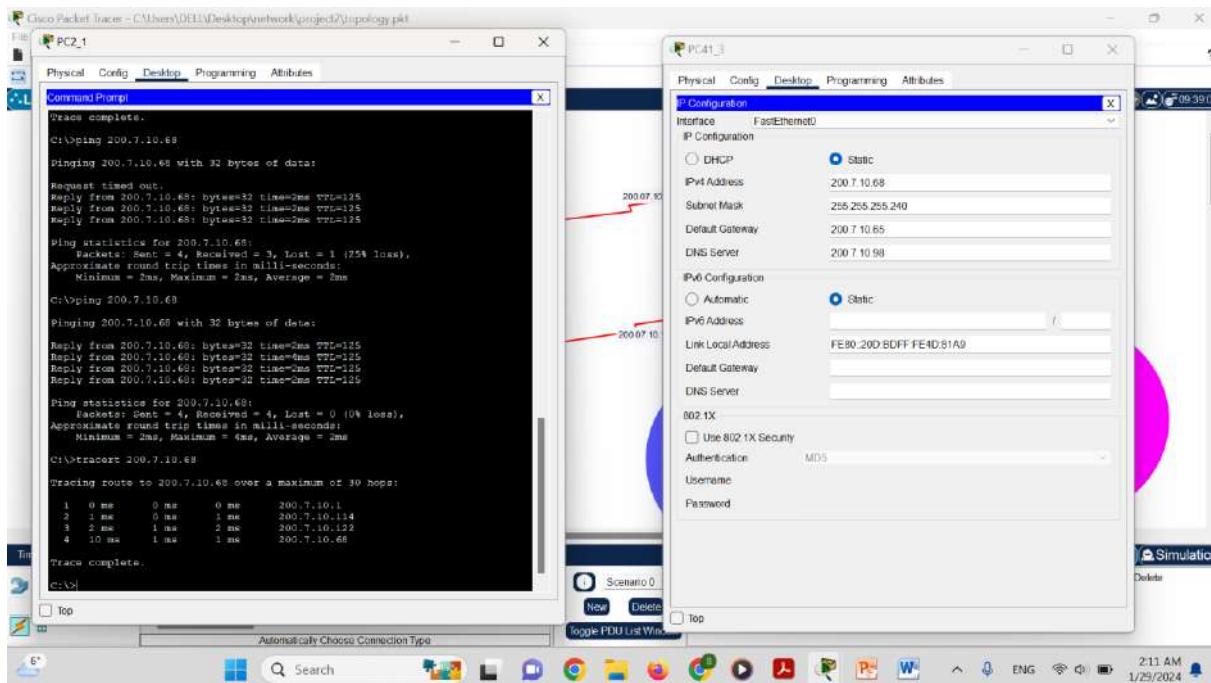


Figure 93:PC2_1 pinging and tracert to PC41_3(different subnets)

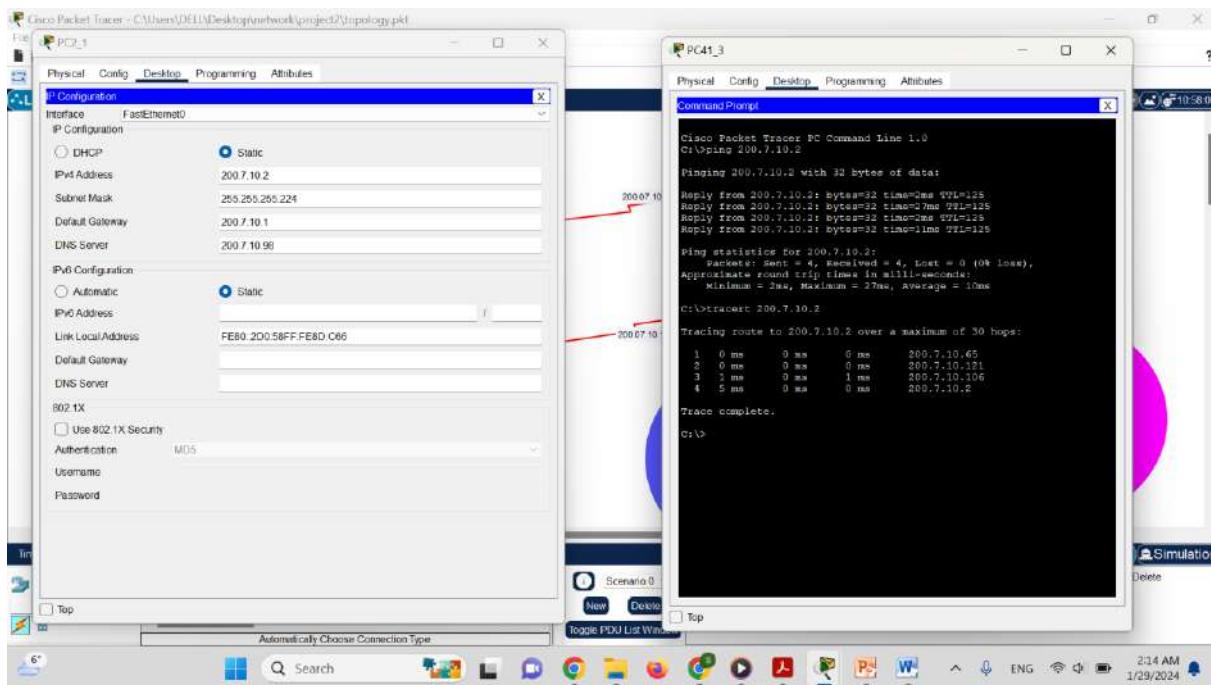


Figure 94:PC41_3 pinging and tracert to PC2_1(different subnets)

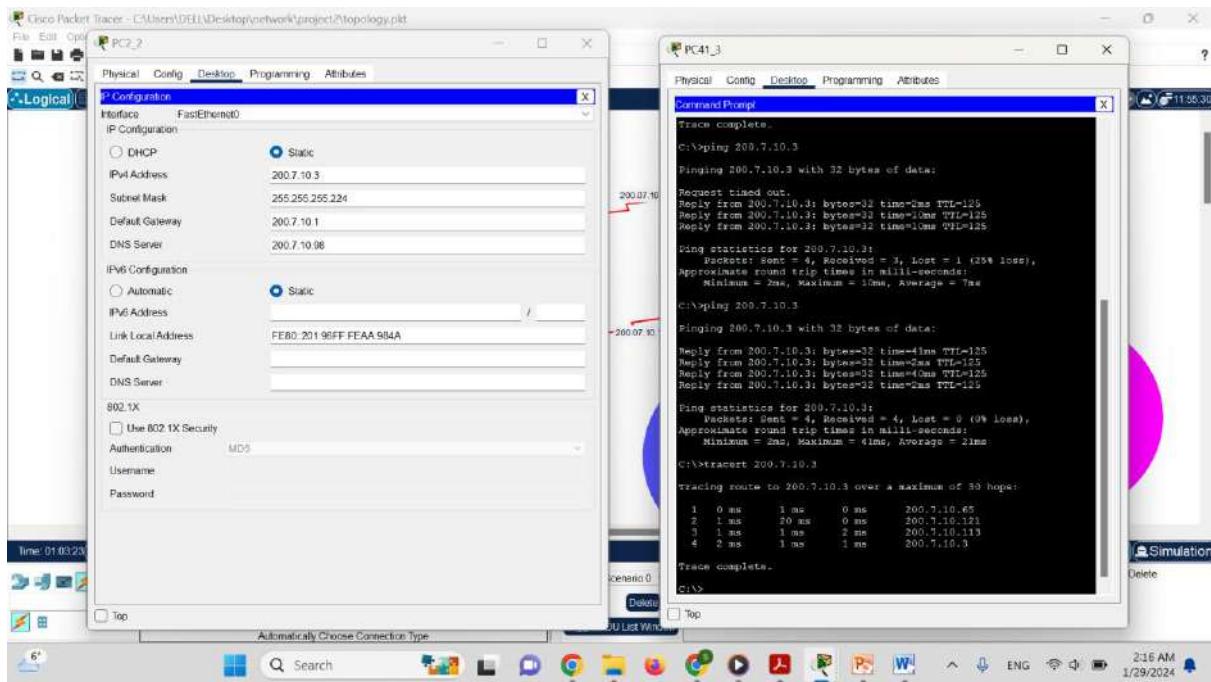


Figure 95:PC41_3 pinging and tracert to PC2_2(different subnets)

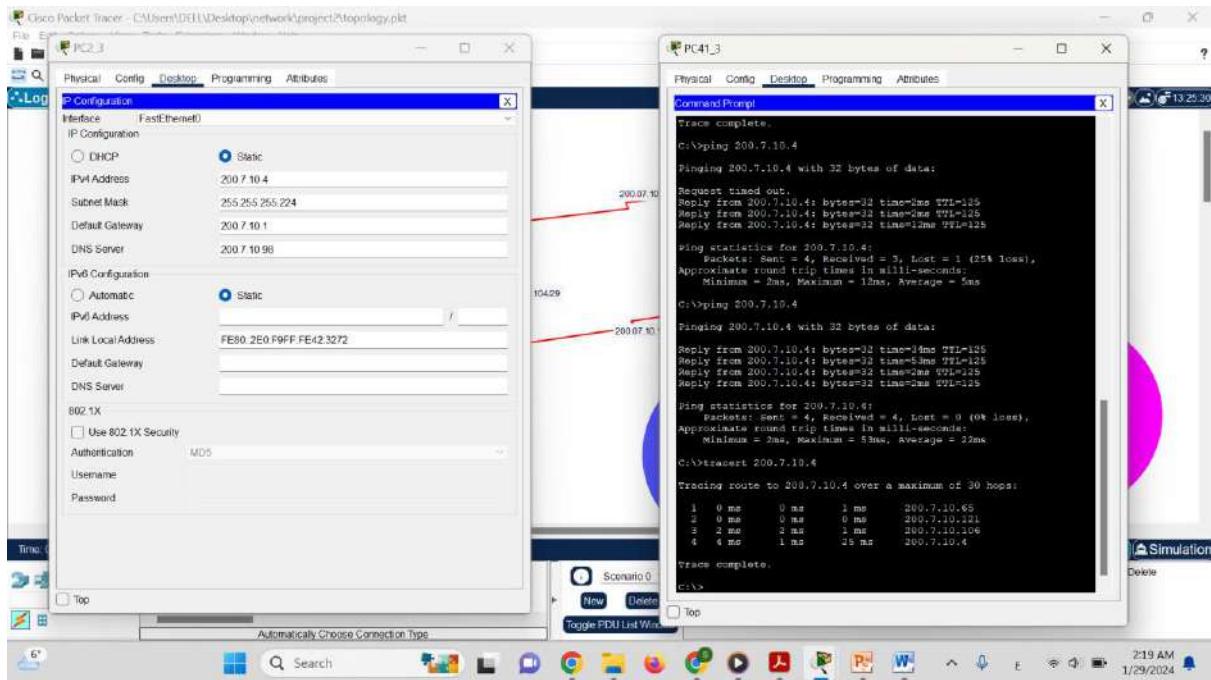


Figure 96:PC41_3 pinging and tracert to PC2_3(different subnets)

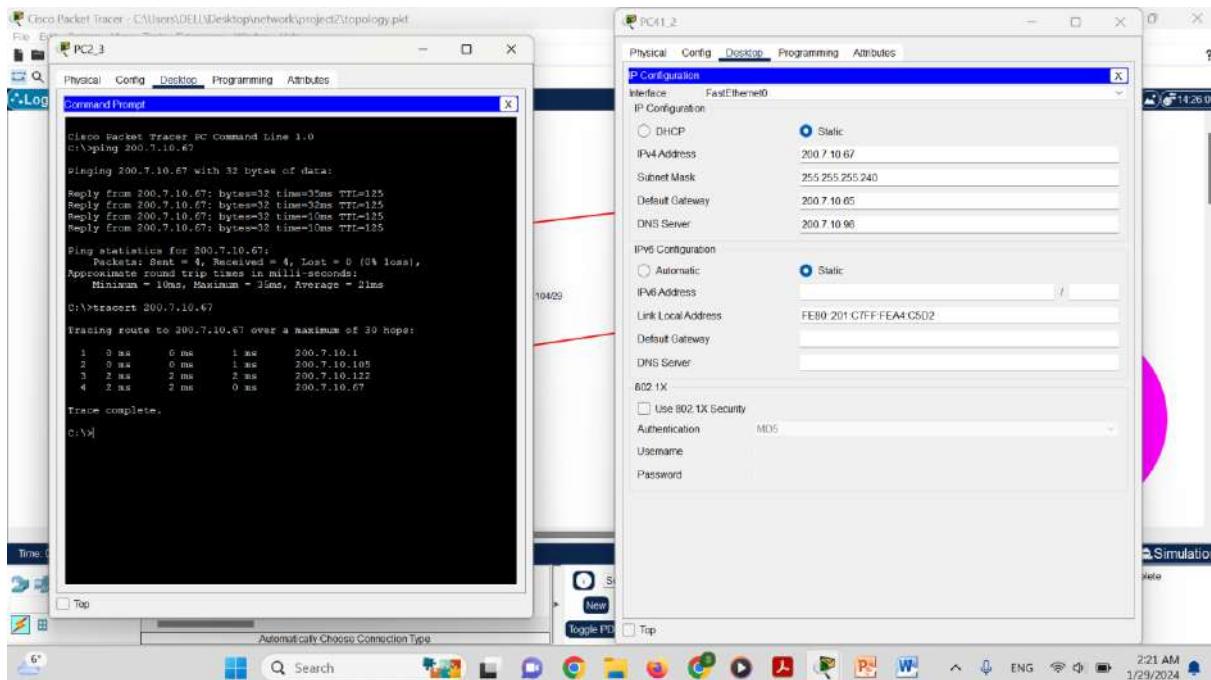


Figure 97:PC2_3 pinging and tracert to PC41_2(different subnets)

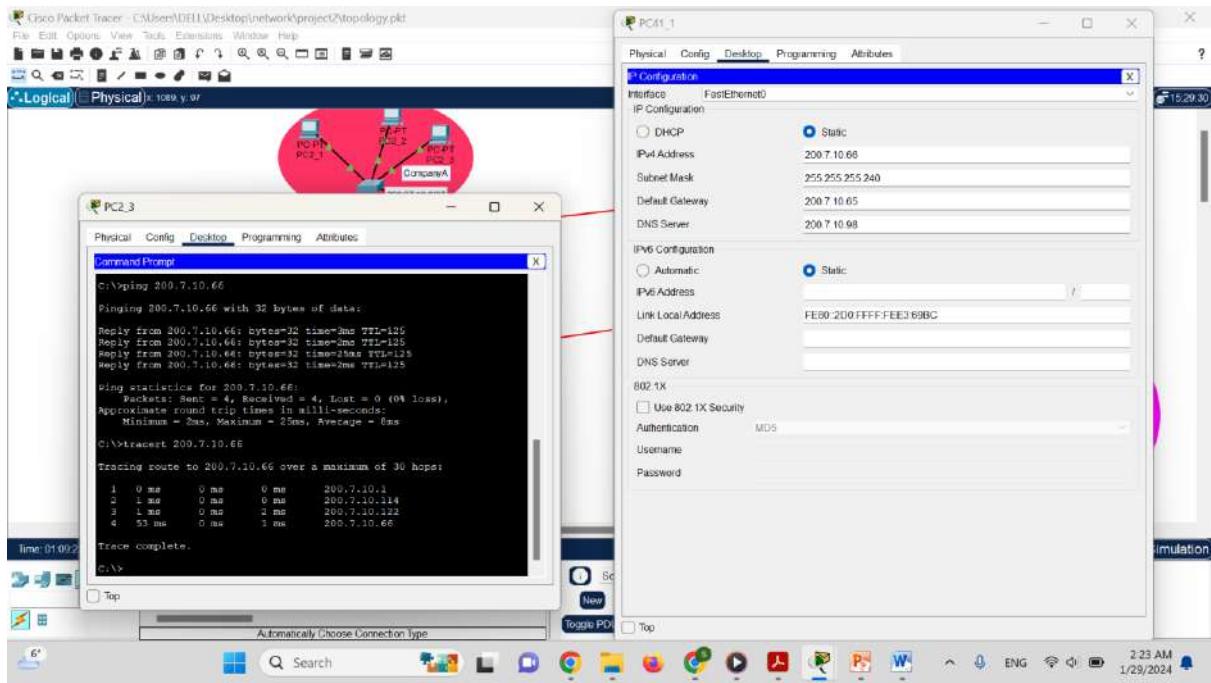


Figure 98:PC2_3 pinging and tracert to PC41_1(different subnets)

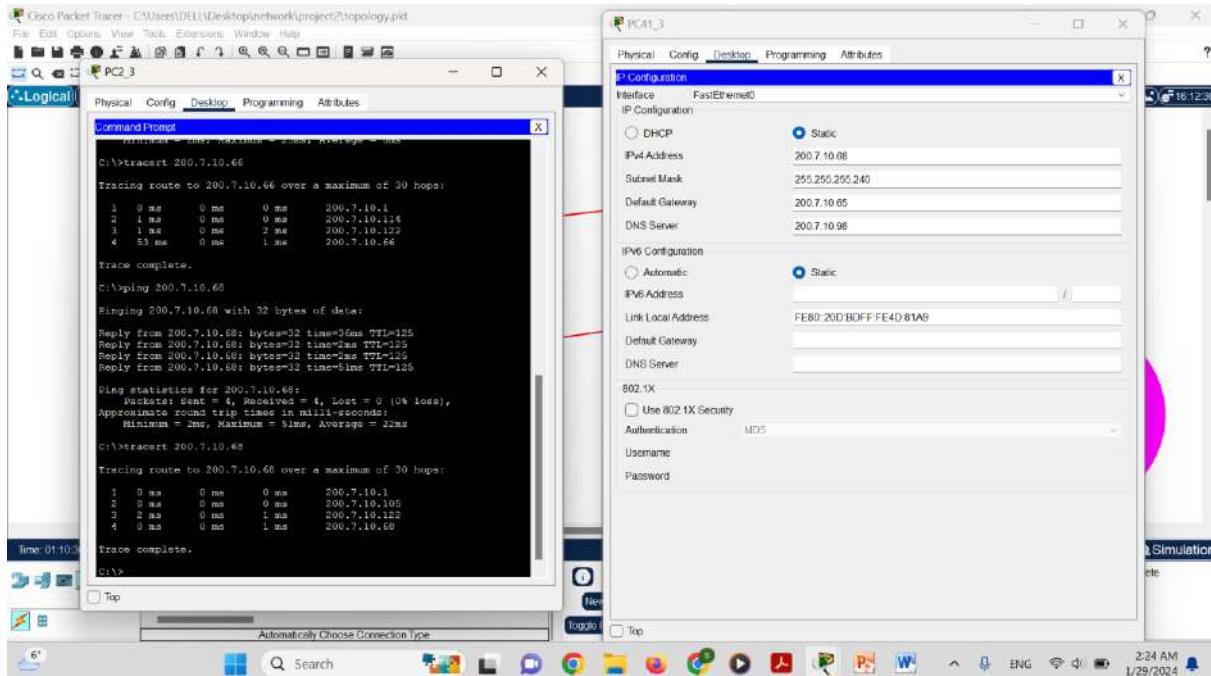


Figure 99:PC2_3 pinging and tracert to PC41_3(different subnets)

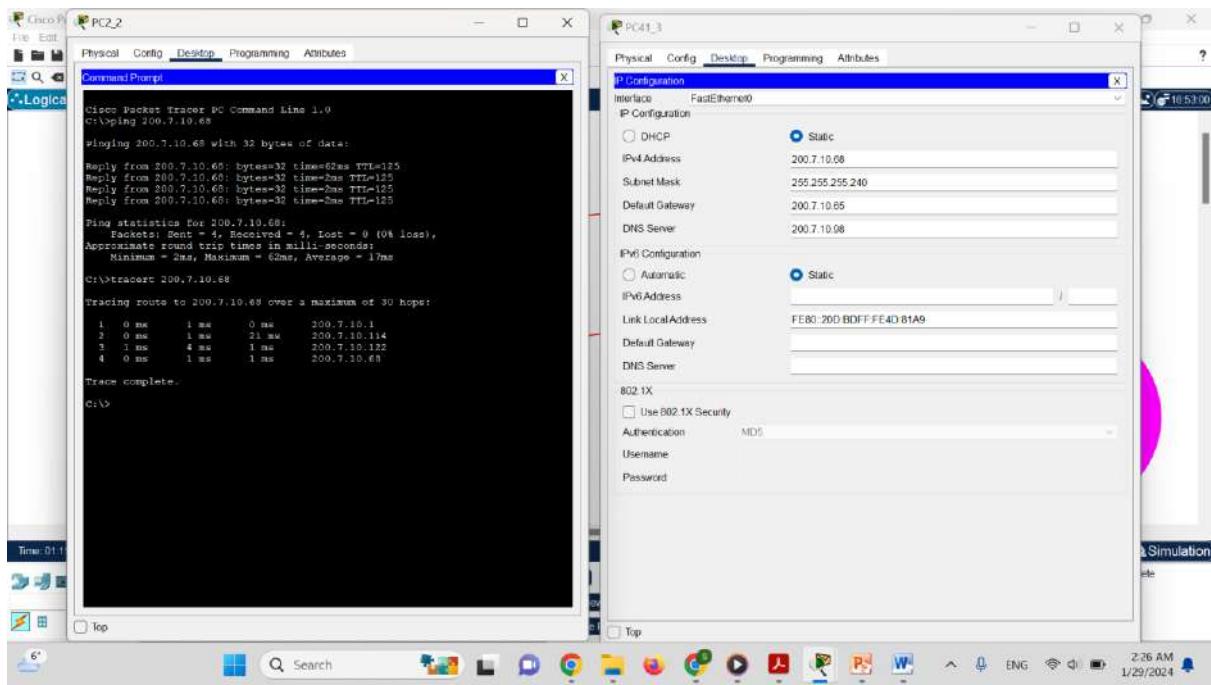


Figure 100:PC2_2 pinging and tracert to PC41_3(different subnets)

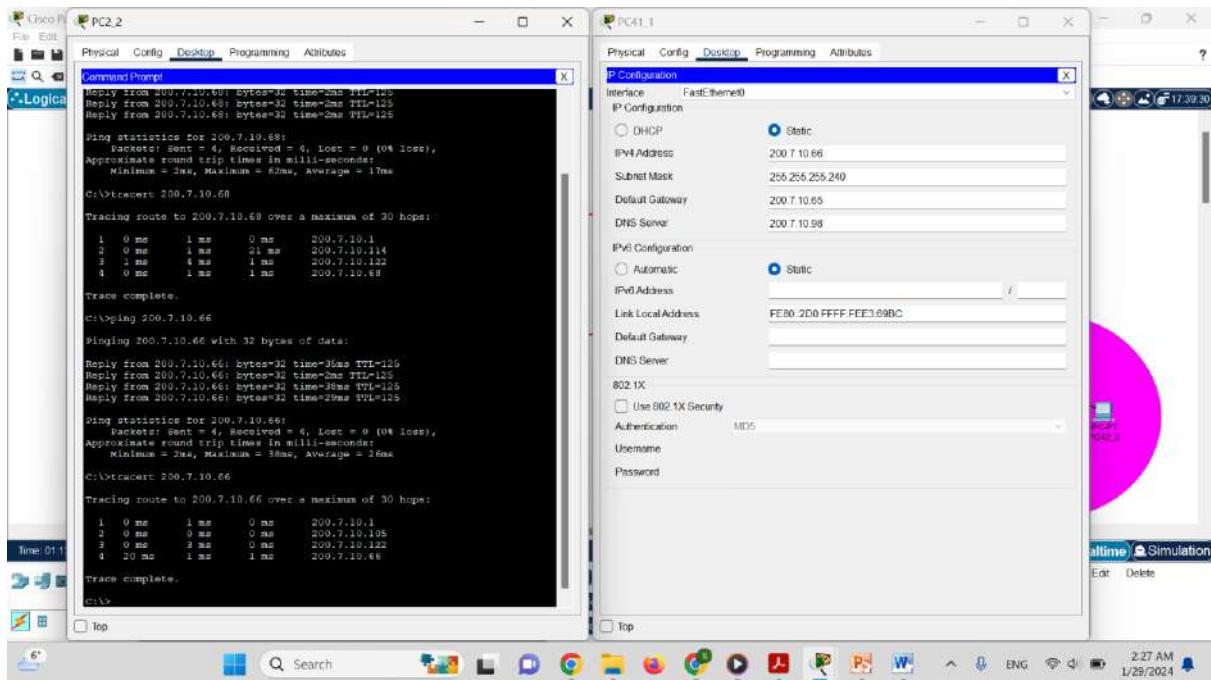


Figure 101:PC2_2 pinging and tracert to PC41_1(different subnets)

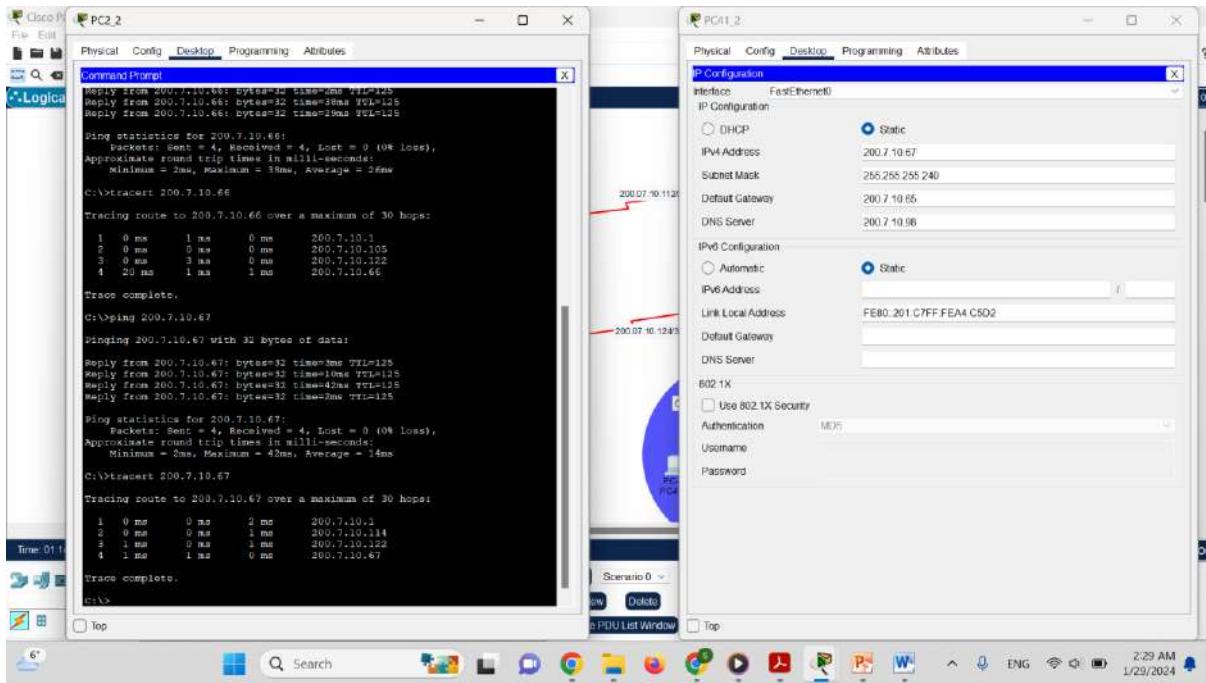


Figure 102:PC2_2 pinging and tracert to PC41_2(different subnets)

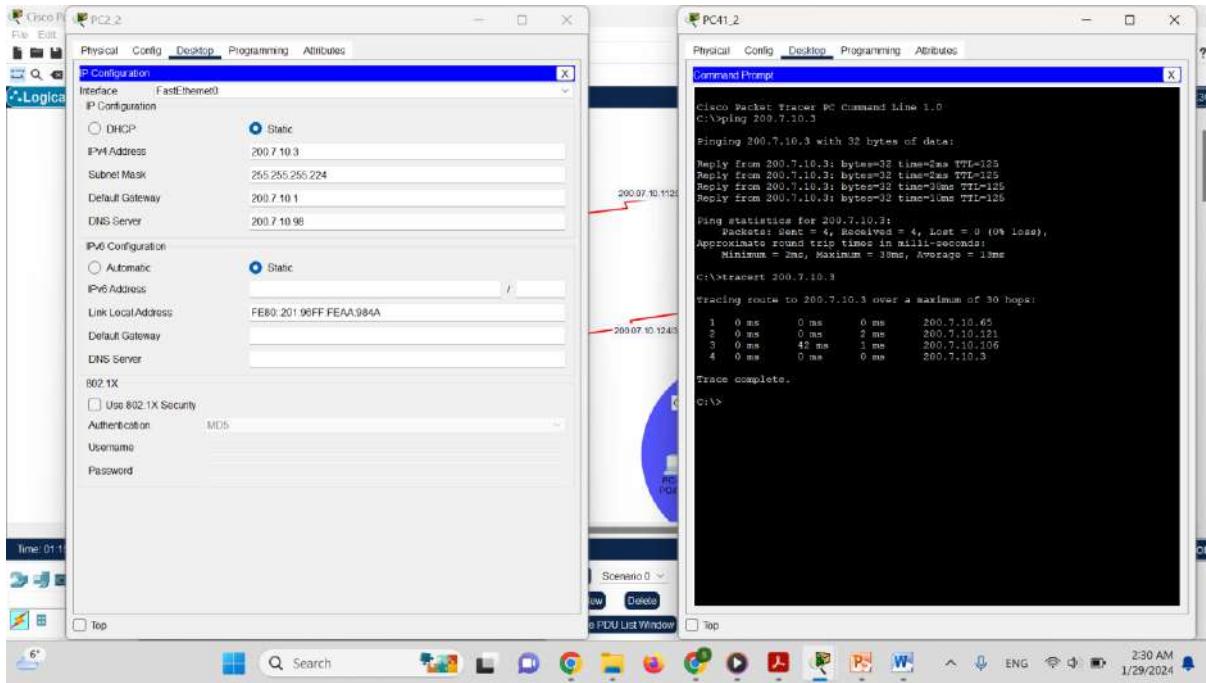


Figure 103:PC41_2 pinging and tracert to PC2_2(different subnets)

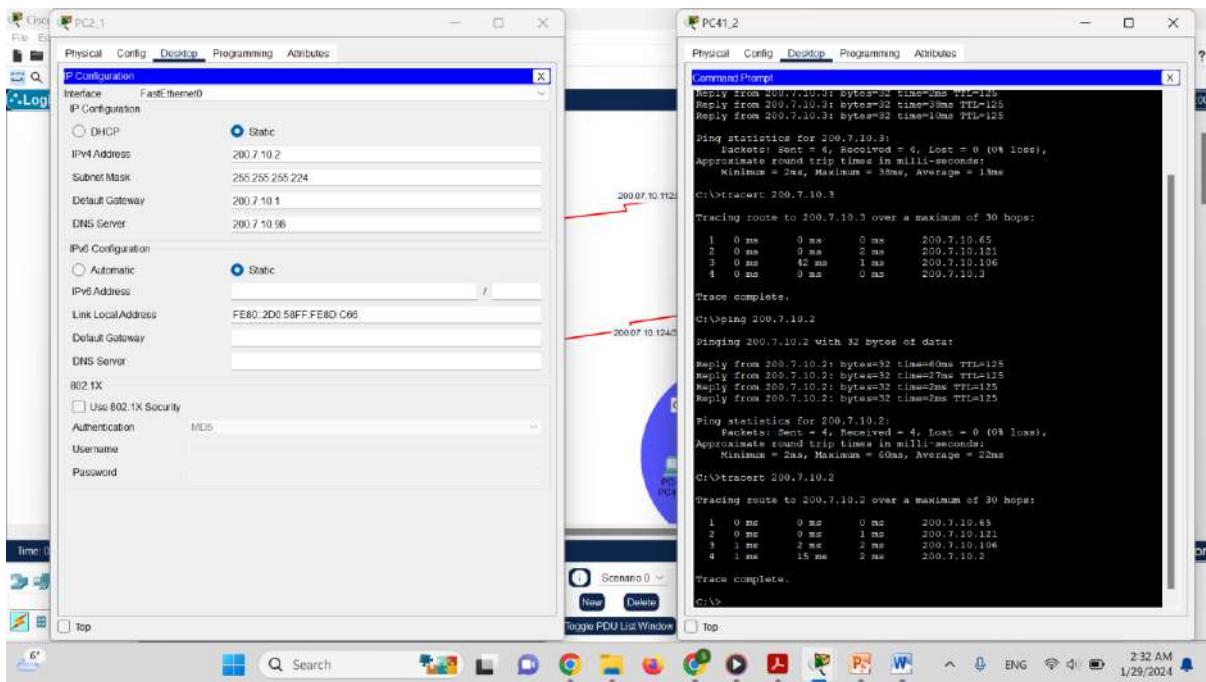


Figure 104:PC41_2 pinging and tracert to PC2_1(different subnets)

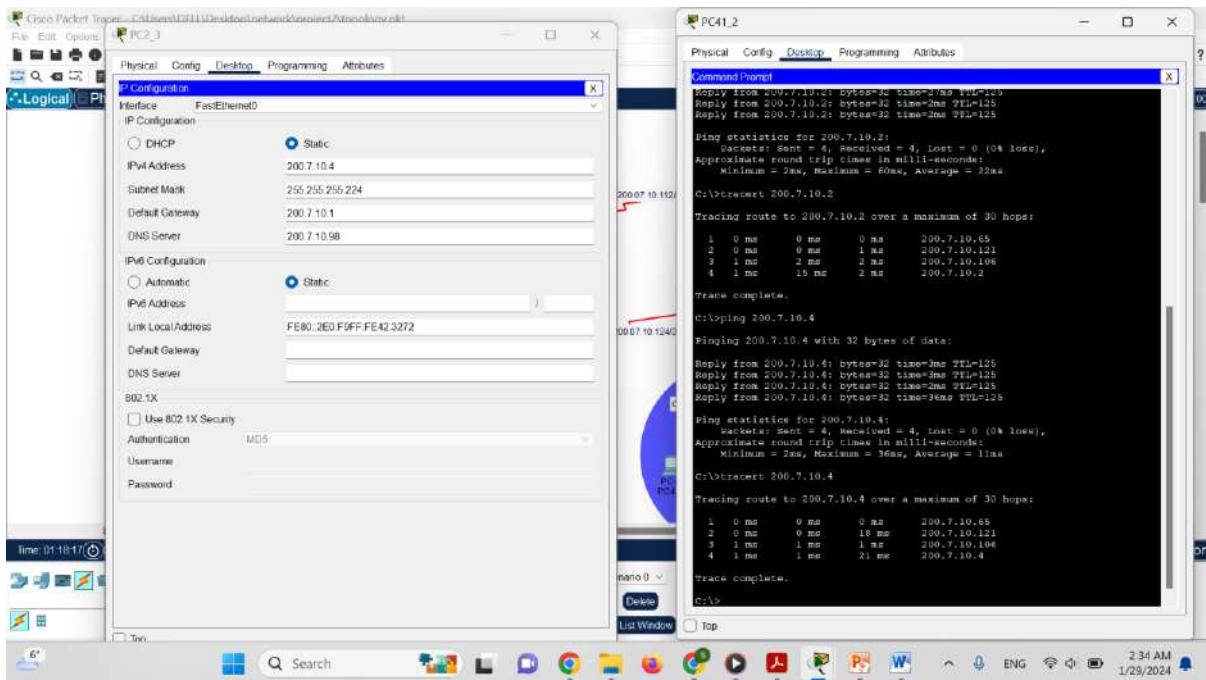


Figure 105:PC41_2 pinging and tracert to PC2_3(different subnets)

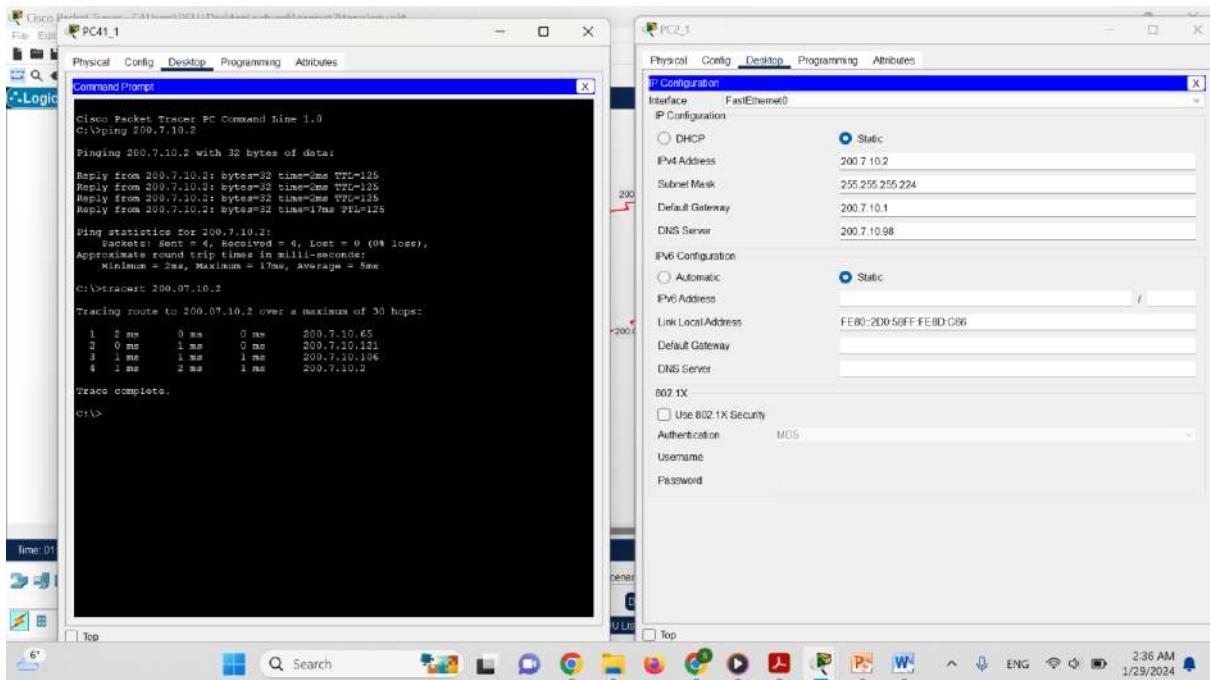


Figure 106:PC41_21pinging and tracert to PC2_1(different subnets)

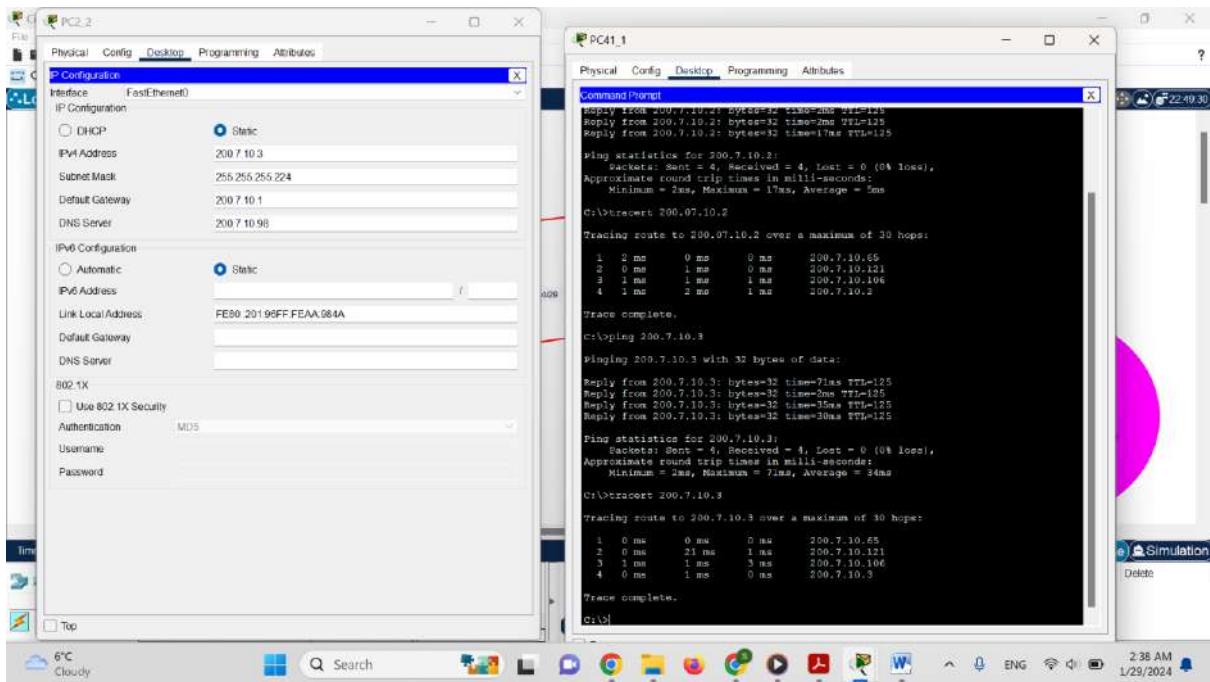


Figure 107:PC41_21pinging and tracert to PC2_2(different subnets)

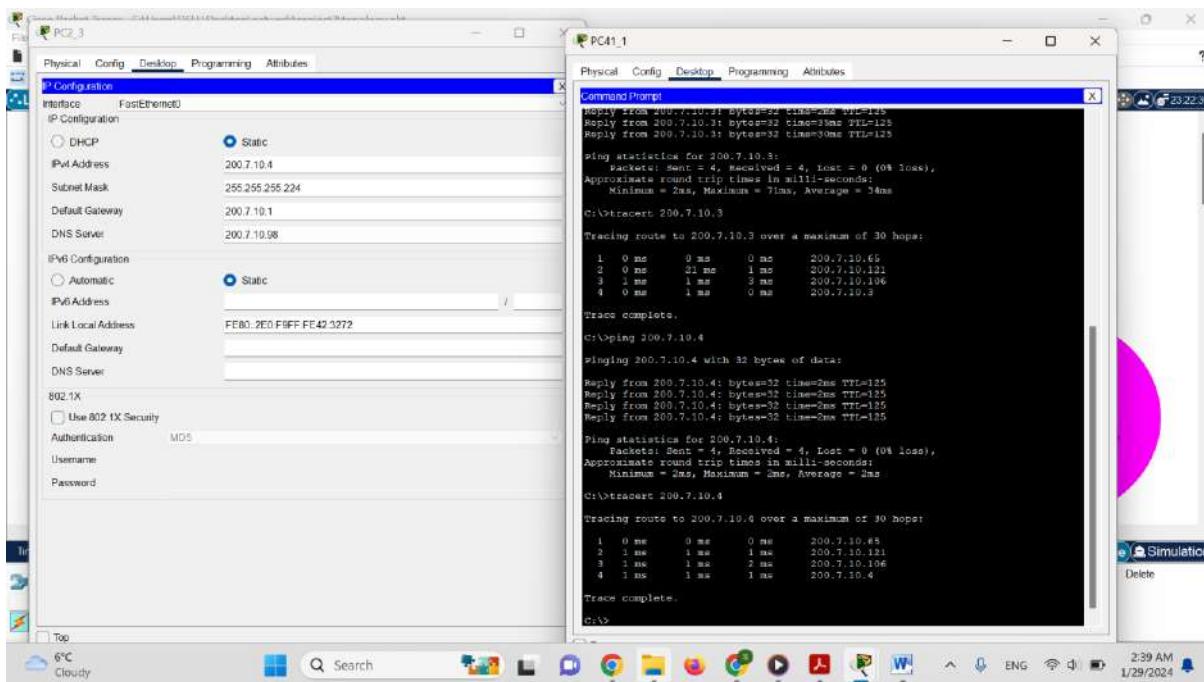


Figure 108:PC41_21pinging and traceroute to PC2_3(different subnets)

company A and Company C office 2 :

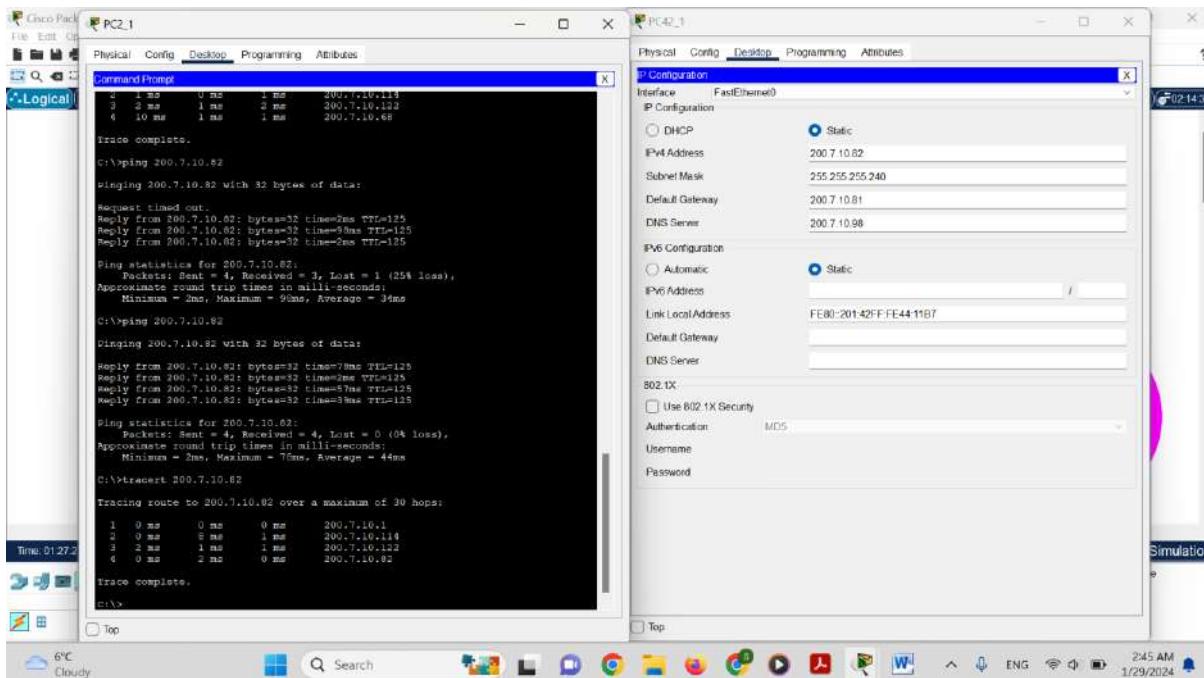


Figure 109:PC2_1pinging and traceroute to PC42_1(different subnets)

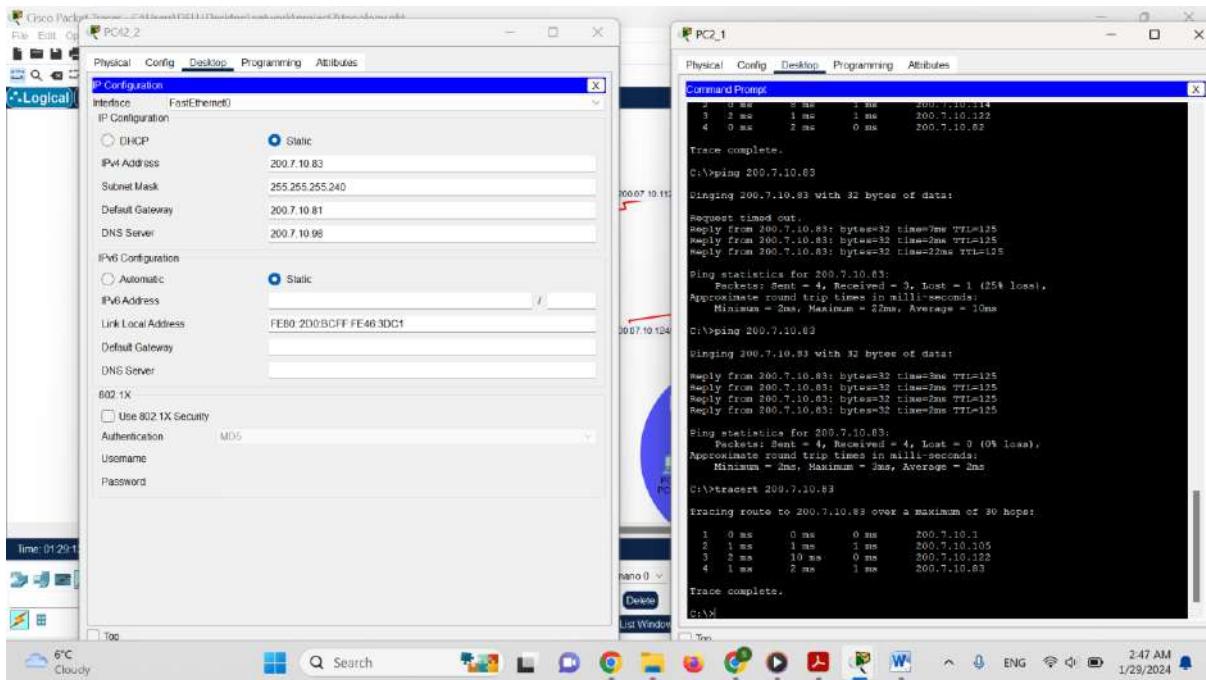


Figure 110:PC2_1pinging and tracert to PC42_2(different subnets)

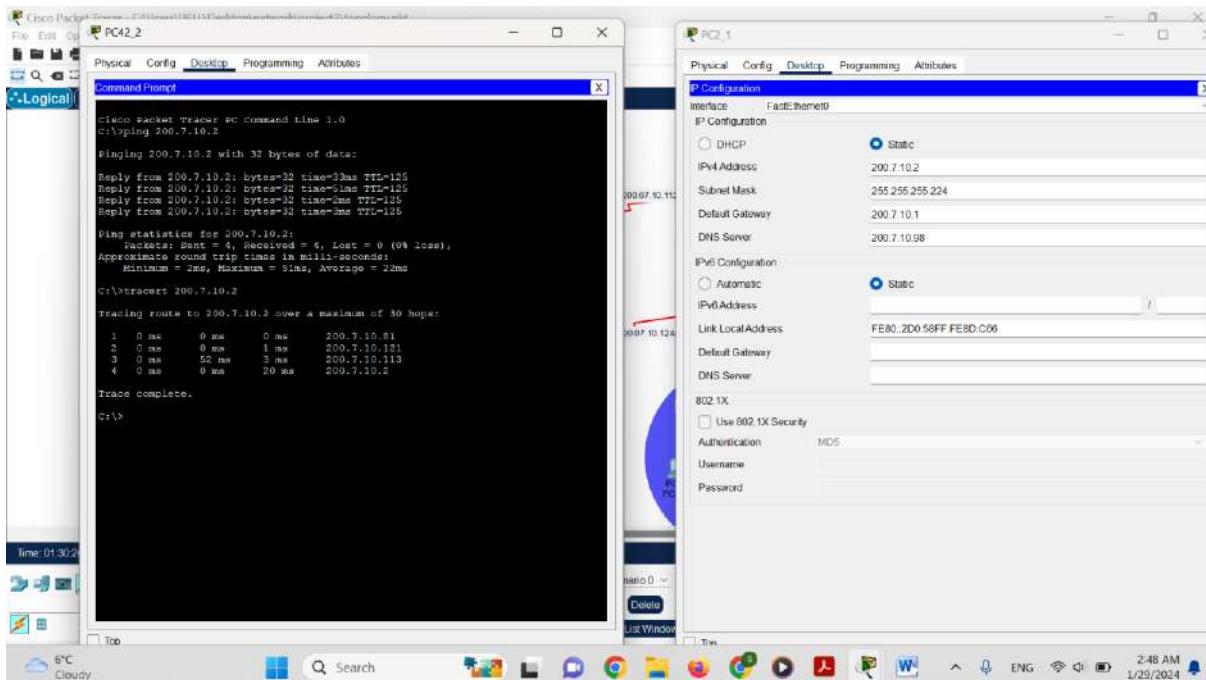


Figure 111:PC42_2pinging and tracert to PC2_1(different subnets)

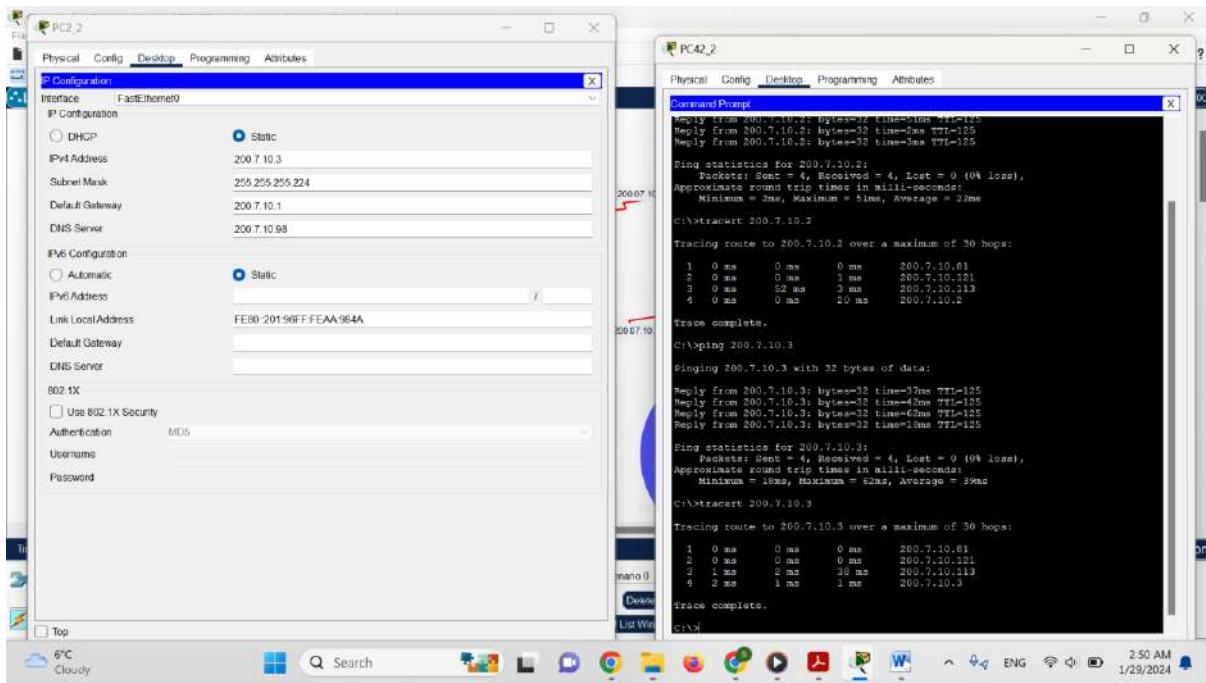


Figure 112:PC42_2pinging and tracert to PC2_2(different subnets)

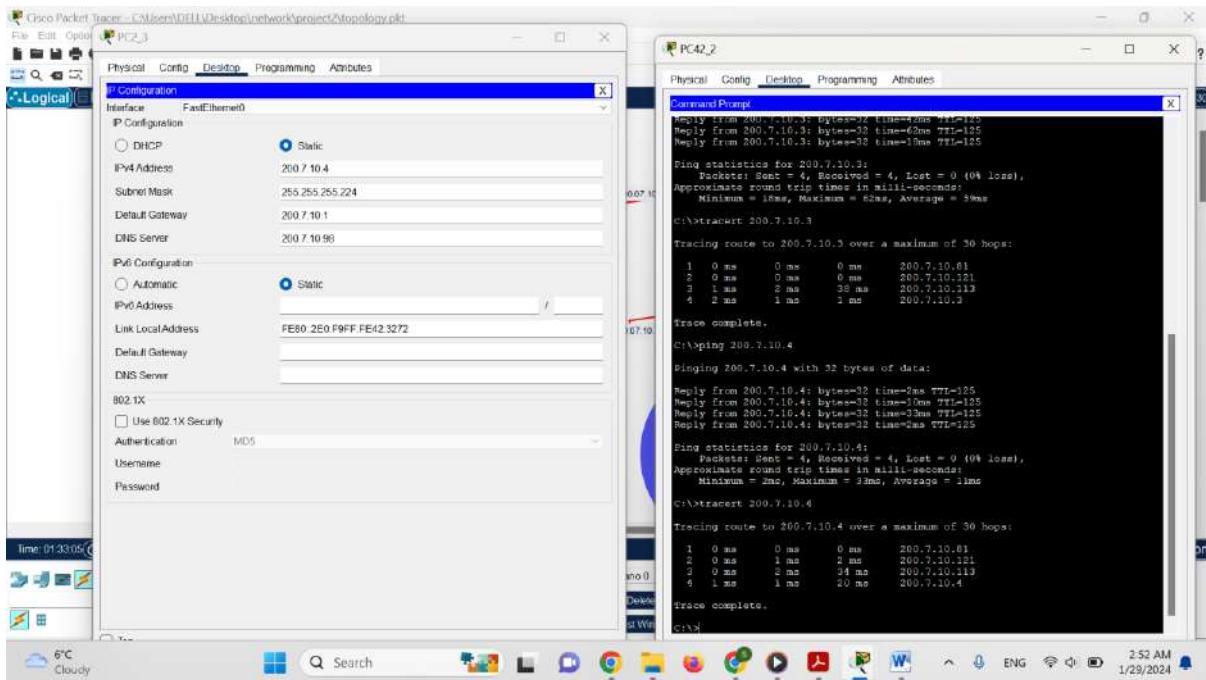


Figure 113:PC42_2pinging and tracert to PC2_3(different subnets)

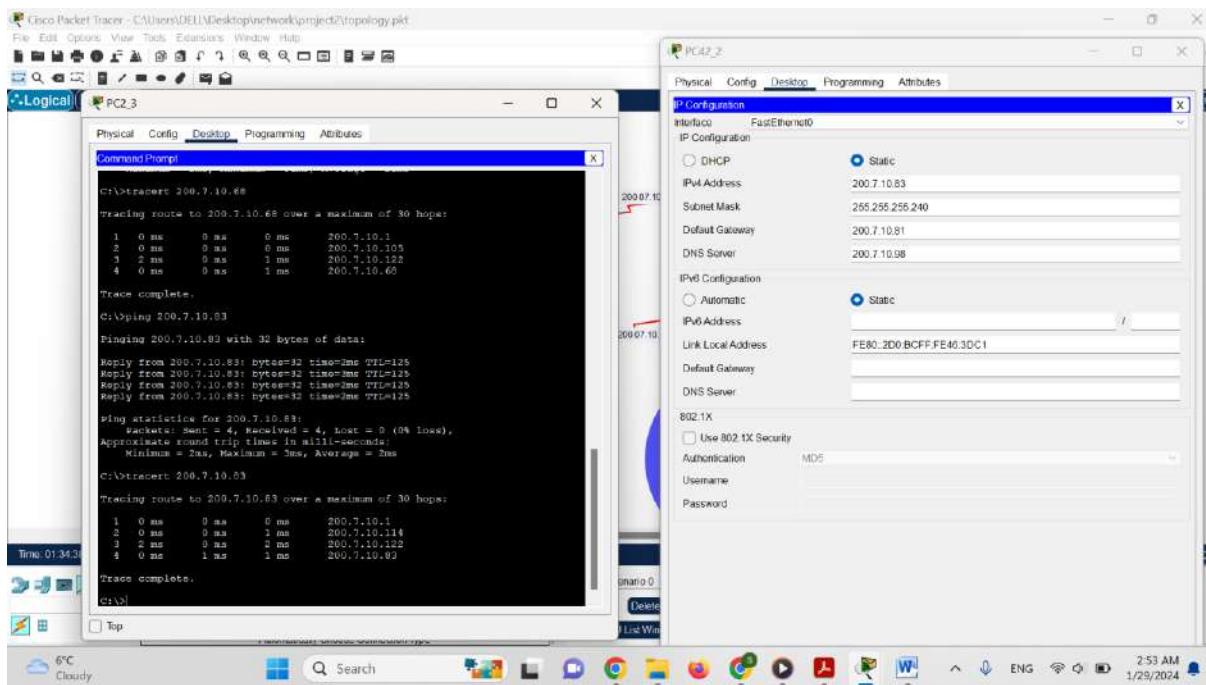


Figure 114:PC2_3pinging and tracert to PC42_2(different subnets)

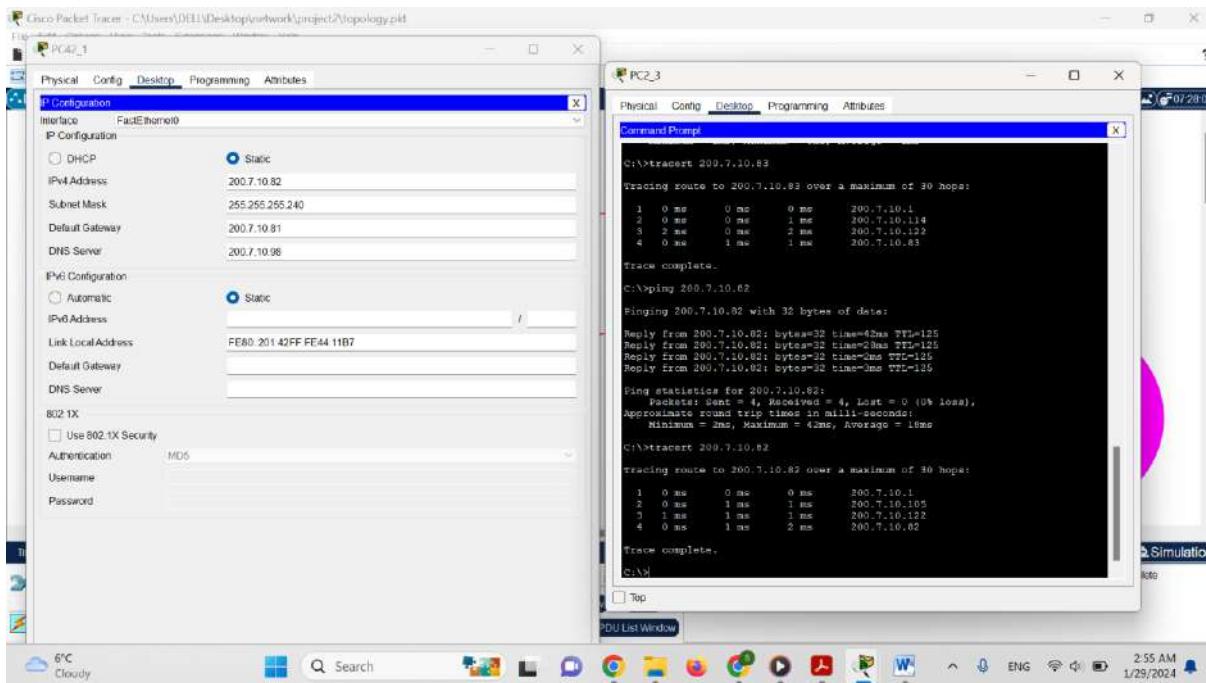


Figure 115:PC2_3pinging and tracert to PC42_1(different subnets)

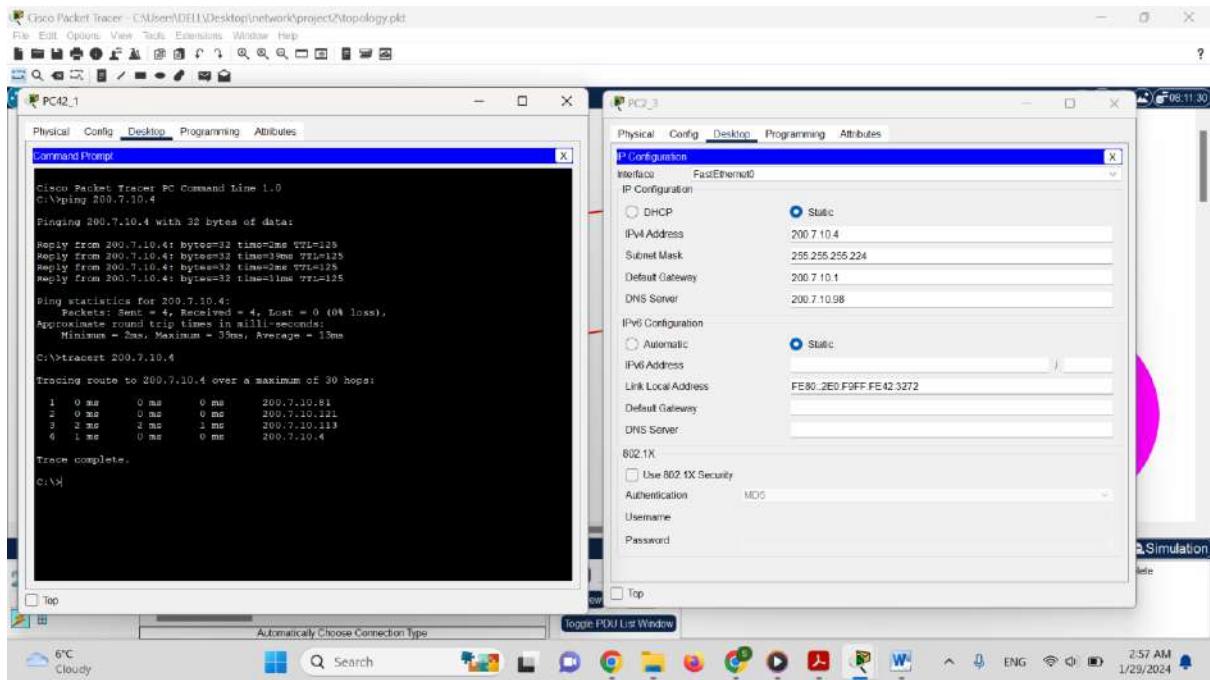


Figure 116:PC42_1pinging and tracert to PC2_3(different subnets)

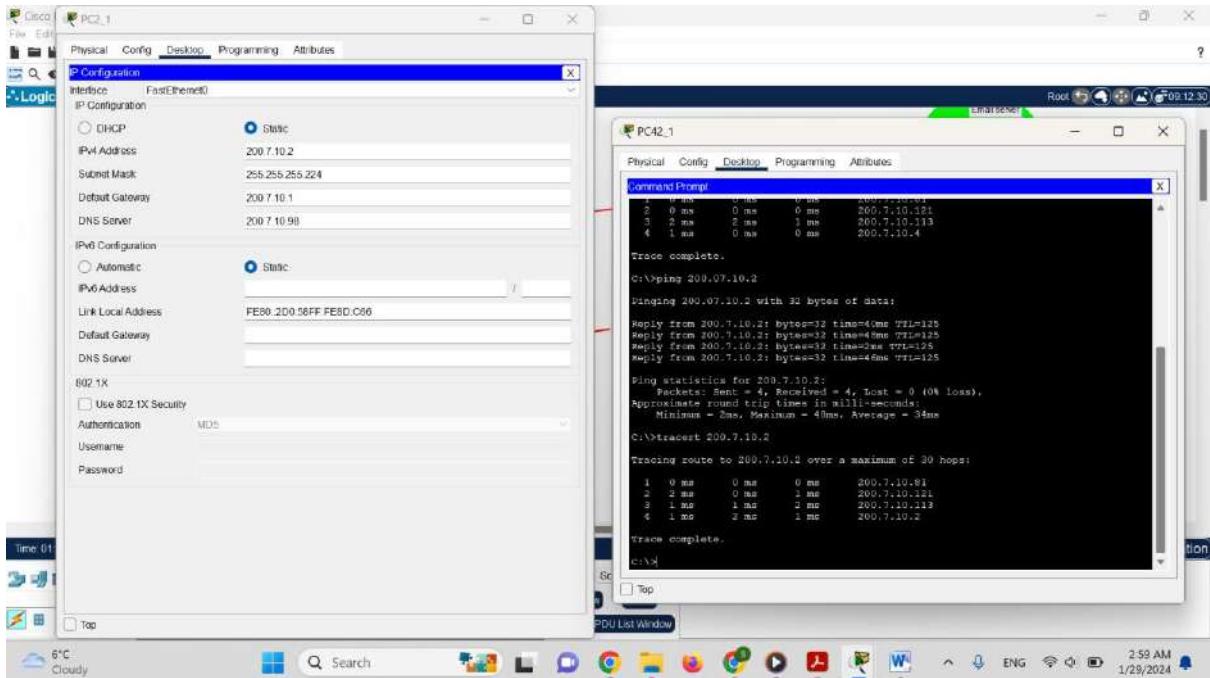


Figure 117:PC42_1pinging and tracert to PC2_1(different subnets)

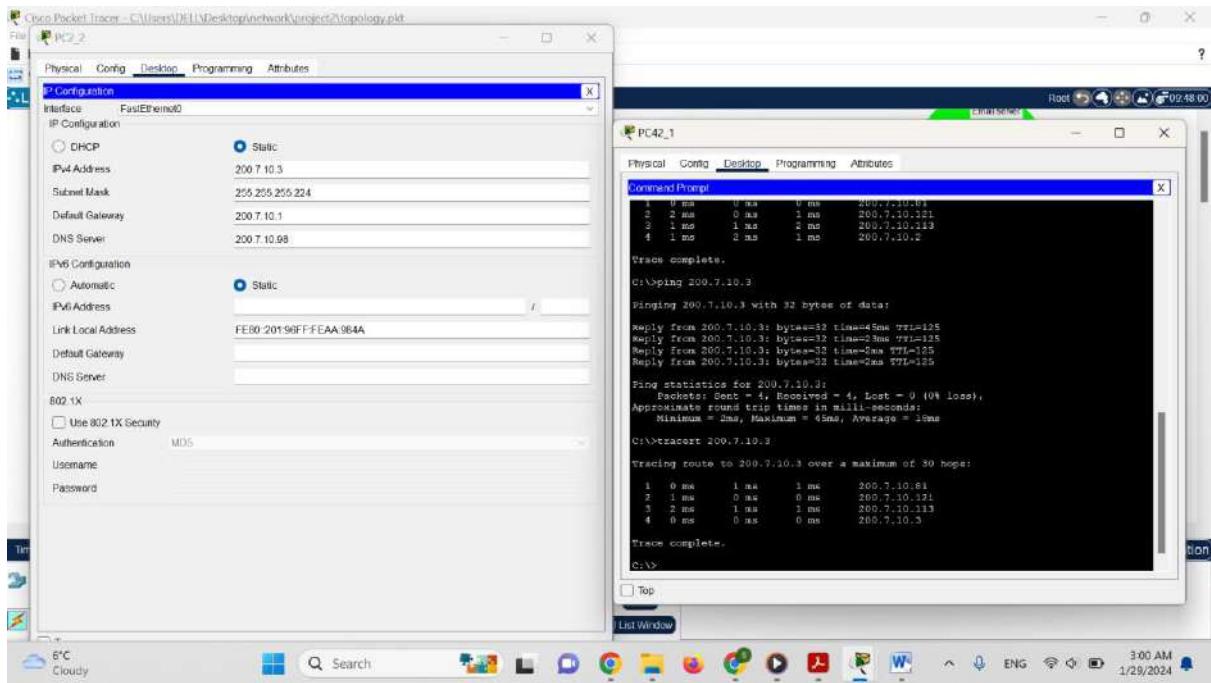


Figure 118:PC42_1 pinging and tracert to PC2_2(different subnets)

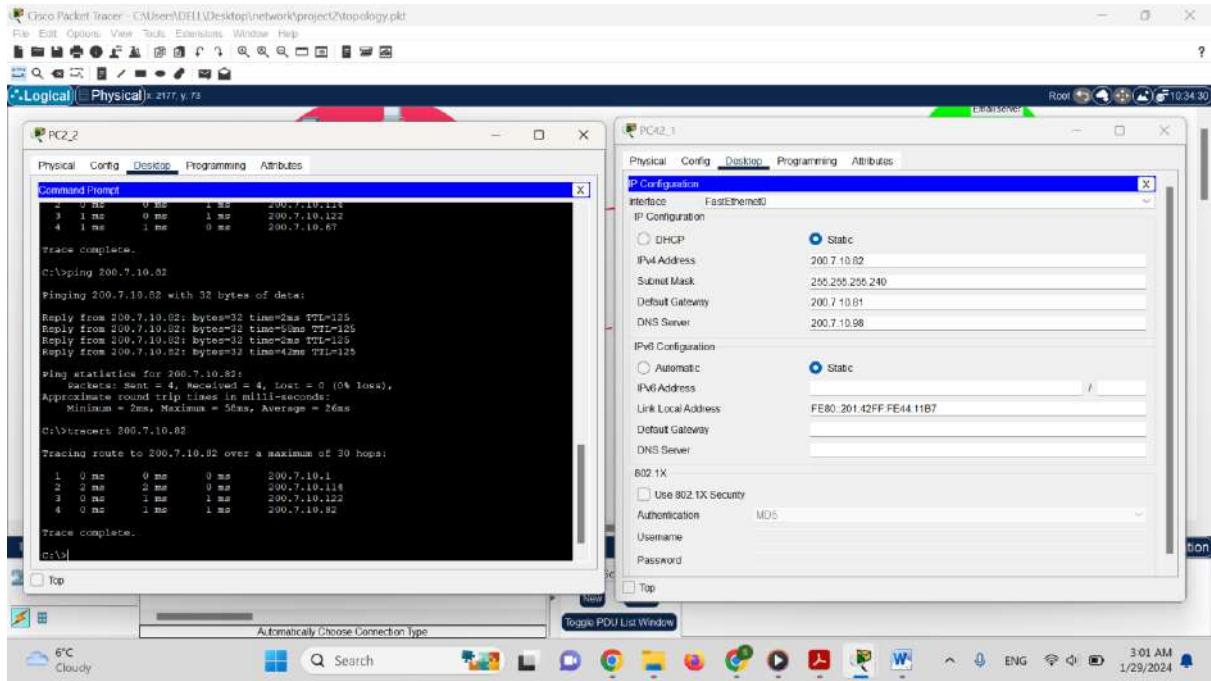


Figure 119:PC2_2 pinging and tracert to PC42_1(different subnets)

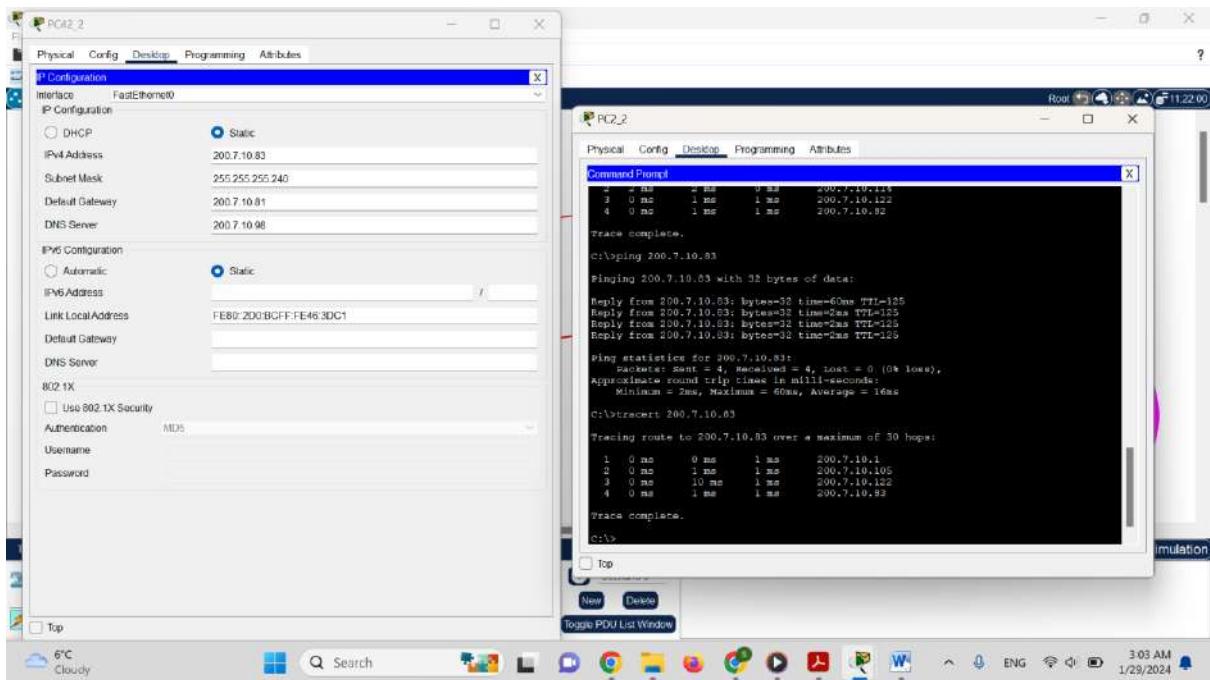


Figure 120:PC2_2pinging and tracert to PC42_2(different subnets)

company B and Company C office 1 :

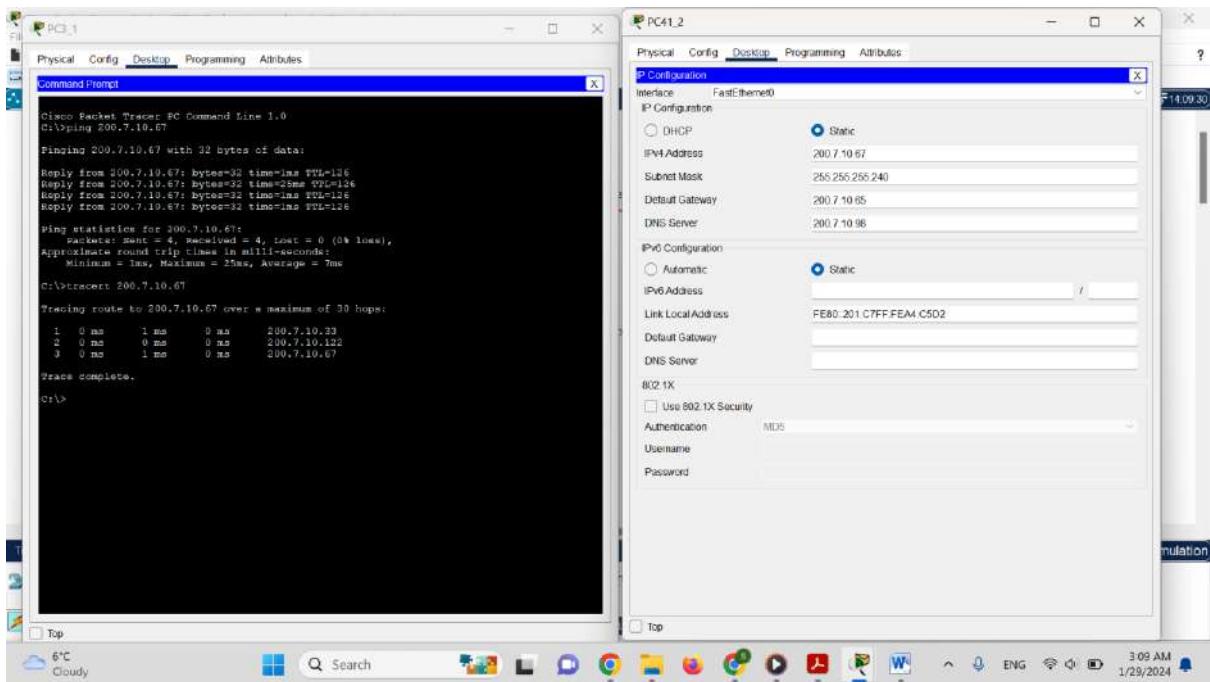


Figure 121:PC3_1pinging and tracert to PC41_2(different subnets)

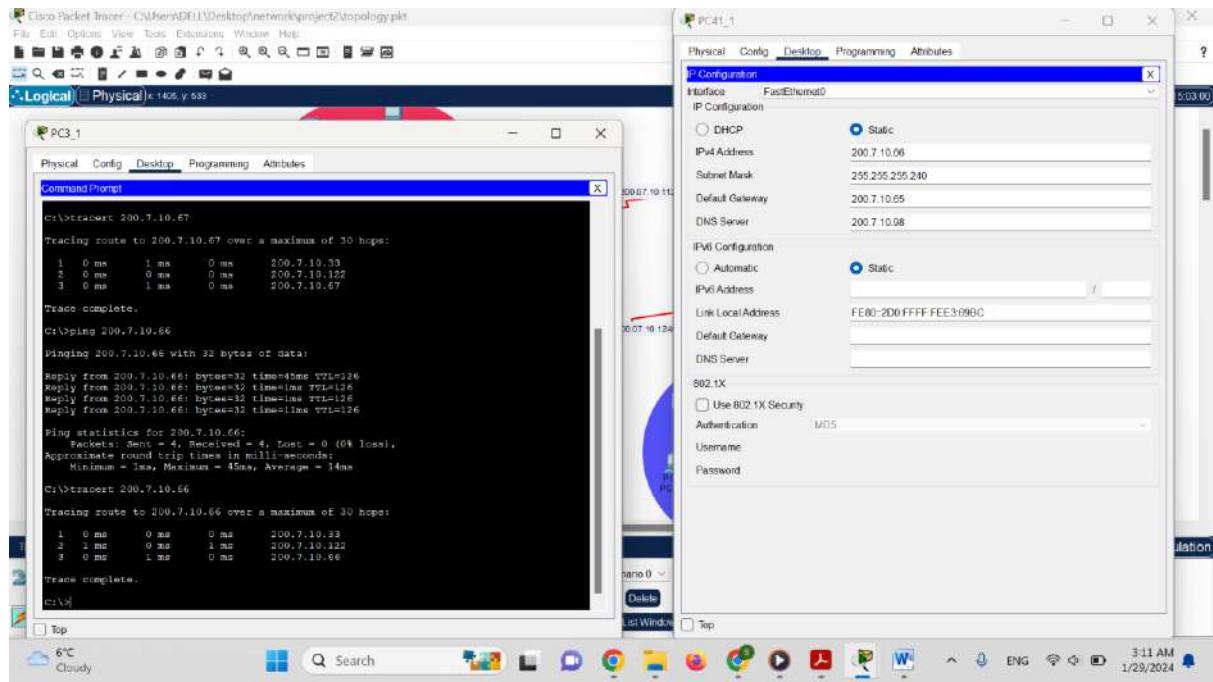


Figure 122:PC3_1pinging and tracert to PC41_1(different subnets)

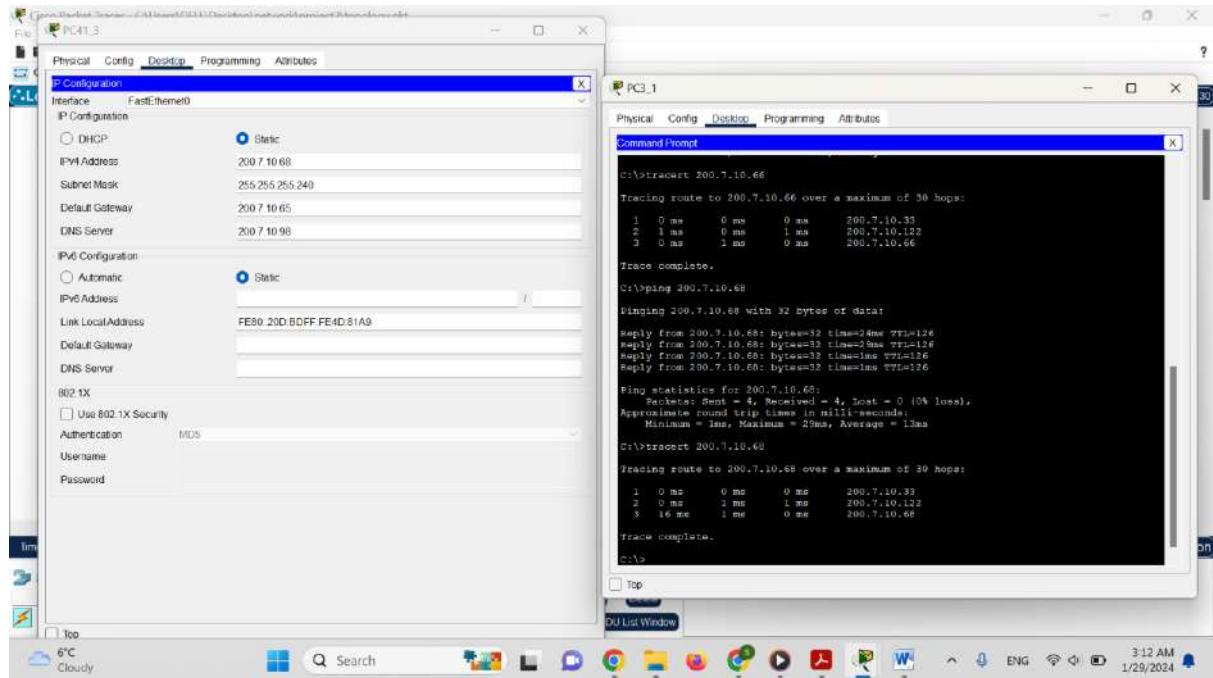


Figure 123:PC3_1pinging and tracert to PC41_3(different subnets)

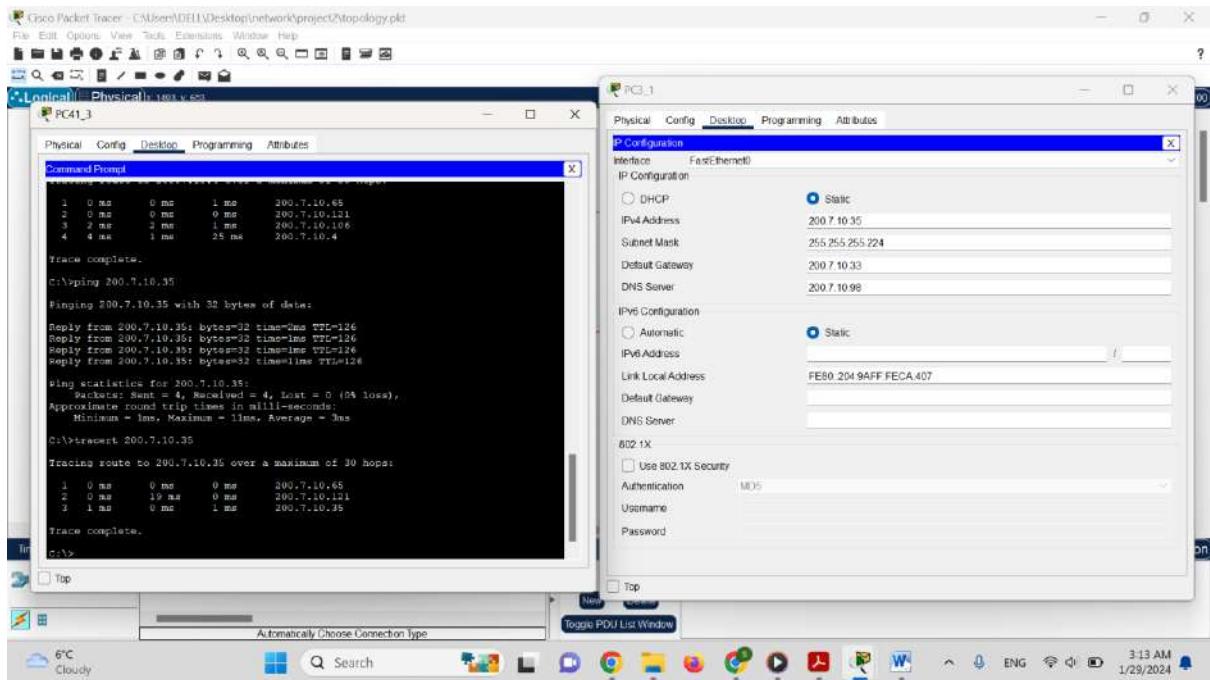


Figure 124:PC41_3pinging and tracert to PC3_1(different subnets)

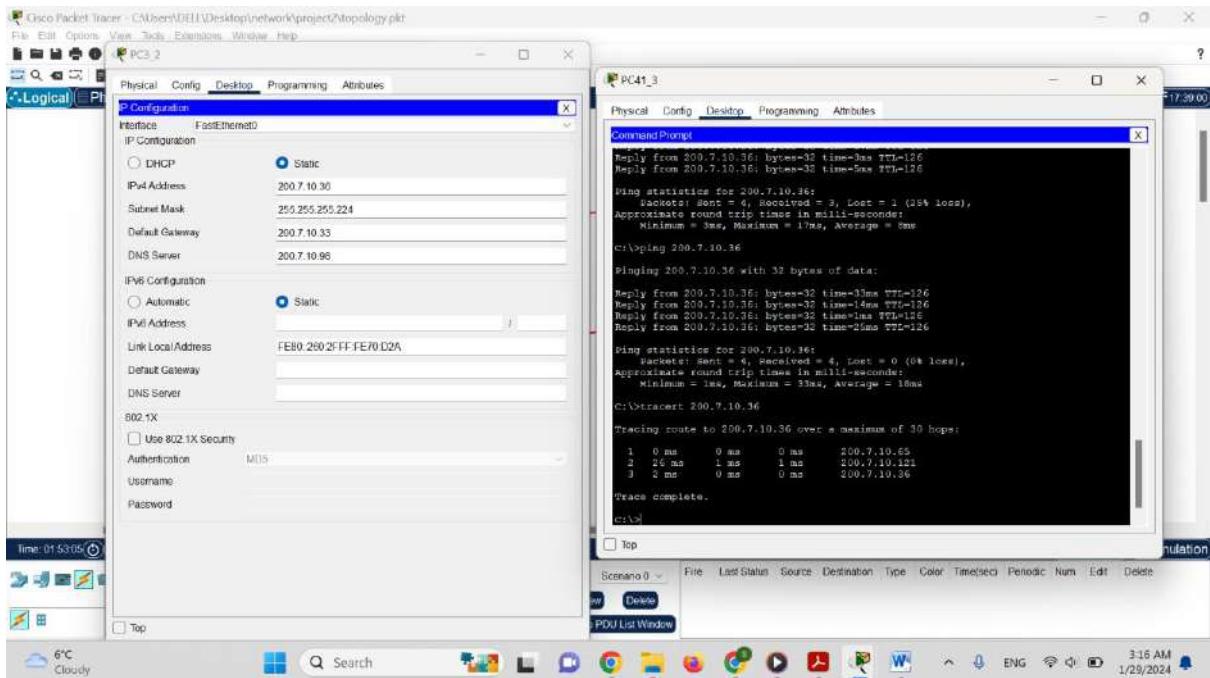


Figure 125:PC41_3pinging and tracert to PC3_1(different subnets)

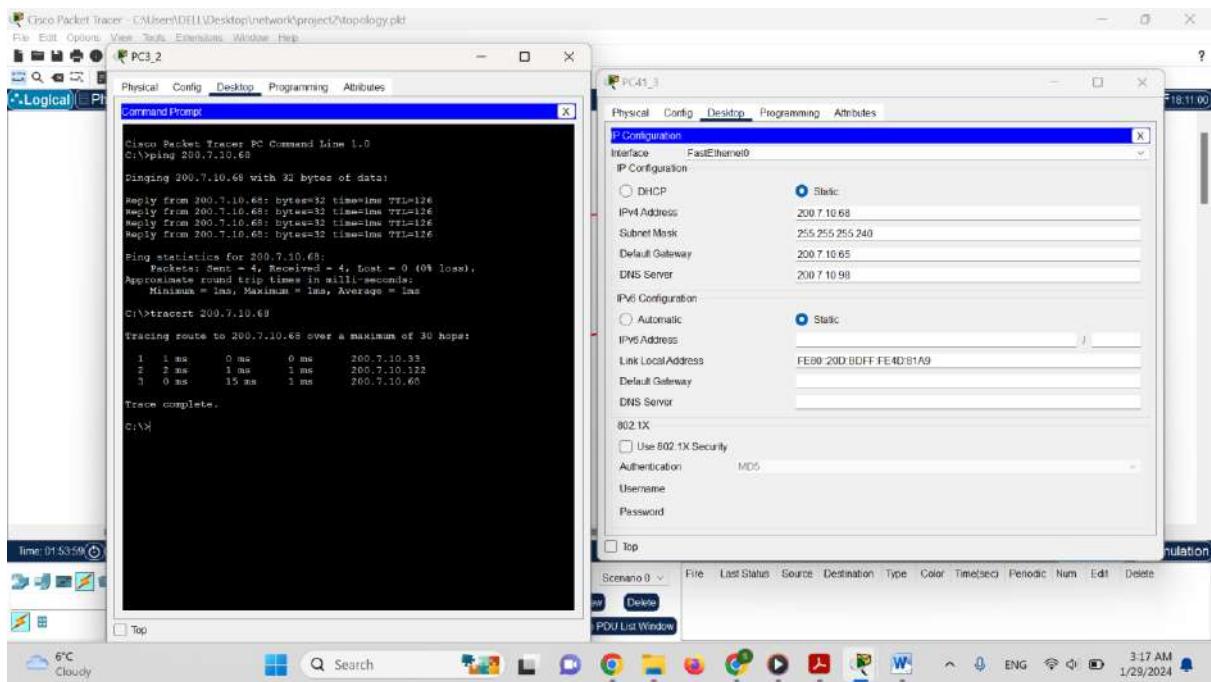


Figure 126:PC3_2pinging and tracert to PC41-3(different subnets)

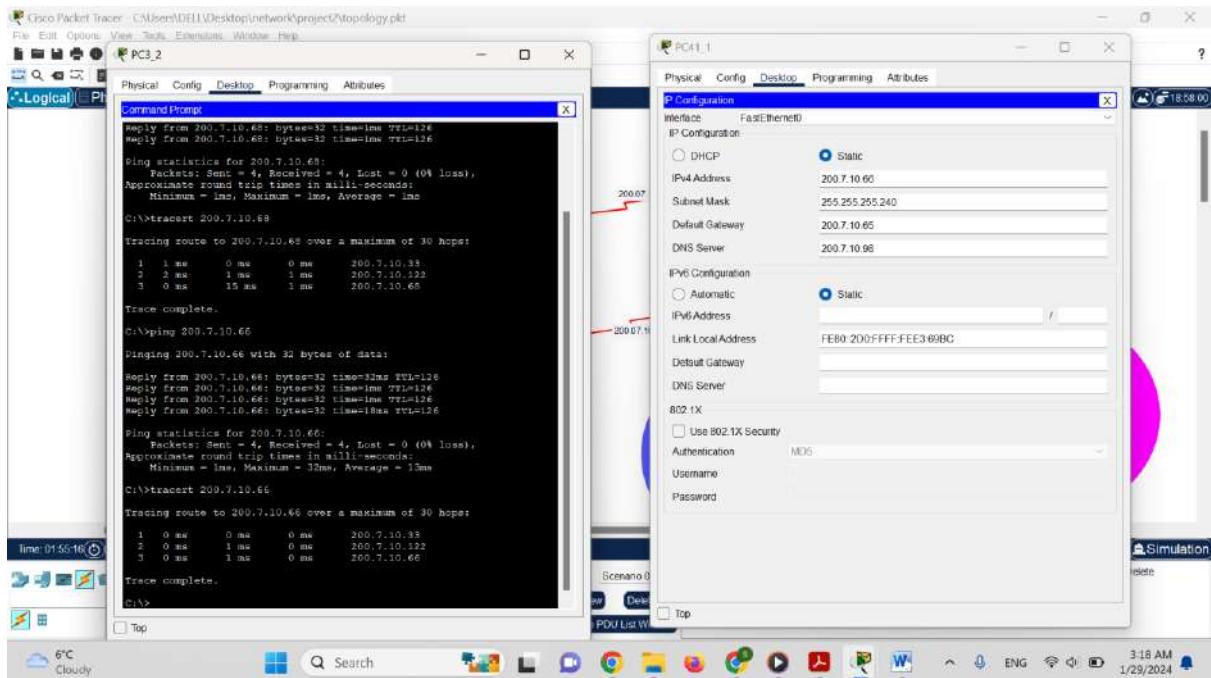


Figure 127:PC3_2pinging and tracert to PC41-1(different subnets)

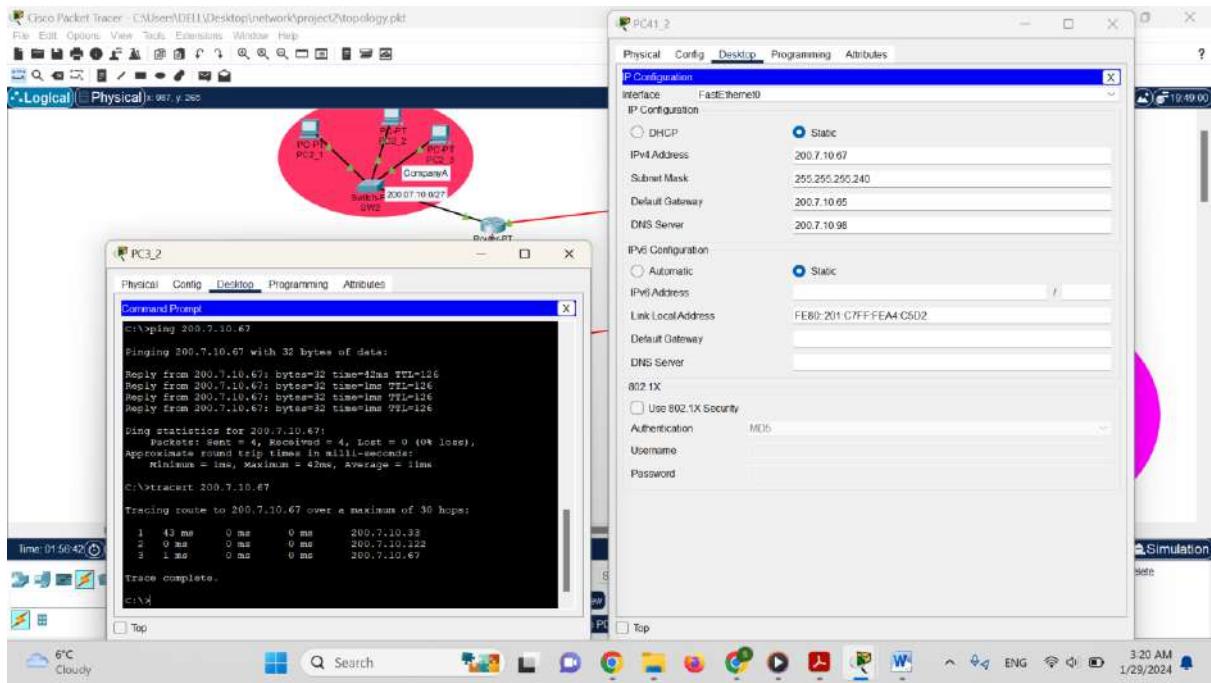


Figure 128:PC3_2pinging and tracert to PC41-2(different subnets)

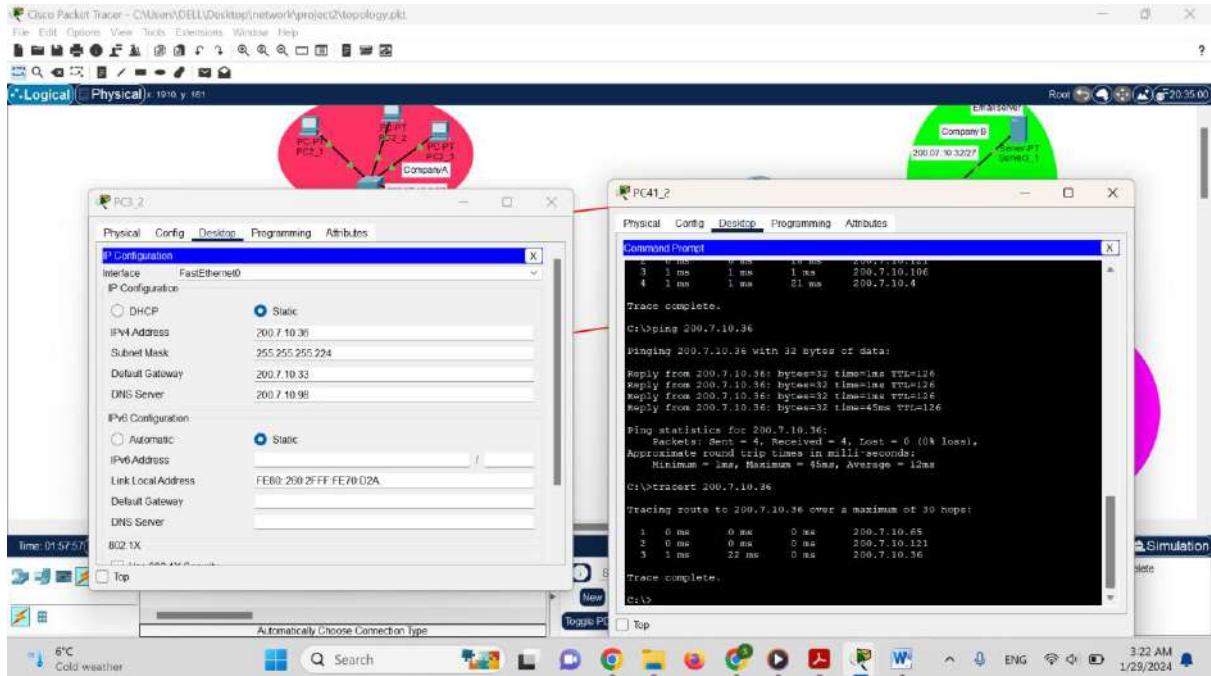


Figure 129:PC41_2pinging and tracert to PC3-2(different subnets)

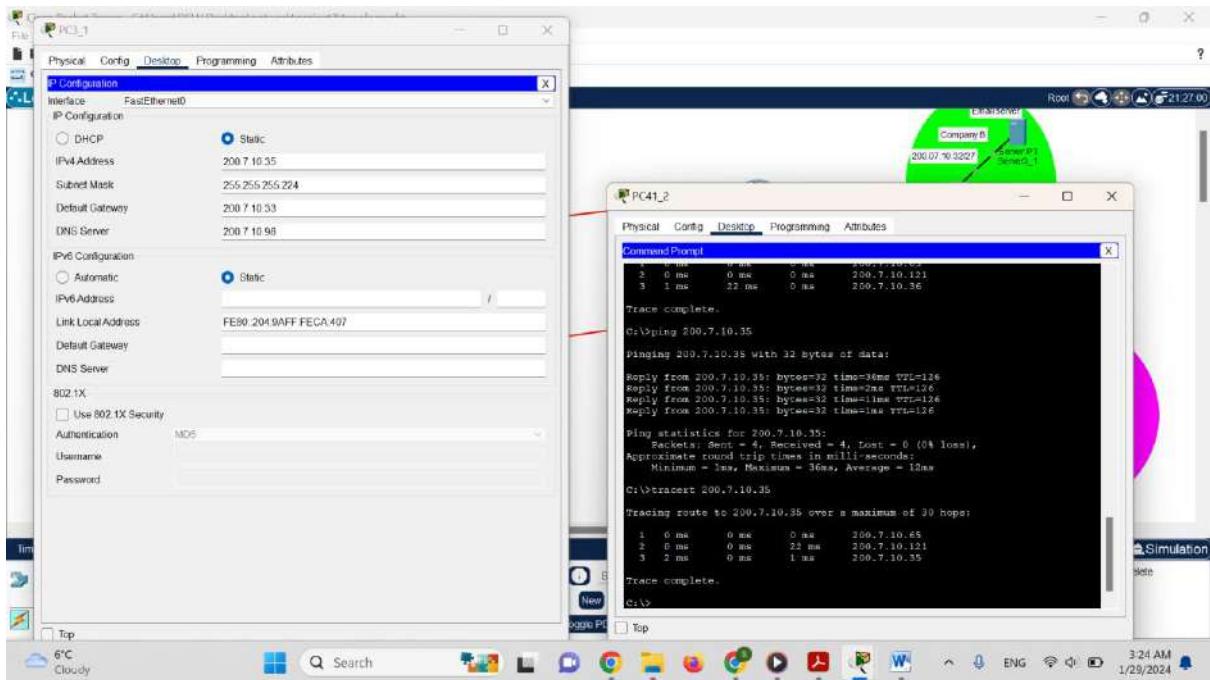


Figure 130:PC41_2pinging and tracert to PC3-1(different subnets)

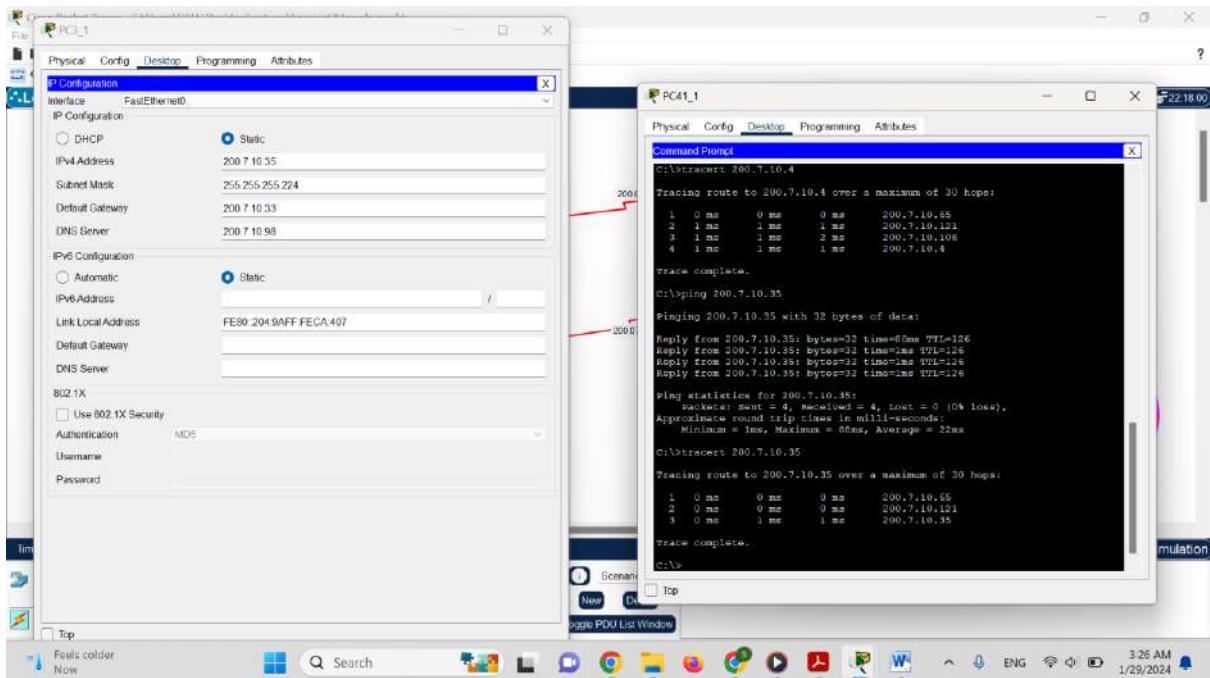


Figure 131:PC41_1pinging and tracert to PC3-1(different subnets)

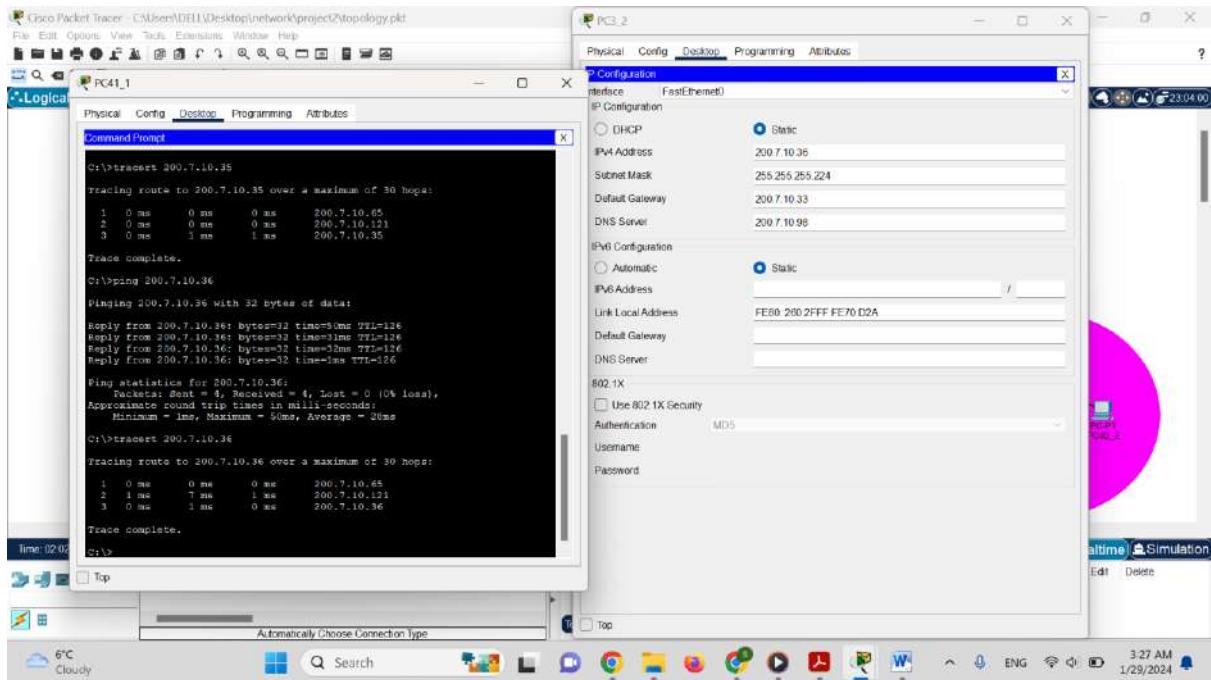


Figure 132:PC41_1pinging and tracert to PC3-2(different subnets)

company B and Company C office 2 :

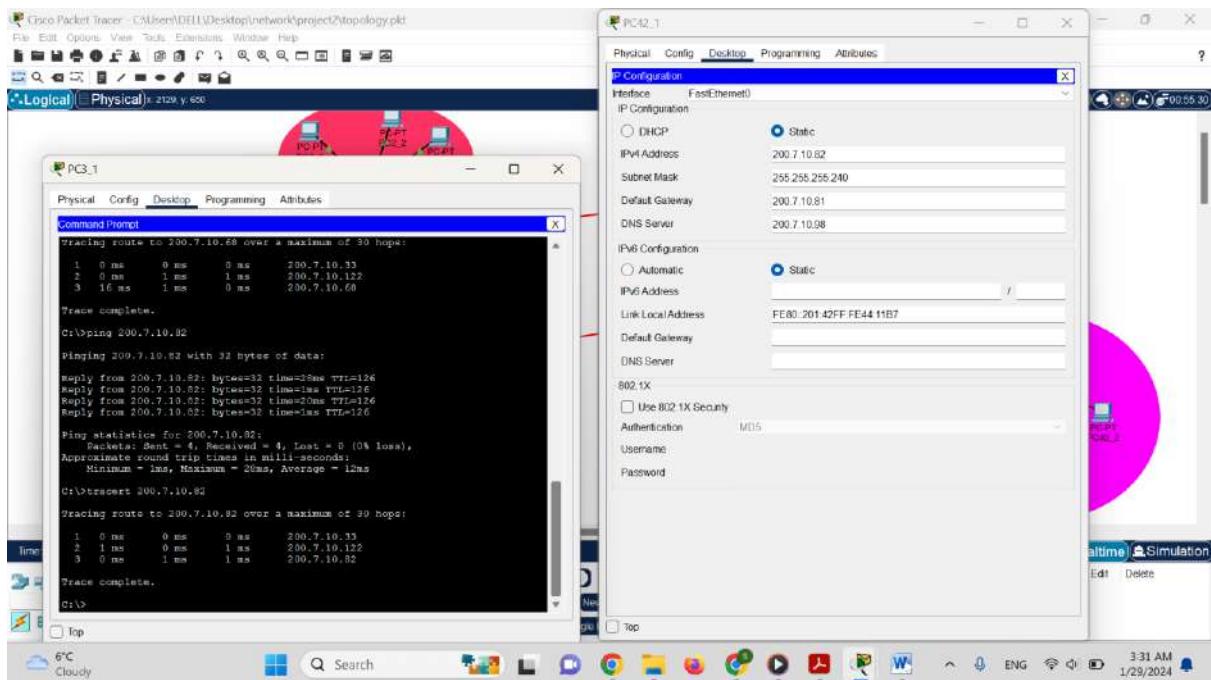


Figure 133:PC3_1pinging and tracert to PC42_1(different subnets)

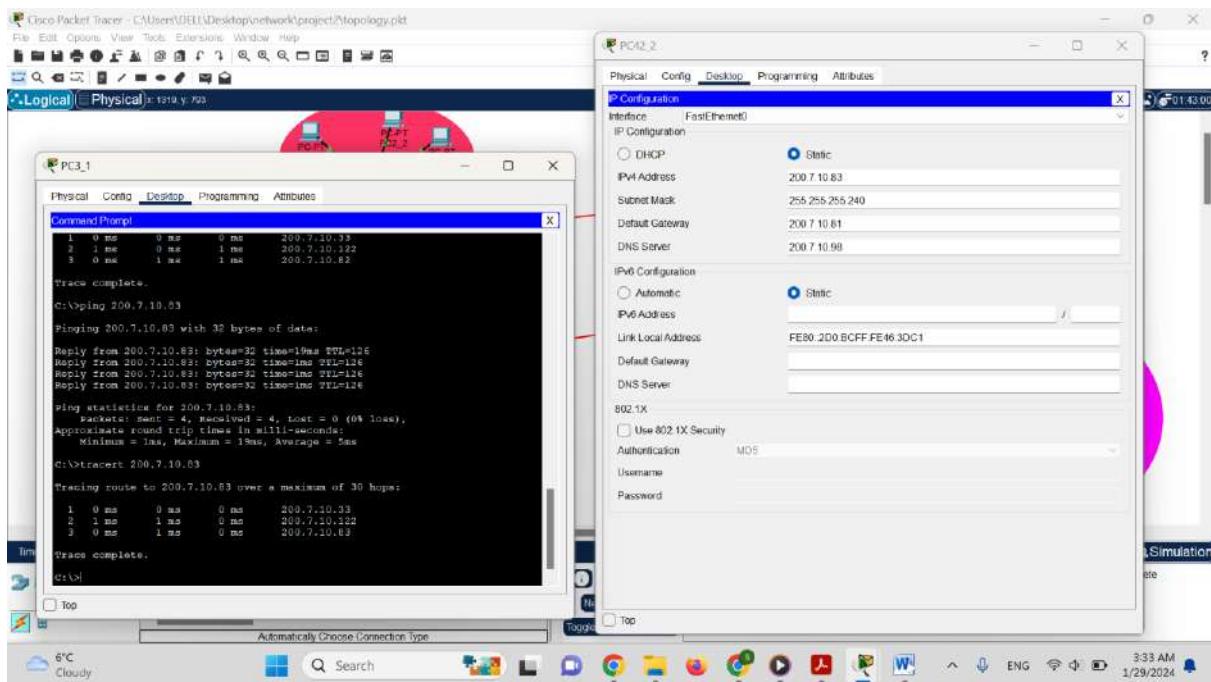


Figure 134:PC3_1pinging and tracert to PC42_2(different subnets)

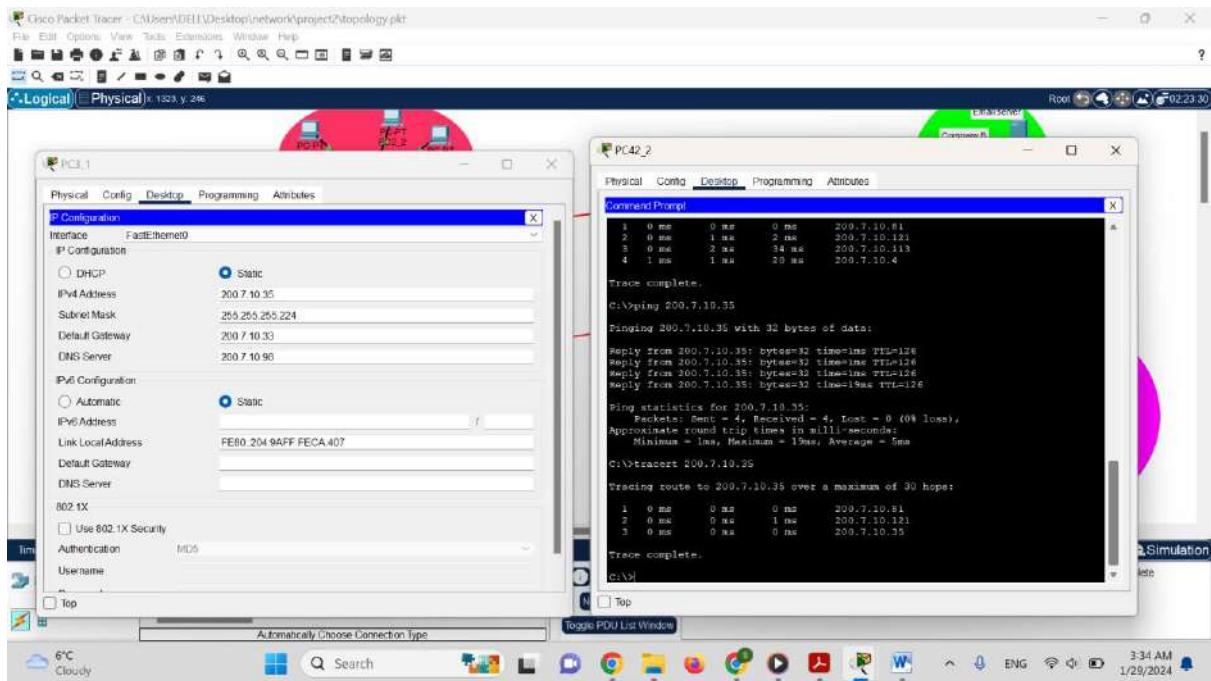


Figure 135:PC42_2pinging and tracert to PC3_1(different subnets)

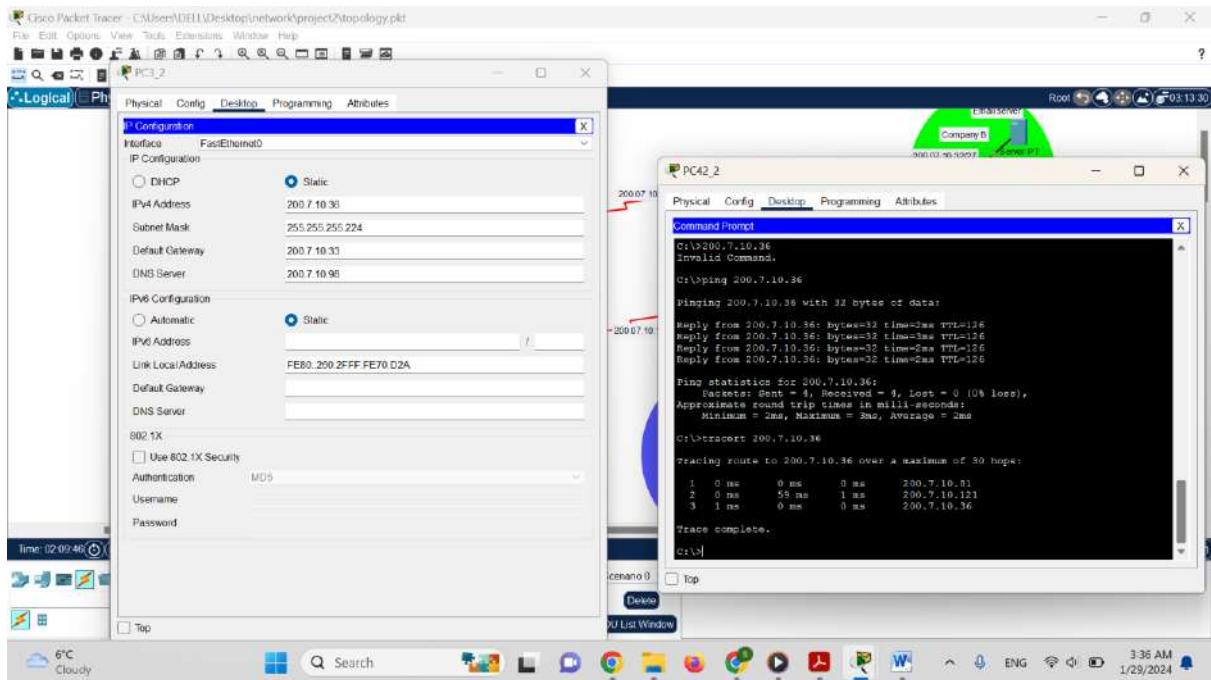


Figure 136:PC42_2pinging and tracert to PC3_2(different subnets)

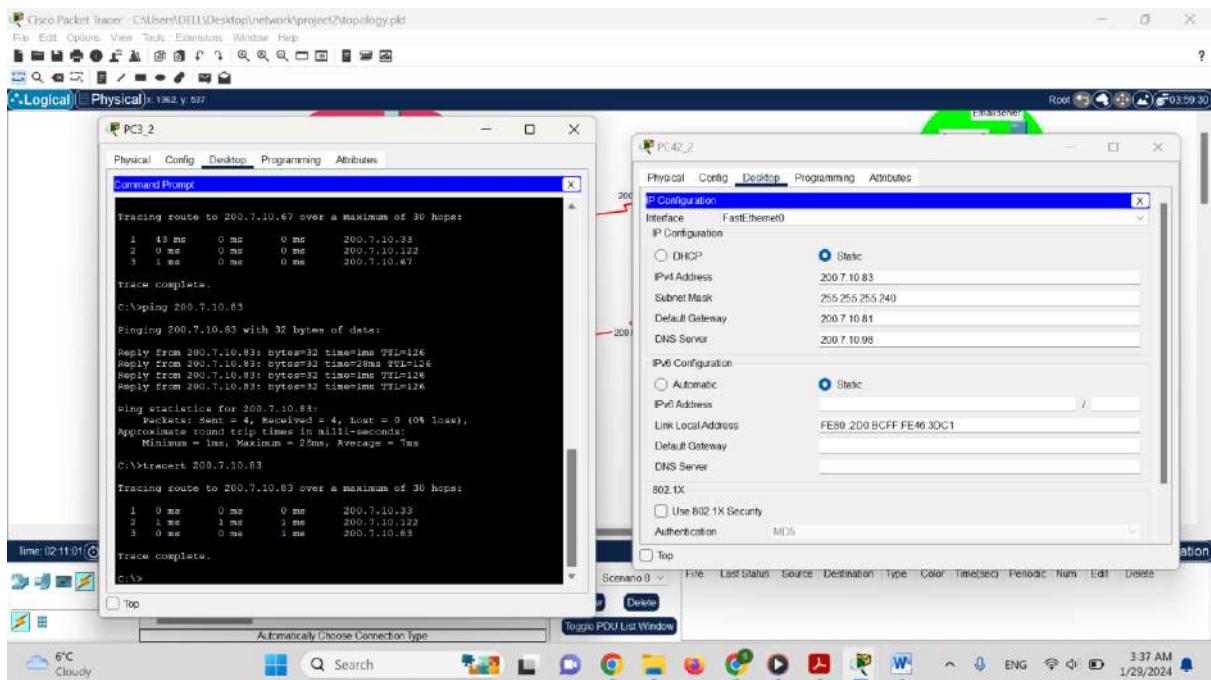


Figure 137:PC3_2pinging and tracert to PC42_2(different subnets)

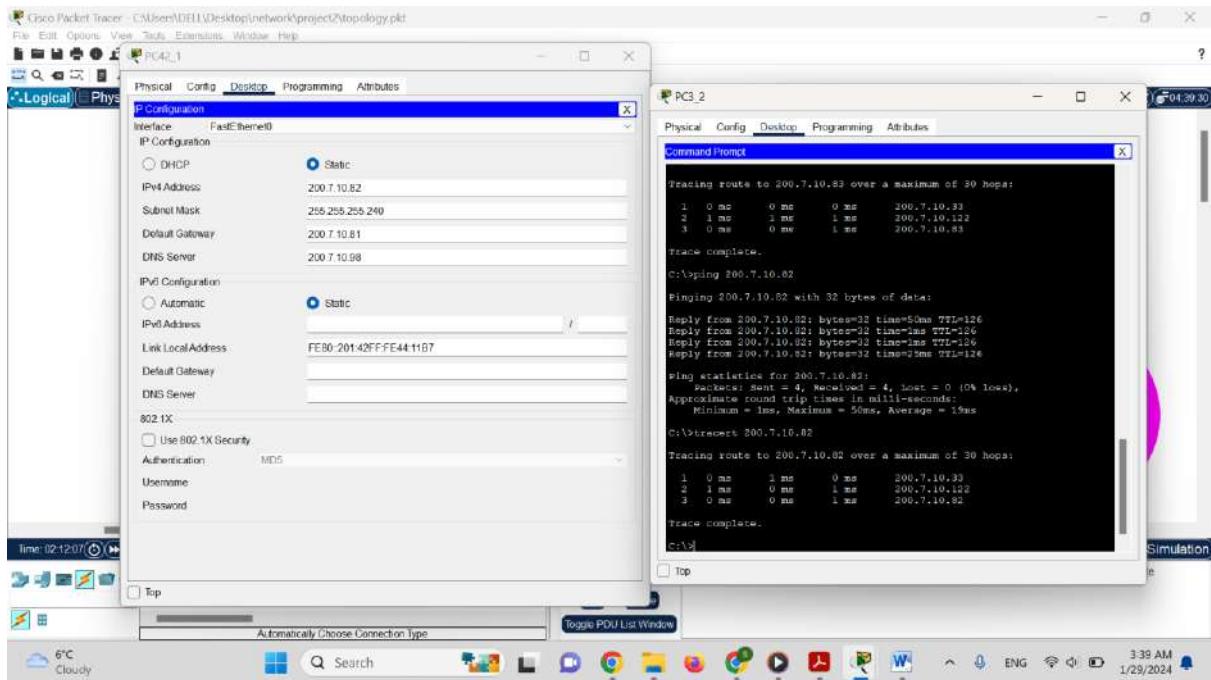


Figure 138:PC3_2pinging and tracert to PC42_1(different subnets)

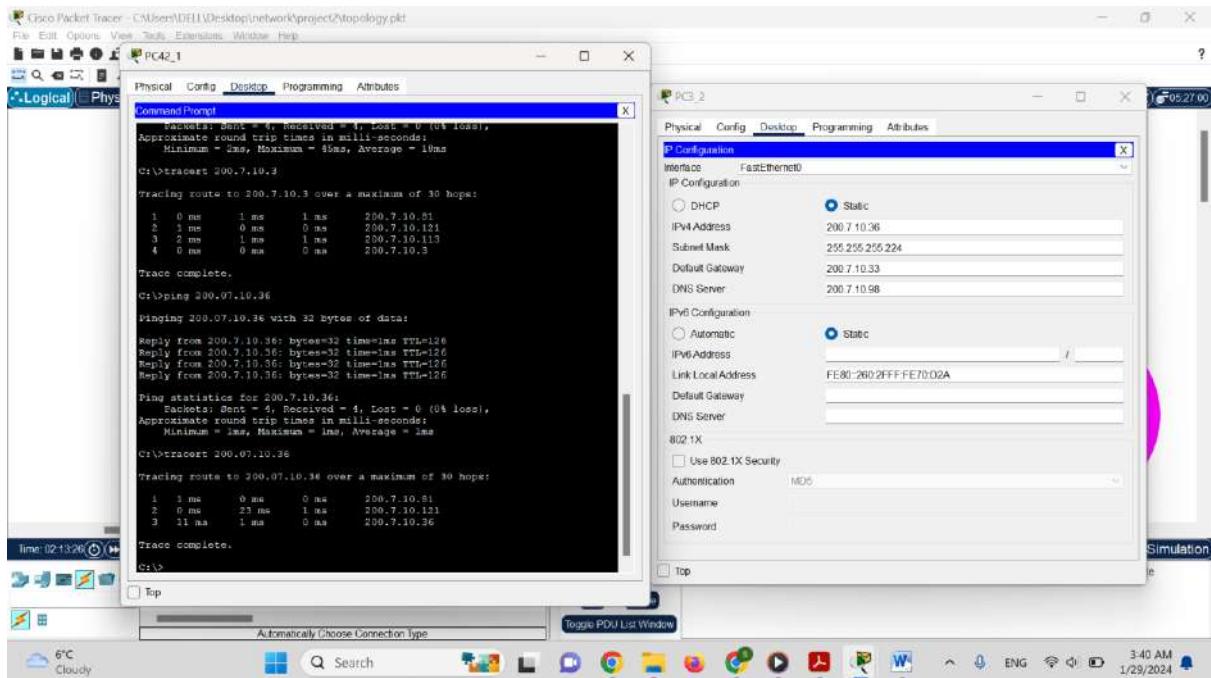


Figure 139:PC42_1pinging and tracert to PC3_2(different subnets)

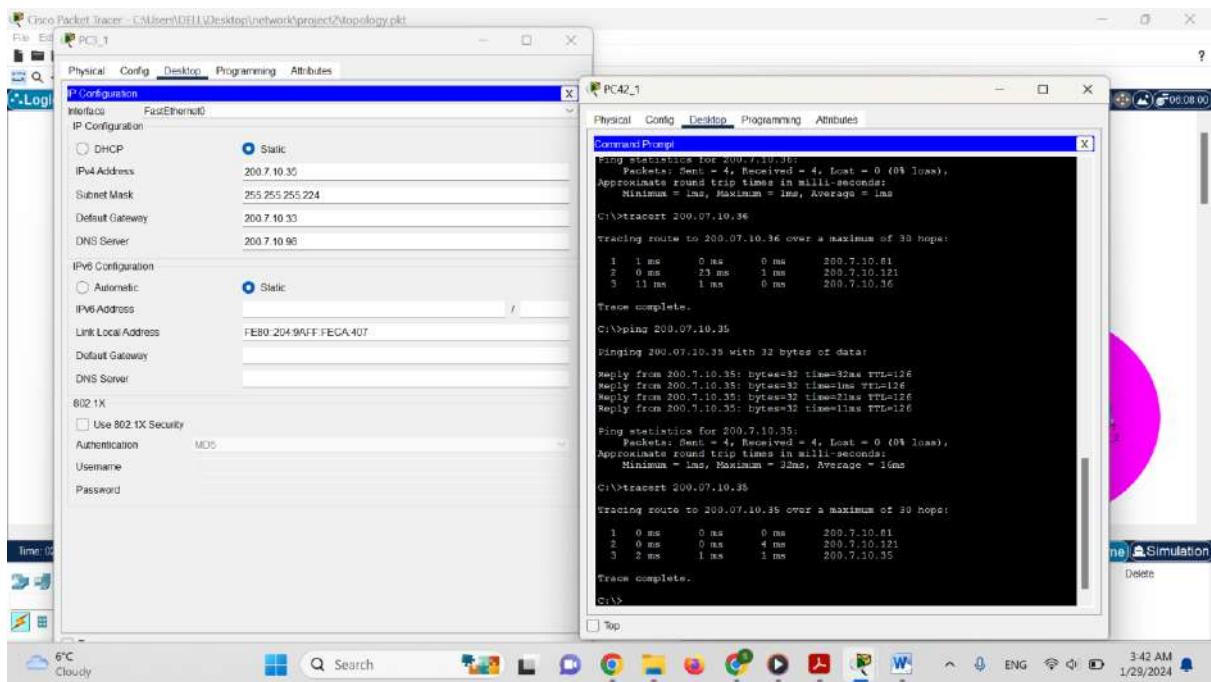


Figure 140:PC42_1pinging and tracert to PC3_1(different subnets)

2.

We try to open www.firstsem2024.com from all Pcs:

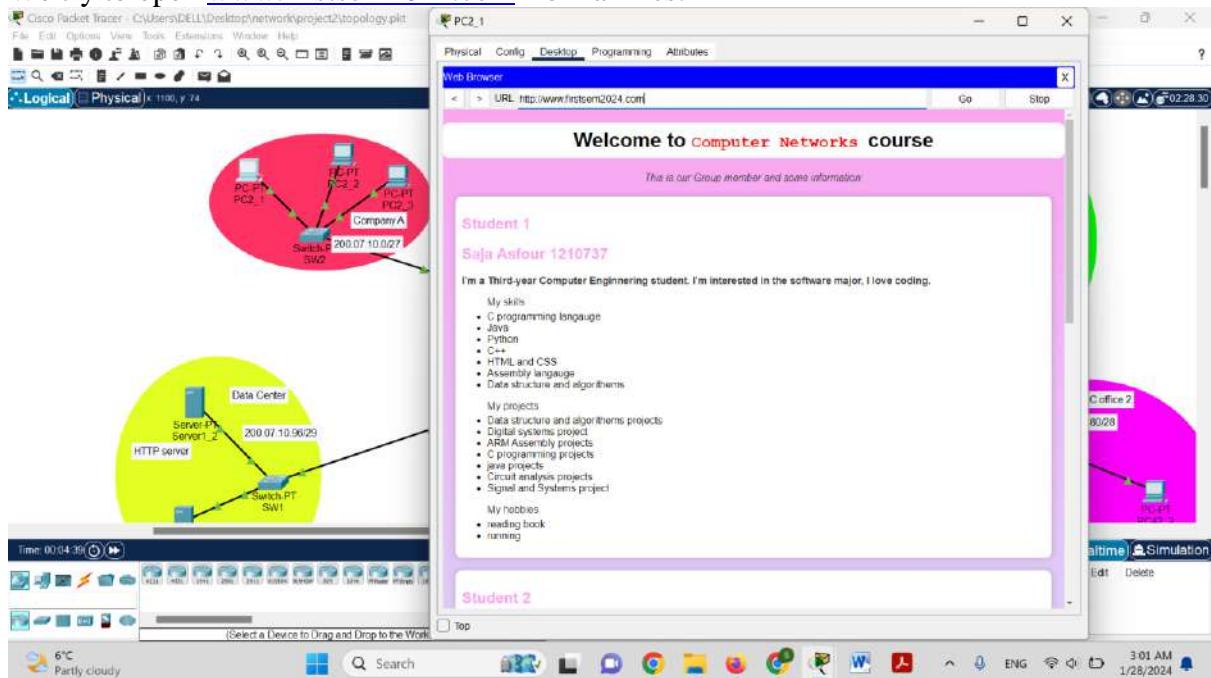


Figure 141:open www.firstsem2024.com from Pc2_1

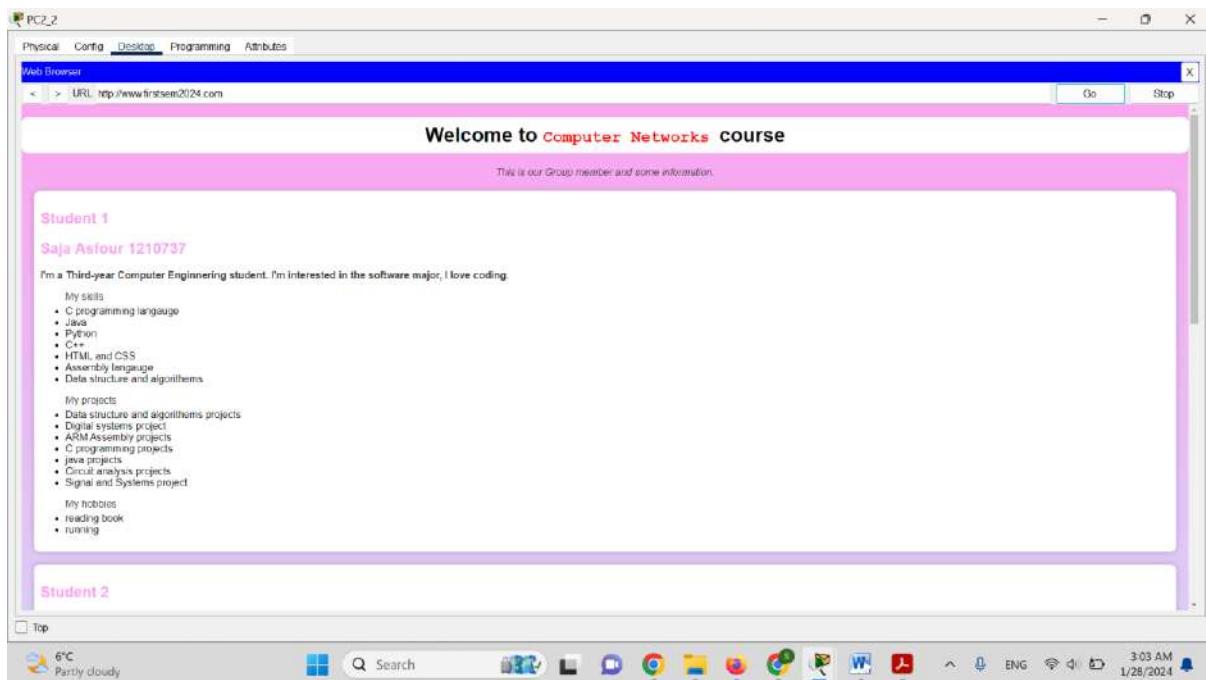


Figure 142:open www.firstsem2024.com from Pc2_2

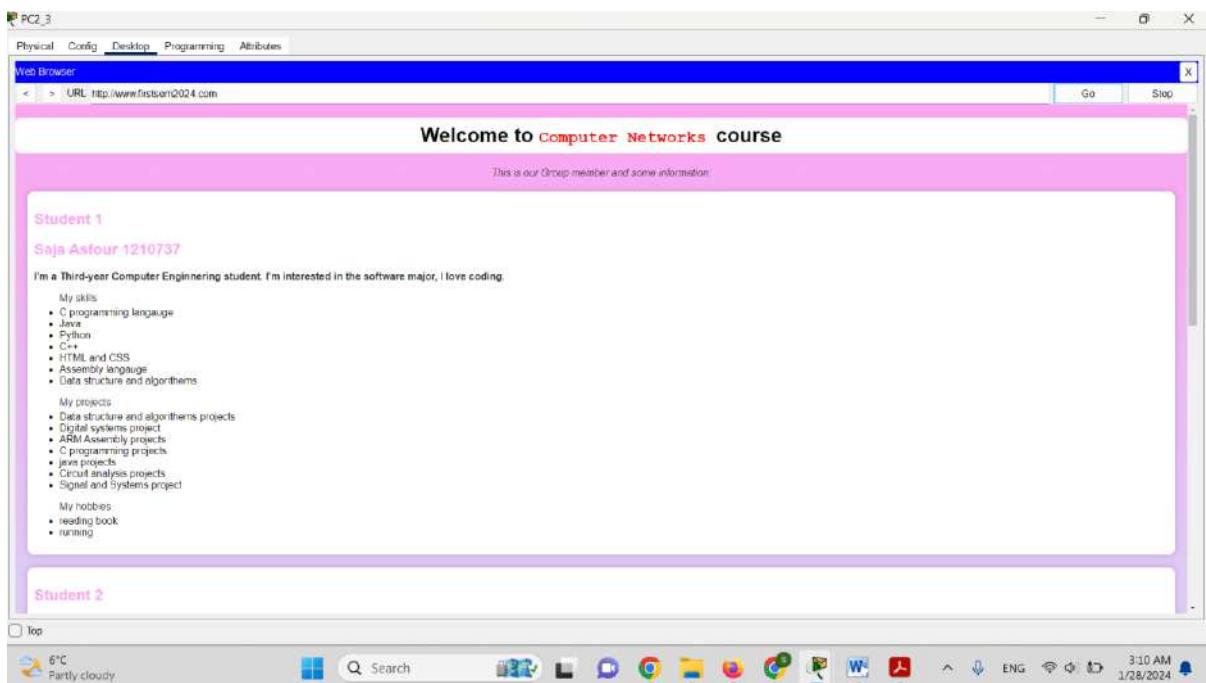


Figure 143:open www.firstsem2024.com from Pc2_3

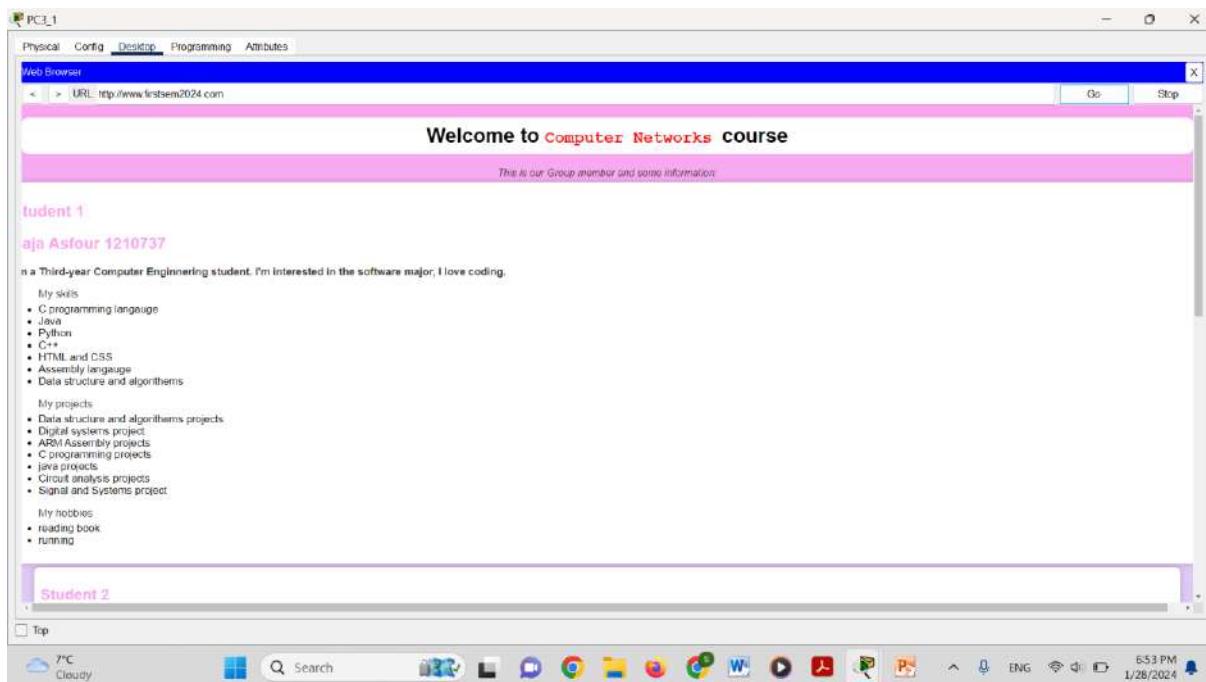


Figure 144:open www.firstsem2024.com from Pc3_1

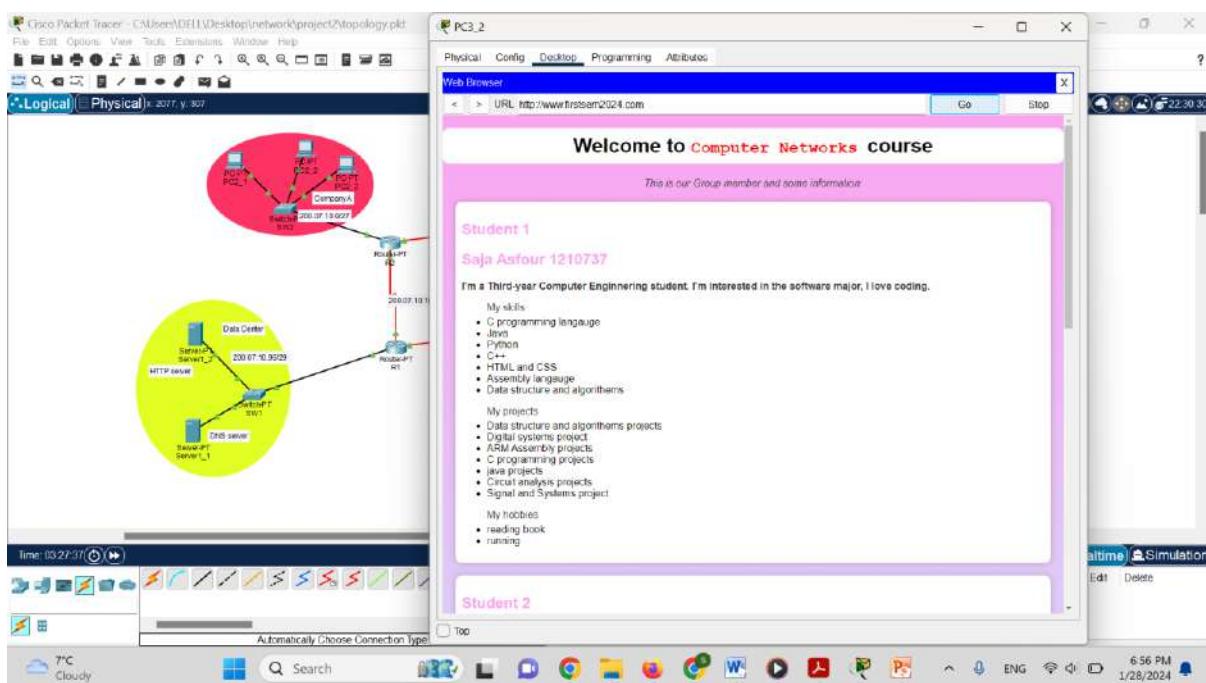


Figure 145:open www.firstsem2024.com from Pc3_2

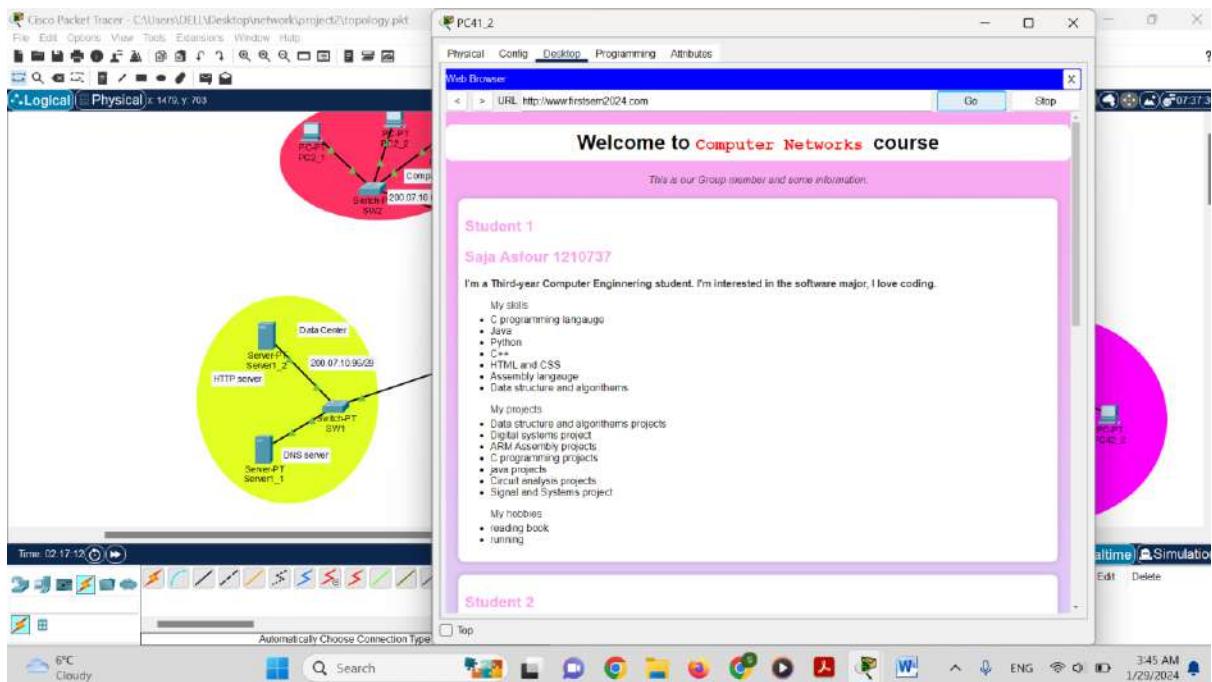


Figure 146:open www.firstsem2024.com from Pc41_2

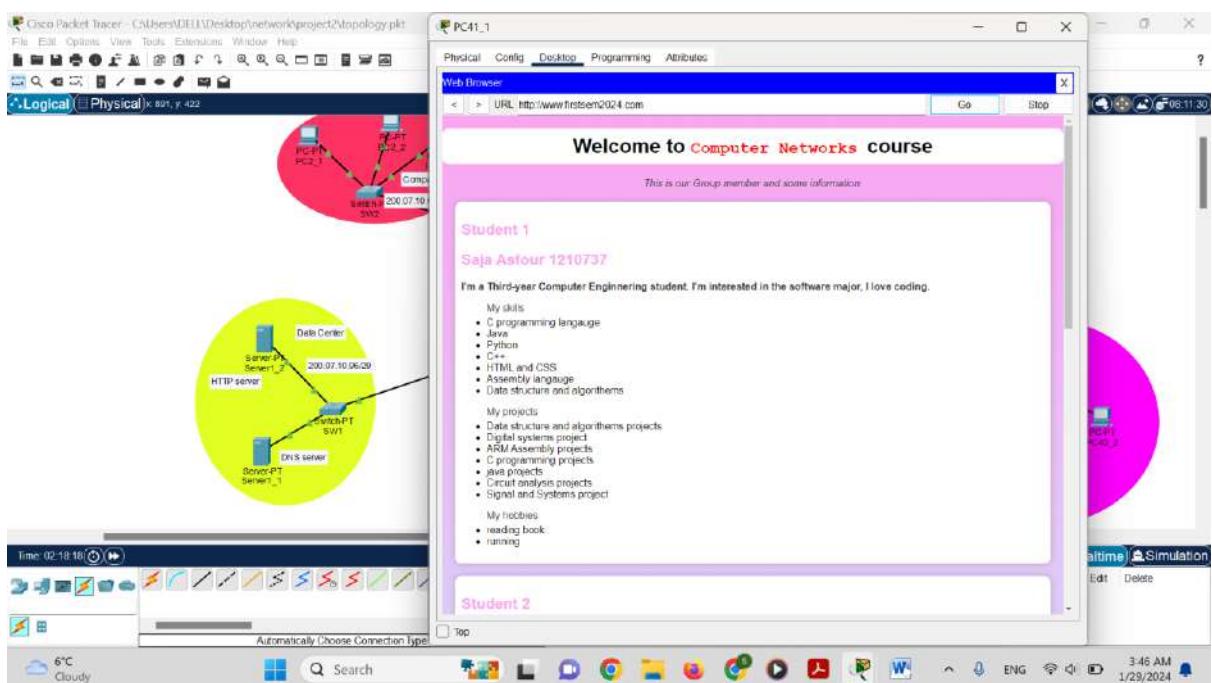


Figure 147:open www.firstsem2024.com from Pc41_1

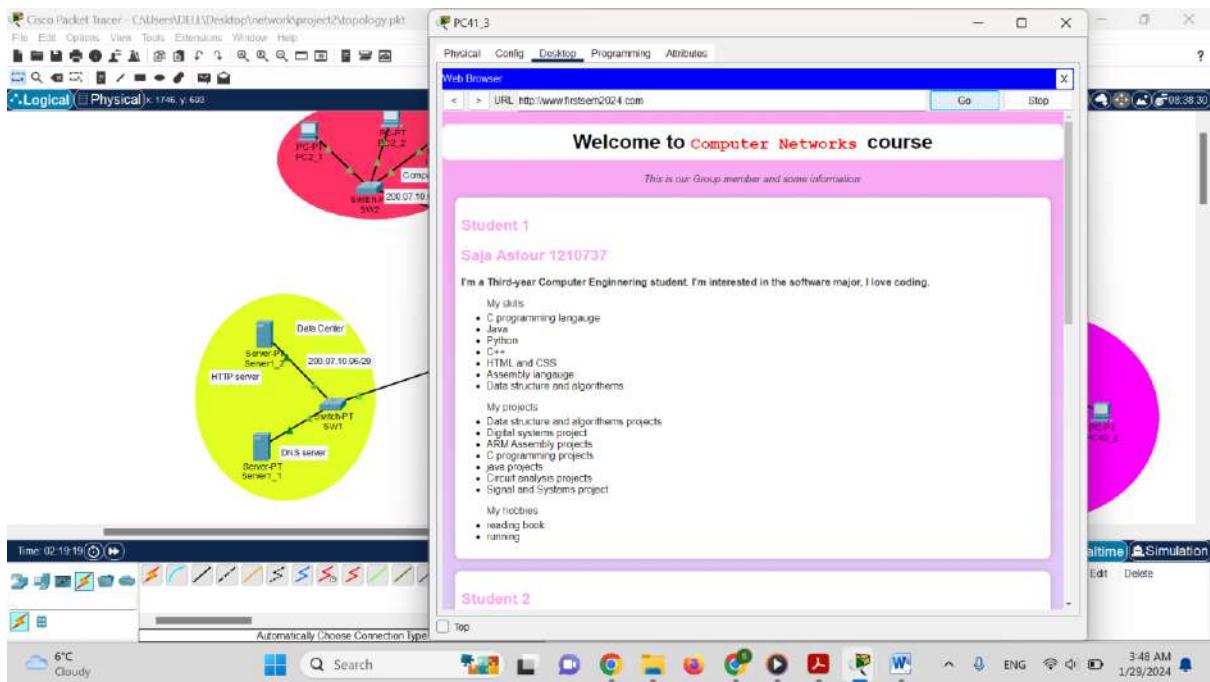


Figure 148:open www.firstsem2024.com from Pc41_3

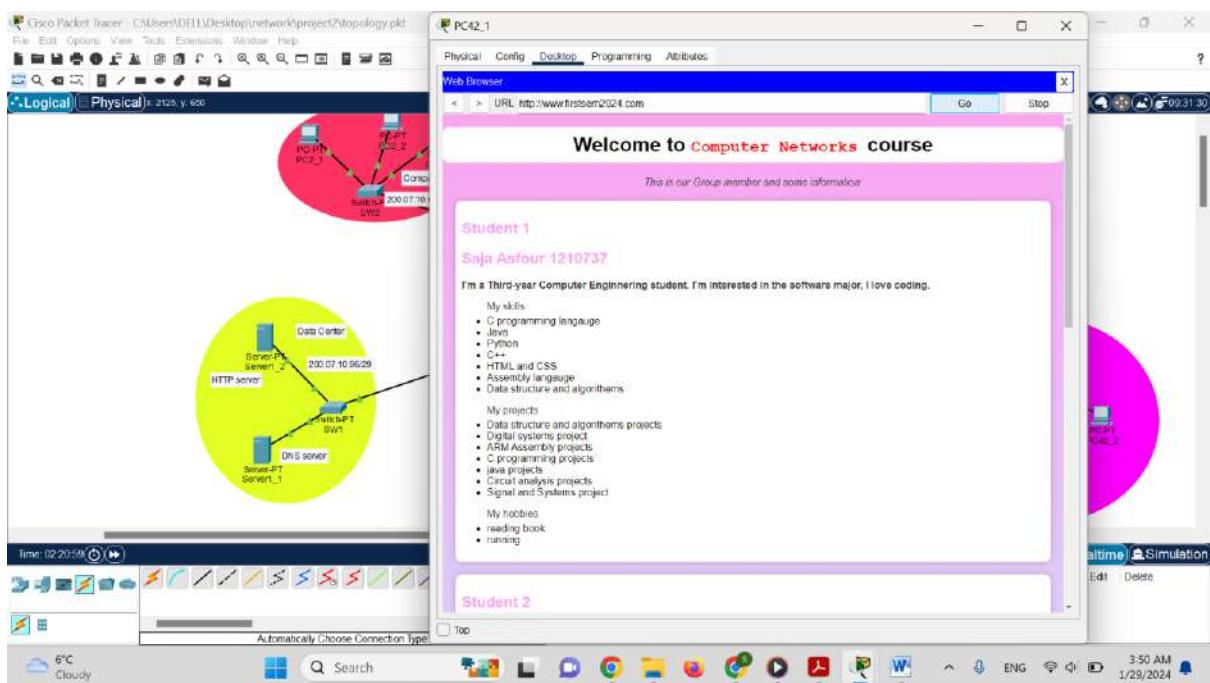


Figure 149:open www.firstsem2024.com from Pc42_1

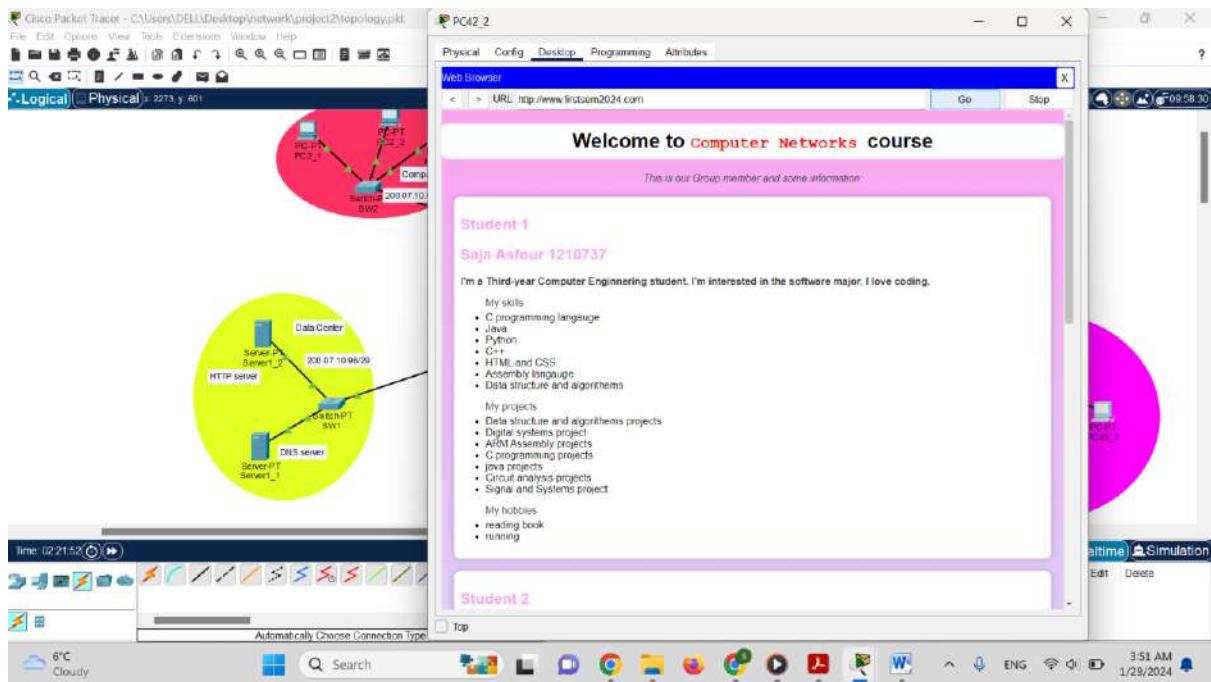
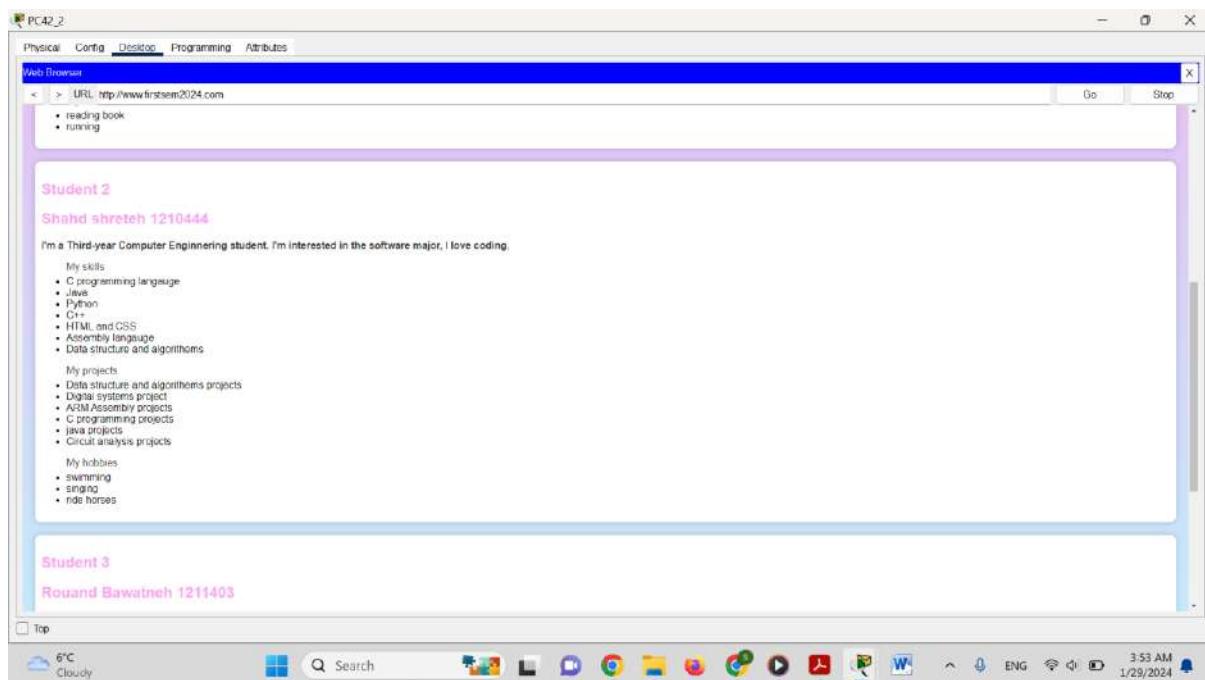
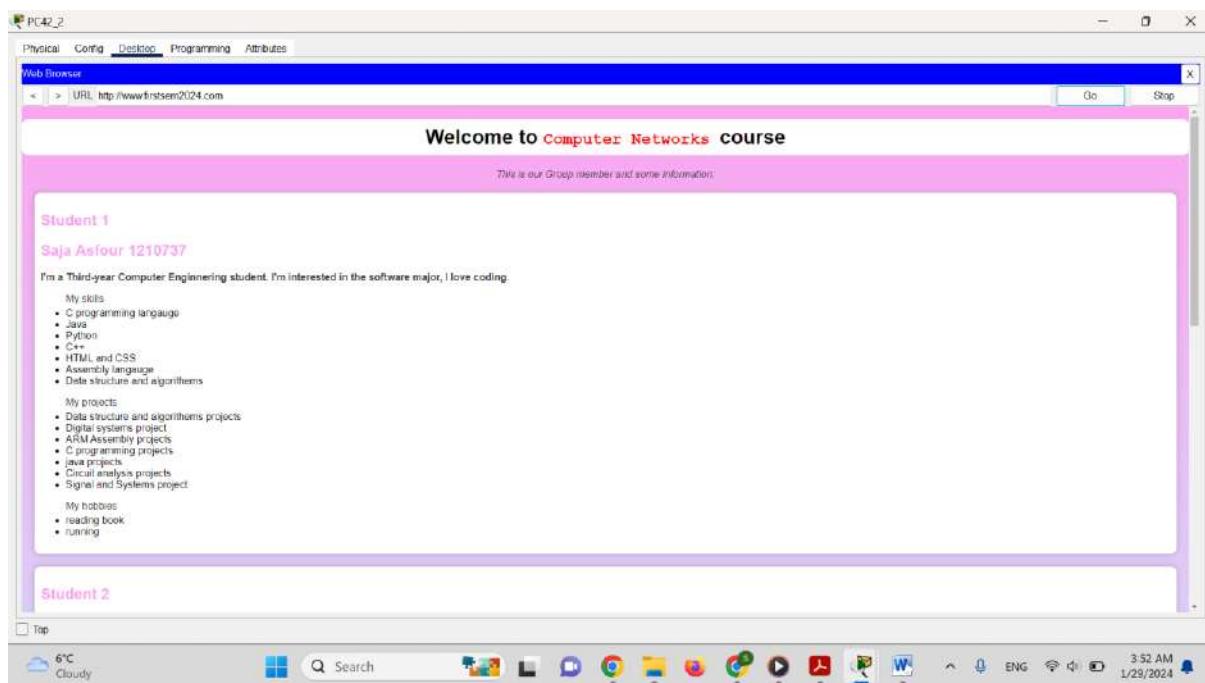


Figure 150:open www.firstsem2024.com from Pc42_2

And below the snapshot for our website:



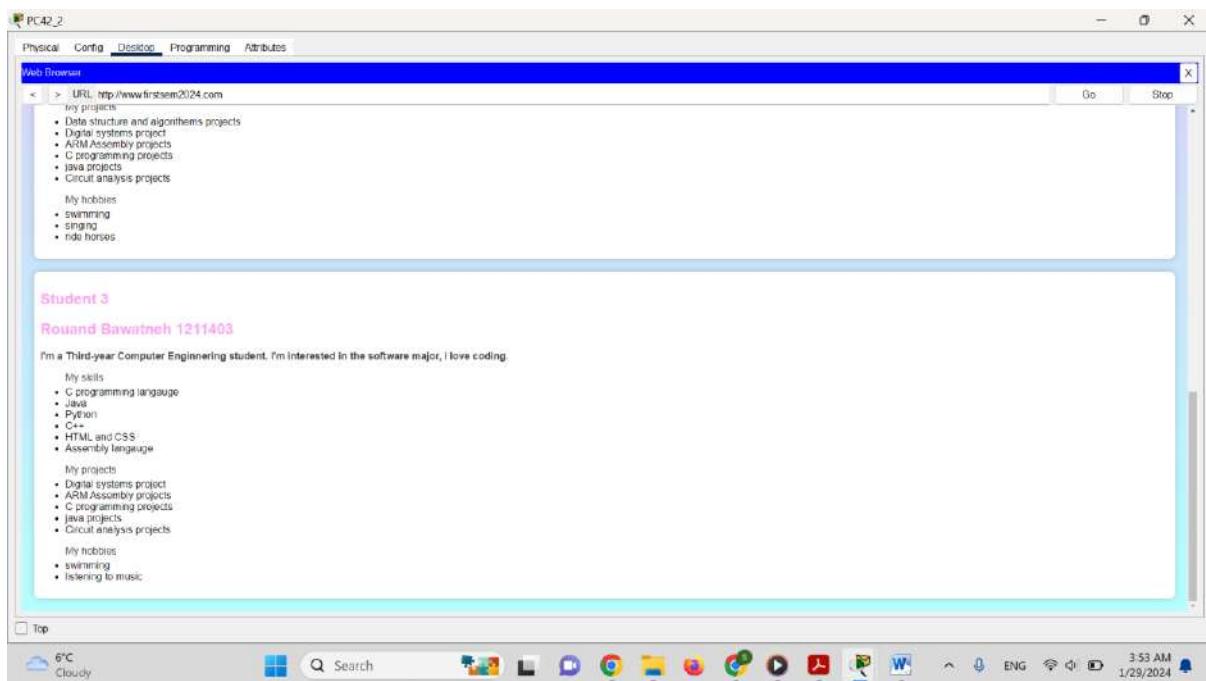


Figure 151:snapshot for our website

Conclusion:

In conclusion we know how to connect a subnets together in packet tracer , which includes Pcs ,servers ,switches, and router and make configuration for all of them . and we know who to ping and trace between different Pcs. and we create a small web page consist of html and CSS style , then show it in different pc in the network. And create email user for our network with password to send and receive from each other. And finally we put snapshot for all of this content and steps.