



IUS
INSTITUT
UNIVERSITAIRE
DES SCIENCES

Faculté : Sciences Informatique

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TD N° 6 - Reseaux

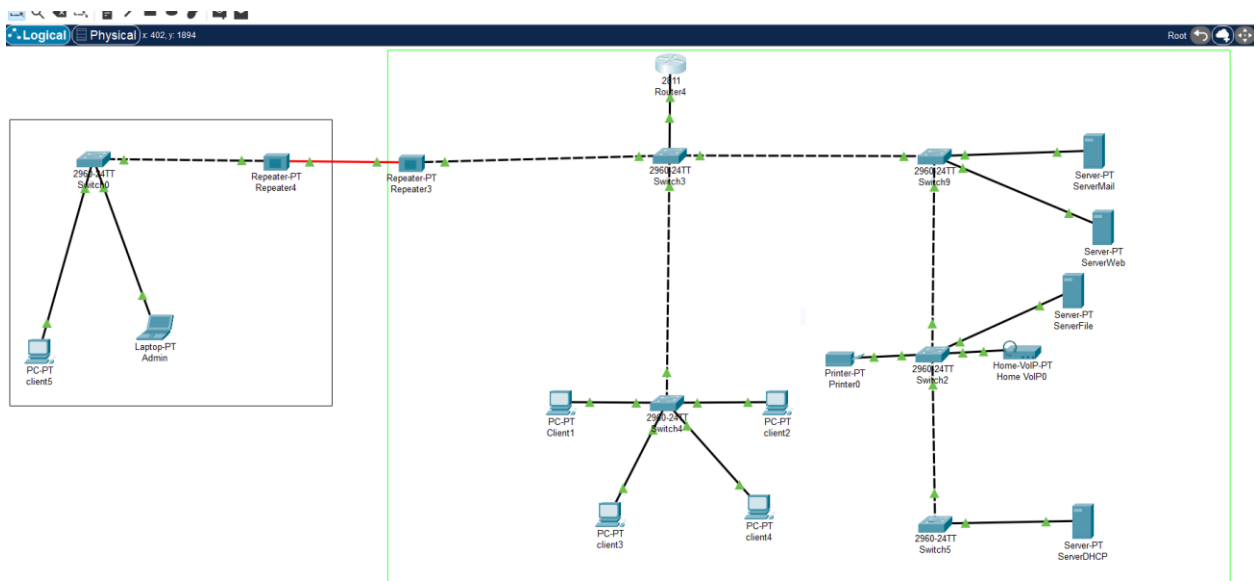
Niveau : L3

Date : Le/10/12/25

Les PC doivent recevoir une adresse IPv6 automatiquement.

Travaux Dirigés

1. Reproduisez cette topologie en configurant les services DHCP afin d'attribuer automatiquement les adresses IP aux dispositifs du réseau.



File Edit Options View Tools Extensions Window Help

Logical (Physical) x 954, y 1921

Router4

Physical Config CLI Attributes

IOS Command Line Interface

249856K bytes of ATA System CompactFlash 0 (Read/Write)

--- System Configuration Dialog ---

Would you like to enter the initial configuration dialog? [yes/no]: no

Press RETURN to get started!

```
Router> enable
Router# hostname R1
Router# configure terminal
Router(config)# interface FastEthernet0/0
Router(config-if)# ip address 192.168.1.254 255.255.255.0
Router(config-if)# no shutdown
Router(config-if)#
Router(config-if)# ip helper-address 192.168.1.1
Router(config-if)# end
Router#
%SYS-5-CONFIG_I: Configured from console by console
```

Copy Paste

Time: 01:09:20

Top

client5

Physical Config Desktop Programming Attributes

Configuration

Interface FastEthernet0

IP Configuration

☒ DHCP ☐ Static

IPv4 Address 169.254.200.91

Subnet Mask 255.255.0.0

Default Gateway 0.0.0.0

DNS Server 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address

Link Local Address FE80:2D0:58FF:FE0E:C85B

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

Authentication MD5

Username

Password

Client1

PhysicalConfigDesktopProgrammingAttributes

IP Configuration

InterfaceFastEthernet0

IP Configuration

☒ DHCP

☐ Static

DHCP failed. APIPA is being used.

IPv4 Address169.254.117.227

Subnet Mask255.255.0.0

Default Gateway0.0.0.0

DNS Server0.0.0.0

IPv6 Configuration

☐ Automatic

☒ Static

IPv6 Address

Link Local AddressFE80::2E0:A3FF:FE59:75E3

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

AuthenticationMD5

Username

Password

ServerDHCP

Physical Config **Services** Desktop Programming Attributes

SERVICES

- HTTP
- DHCP**
- DHCPv6
- TFTP
- DNS
- SYSLOG
- AAA
- NTP
- EMAIL
- FTP
- IoT
- VM Management
- Radius EAP

DHCP

Interface: FastEthernet0 Service: ☒ On ☐ Off

Pool Name: serverPool

Default Gateway: 169.254.54.208

DNS Server: 0.0.0.0

Start IP Address: 169 16 0 0

Subnet Mask: 255 255 0 0

Maximum Number of Users: 512

TFTP Server: 0.0.0.0

WLC Address: 0.0.0.0

Buttons: Add Save Remove

Pool Name	Default Gateway	DNS Server	Start IP Address	Subnet Mask	Max User	TFTP Server	WLC Address
serverPool	169.254.5...	0.0.0.0	169.16.0.0	255.255.0.0	512	0.0.0.0	0.0.0.0

Network Diagram:

```

graph LR
    S[2951-LIT Switch] --- R4[Repeater-PT Repeater4]
    R4 --- R3[Repeater-PT Repeater3]
    R3 --- R1[2411 Router]
    S --- L[Laptop-PT Admin]
  
```

ServerFile

Physical Config Services **Desktop** Programming Attributes

Command Prompt

```

Cisco Packet Tracer SERVER Command Line 1.0
C:\> ping 169.254.169.173

Pinging 169.254.169.173 with 32 bytes of data:

Reply from 169.254.169.173: bytes=32 time=1ms TTL=128
Reply from 169.254.169.173: bytes=32 time=20ms TTL=128
Reply from 169.254.169.173: bytes=32 time=2ms TTL=128
Reply from 169.254.169.173: bytes=32 time=1ms TTL=128

Ping statistics for 169.254.169.173:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 20ms, Average = 5ms
C:\>
  
```


Router5

Physical

Config

CLI

Attributes

IOS Command Line Interface

255K bytes of non-volatile configuration memory.
249856K bytes of ATA System CompactFlash 0 (Read/Write)

Press RETURN to get started!

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

R1> enable
R1# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)# ipv6 unicast-routing
R1(config)# interface fastEthernet 0/0
R1(config-if)# ipv6 address 2001:DB8:1::1/64
R1(config-if)# ipv6 enable
R1(config-if)# no shutdown
R1(config-if)# interface fastEthernet 0/1
R1(config-if)# ipv6 address 2001:DB8:2::1/64
R1(config-if)# ipv6 enable
R1(config-if)# no shutdown
R1(config-if)# ipv6 dhcp pool jacmel
R1(config-dhcpv6)# address prefix 2001:DB8:1::/64
R1(config-dhcpv6)# dns-server 2001:4860::8888
R1(config-dhcpv6)# domain-name reseau-jacmel.com
R1(config-dhcpv6)#exit
R1(config)# ipv6
% Incomplete command.
R1(config)# ipv6 dhcp pool cayes-jacmel
R1(config-dhcpv6)# address prefix 2001:DB8:2::/64
R1(config-dhcpv6)# dns-server 2001:4860:4860::8888
R1(config-dhcpv6)# domain-name reseau-cayes-jacmel.com
R1(config-dhcpv6)#exit
R1(config)# interface fastEthernet 0/0
R1(config-if)# ipv6 dhcp server jacmel
R1(config-if)# ipv6 nd managed-config-flag
R1(config-if)#exit
R1(config)# interface fastEthernet 0/1
R1(config-if)# ipv6 dhcp server cayes-jacmel
R1(config-if)# ipv6 nd managed-config-flag
R1(config-if)#exit
R1(config)#

Copy

Paste

☐ Top

ter-PT
ater3

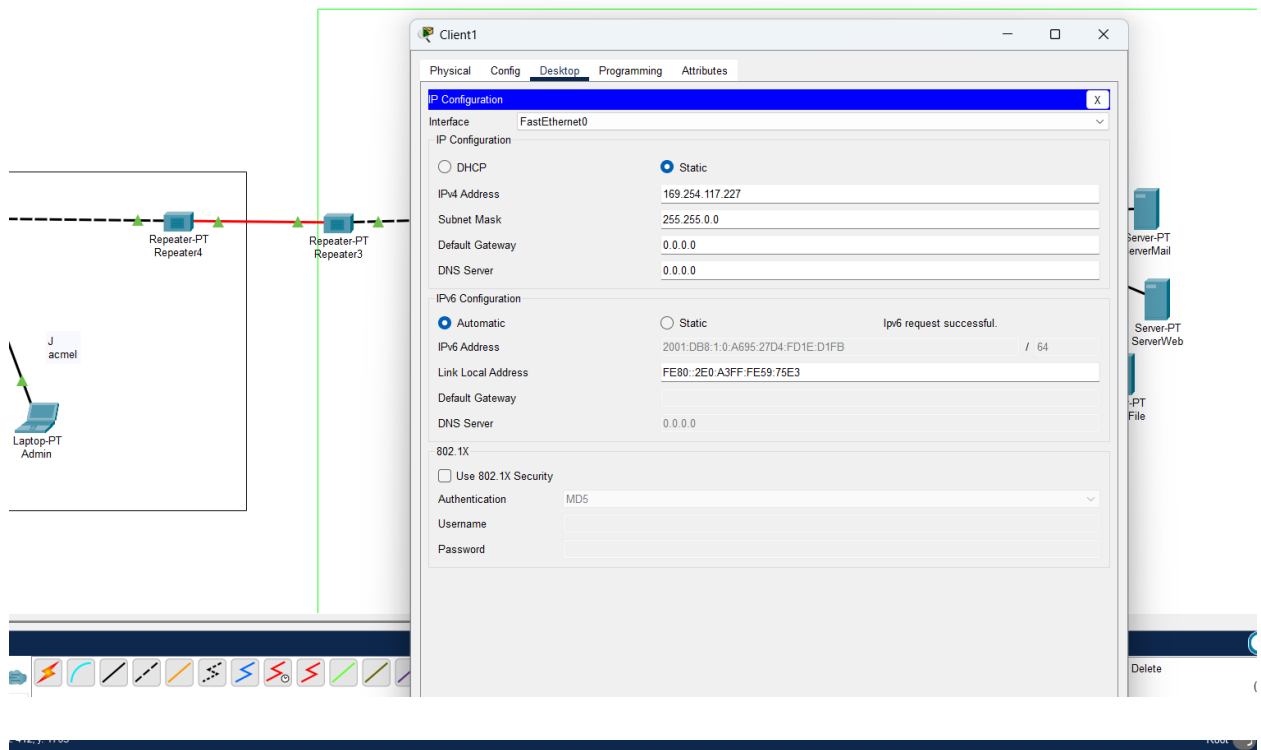
Server-PT
ServerMail

Server-PT
ServerWeb

PT
File

Realit

Delete
(delete)
(delete)
(delete)
(delete)



The network diagram shows a topology with a dashed line representing a backbone. Two repeaters, Repeater-PT Repeater4 and Repeater-PT Repeater3, are connected to this backbone. A green line connects Repeater4 to a laptop labeled 'J acmel' and 'Laptop-PT Admin'. A red line connects Repeater3 to a server labeled 'Server-PT ServerMail'. The Client1 configuration window is open, showing the IP Configuration tab for the FastEthernet0 interface. The IP Configuration section has the Static radio button selected, with the IPv4 Address set to 169.254.117.227, Subnet Mask to 255.255.0.0, Default Gateway to 0.0.0.0, and DNS Server to 0.0.0.0. The IPv6 Configuration section has the Automatic radio button selected, with the IPv6 Address set to 2001:DB8:1:0:A695:27D4:FD1E:D1FB / 64, Link Local Address set to FE80::2E0:A3FF:FE59:75E3, Default Gateway to 0.0.0.0, and DNS Server to 0.0.0.0. The 802.1X section has the Use 802.1X Security checkbox unchecked, Authentication set to MD5, and Username and Password fields empty. The status bar at the bottom of the window shows 'IPv6 request successful.'

Client1

Physical Config Desktop Programming Attributes

IP Configuration

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 169.254.117.227

Subnet Mask 255.255.0.0

Default Gateway 0.0.0.0

DNS Server 0.0.0.0

IPv6 Configuration

☒ Automatic ☐ Static IPv6 request successful.

IPv6 Address 2001:DB8:1:0:A695:27D4:FD1E:D1FB / 64

Link Local Address FE80::2E0:A3FF:FE59:75E3

Default Gateway 0.0.0.0

DNS Server 0.0.0.0

802.1X

☐ Use 802.1X Security

Authentication MD5

Username

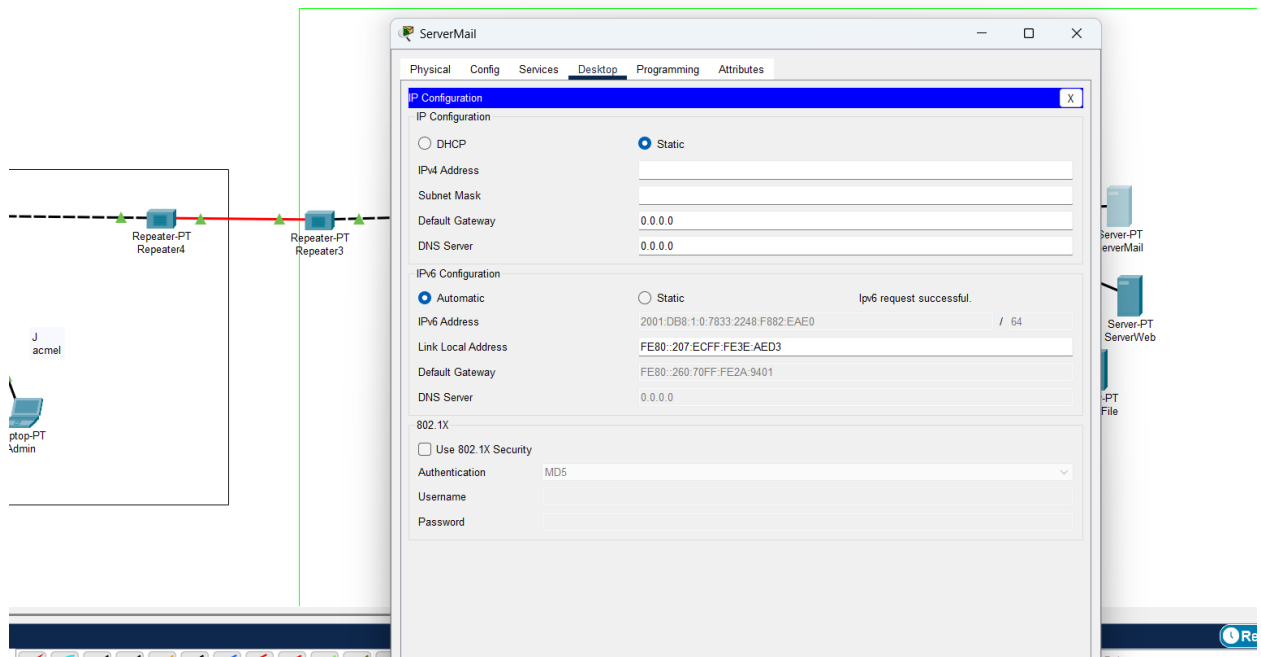
Password

Server-PT ServerMail

Server-PT ServerWeb

PT File

Delete



The network diagram is identical to the one above, showing the same topology with Repeater4 connected to the laptop and Repeater3 connected to the server. The ServerMail configuration window is open, showing the IP Configuration tab for the FastEthernet0 interface. The IP Configuration section has the Static radio button selected, with the IPv4 Address, Subnet Mask, Default Gateway, and DNS Server fields empty. The IPv6 Configuration section has the Automatic radio button selected, with the IPv6 Address set to 2001:DB8:1:0:7833:2248:F882:EAE0 / 64, Link Local Address set to FE80::207:ECFF:FE3E:AED3, Default Gateway set to FE80::260:70FF:FE2A:9401, and DNS Server to 0.0.0.0. The 802.1X section has the Use 802.1X Security checkbox unchecked, Authentication set to MD5, and Username and Password fields empty. The status bar at the bottom of the window shows 'IPv6 request successful.'

ServerMail

Physical Config Services Desktop Programming Attributes

IP Configuration

IP Configuration

☐ DHCP ☒ Static

IPv4 Address

Subnet Mask

Default Gateway 0.0.0.0

DNS Server 0.0.0.0

IPv6 Configuration

☒ Automatic ☐ Static IPv6 request successful.

IPv6 Address 2001:DB8:1:0:7833:2248:F882:EAE0 / 64

Link Local Address FE80::207:ECFF:FE3E:AED3

Default Gateway FE80::260:70FF:FE2A:9401

DNS Server 0.0.0.0

802.1X

☐ Use 802.1X Security

Authentication MD5

Username

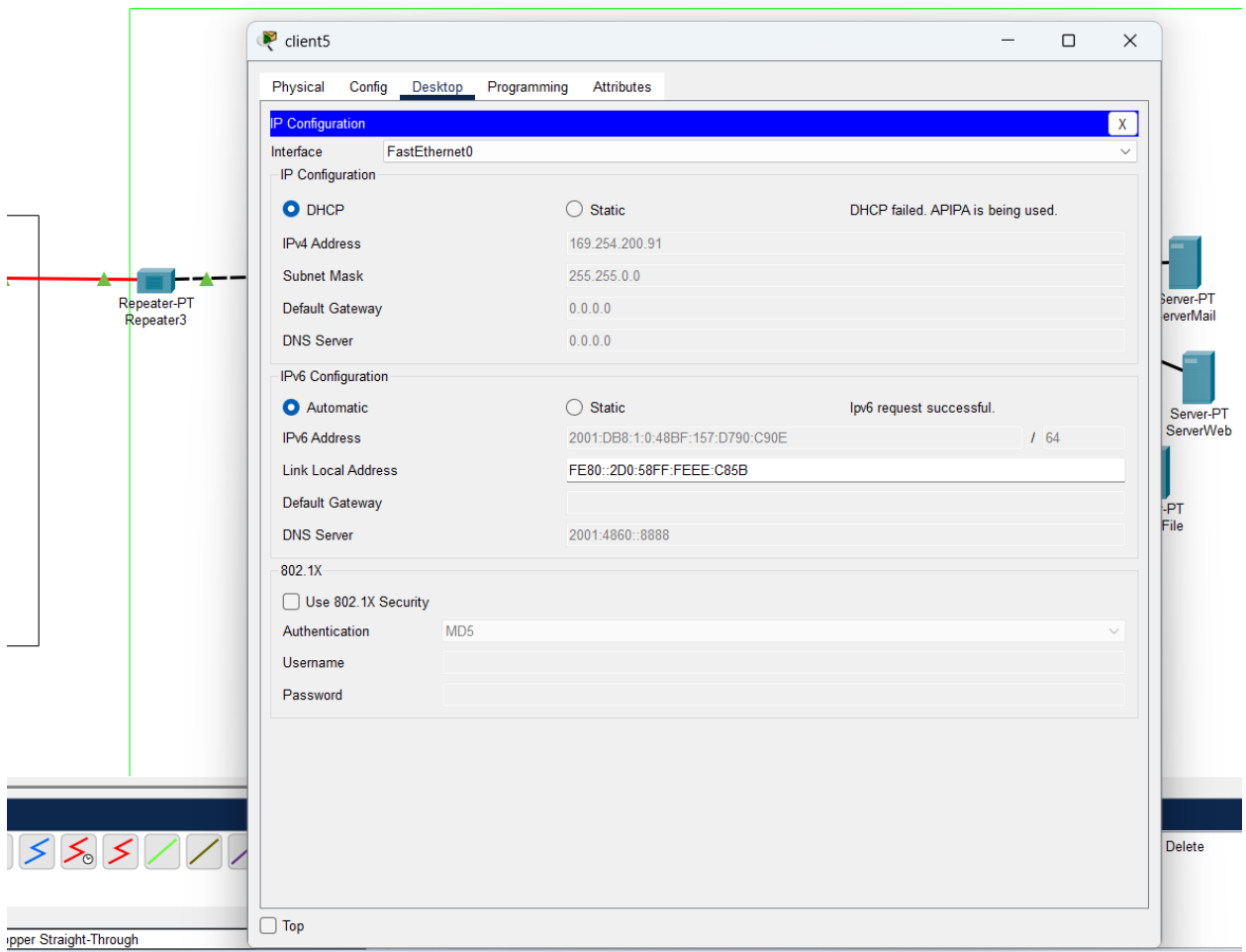
Password

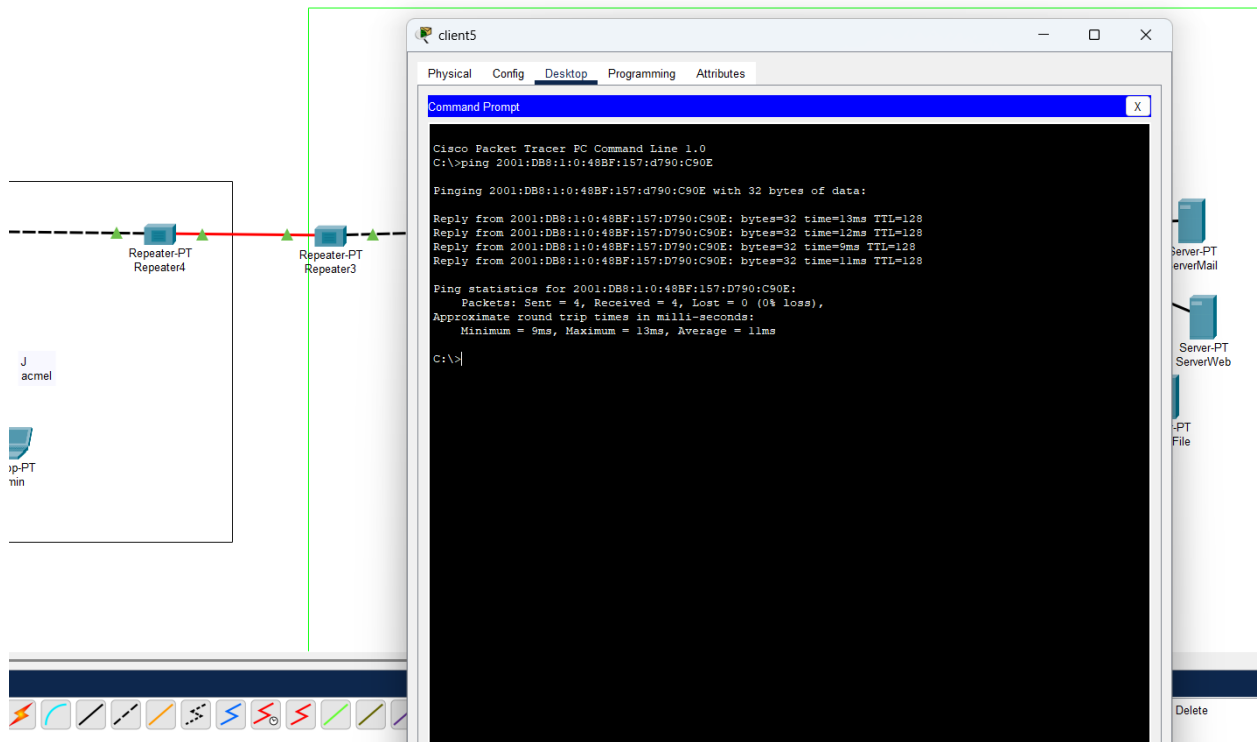
Server-PT ServerMail

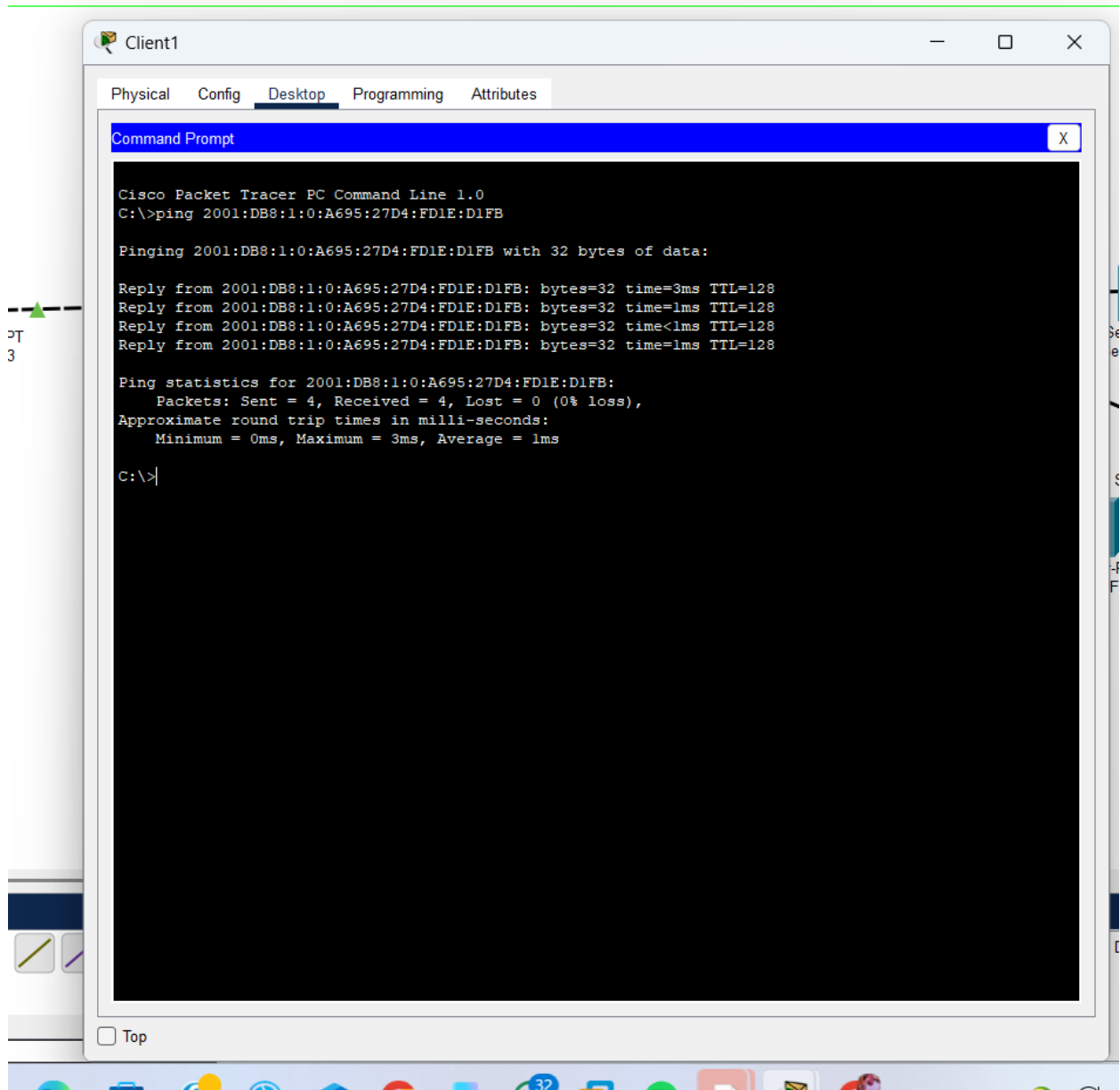
Server-PT ServerWeb

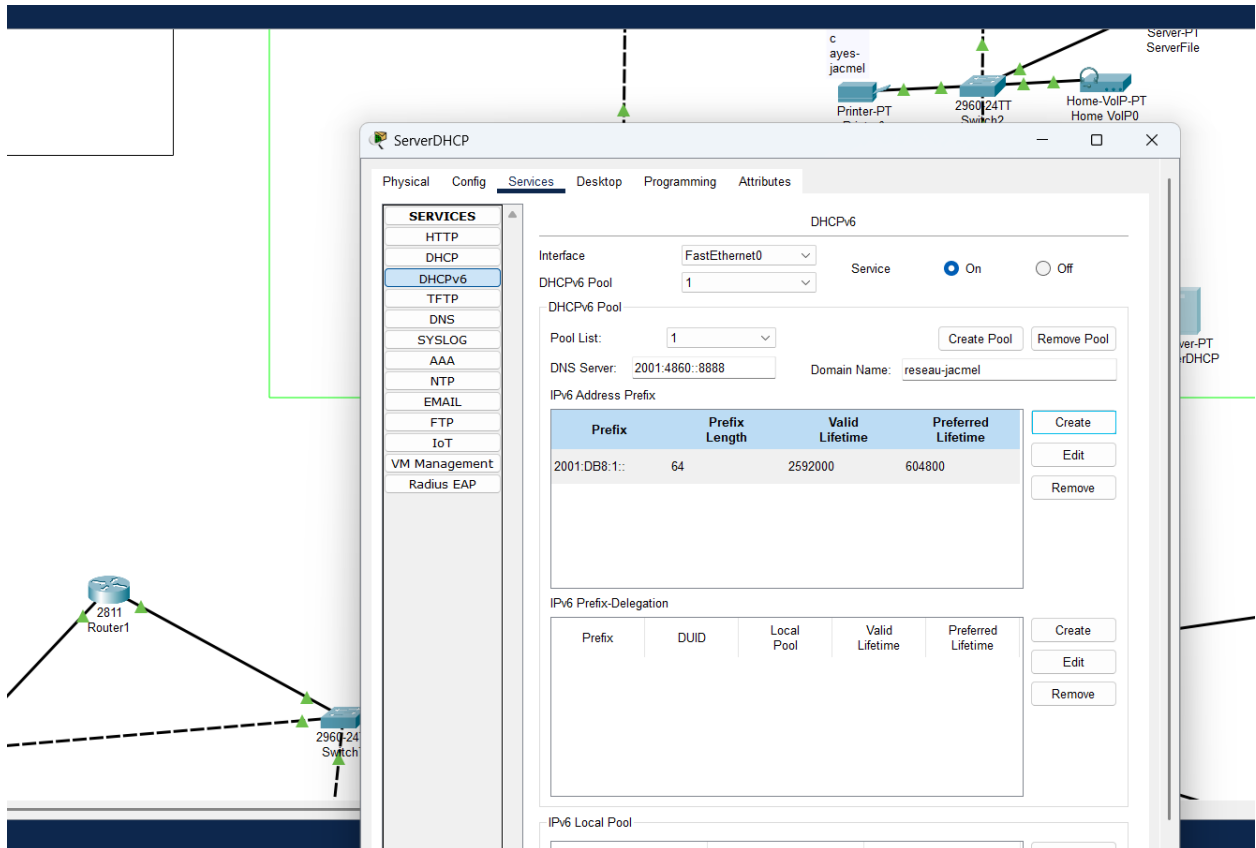
PT File

Re



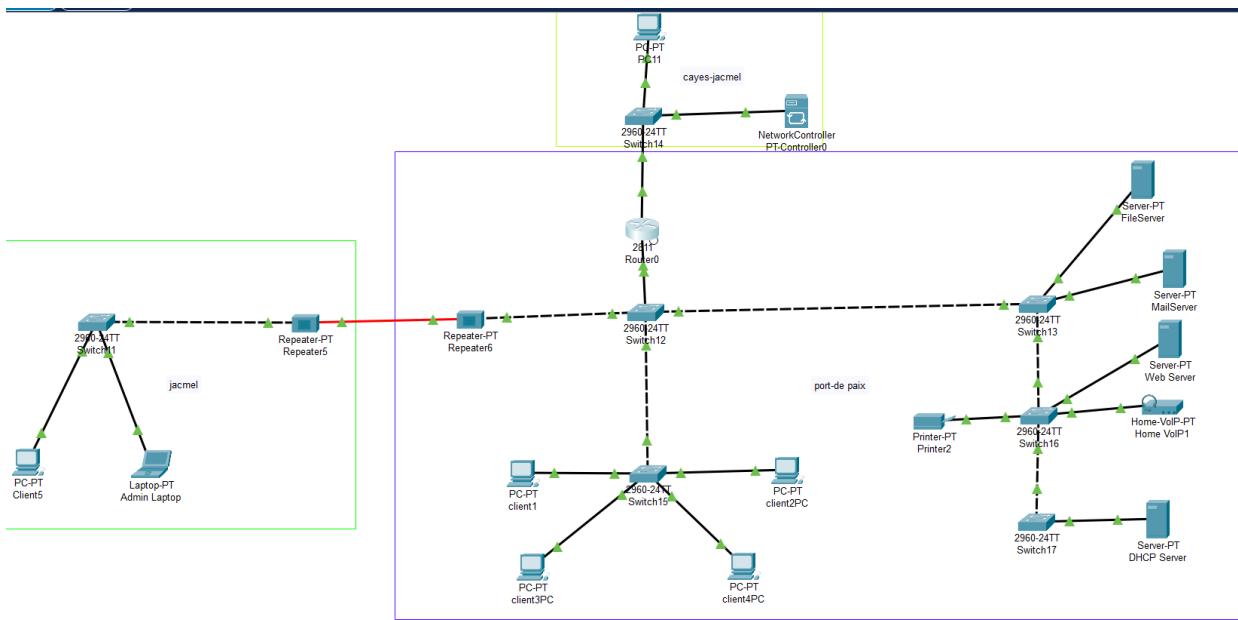






3. Reproduisez cette topologie en configurant les services DHCP, en utilisant le routeur comme serveur DHCP afin d'attribuer

automatiquement les adresses IP aux différents hôtes du réseau.

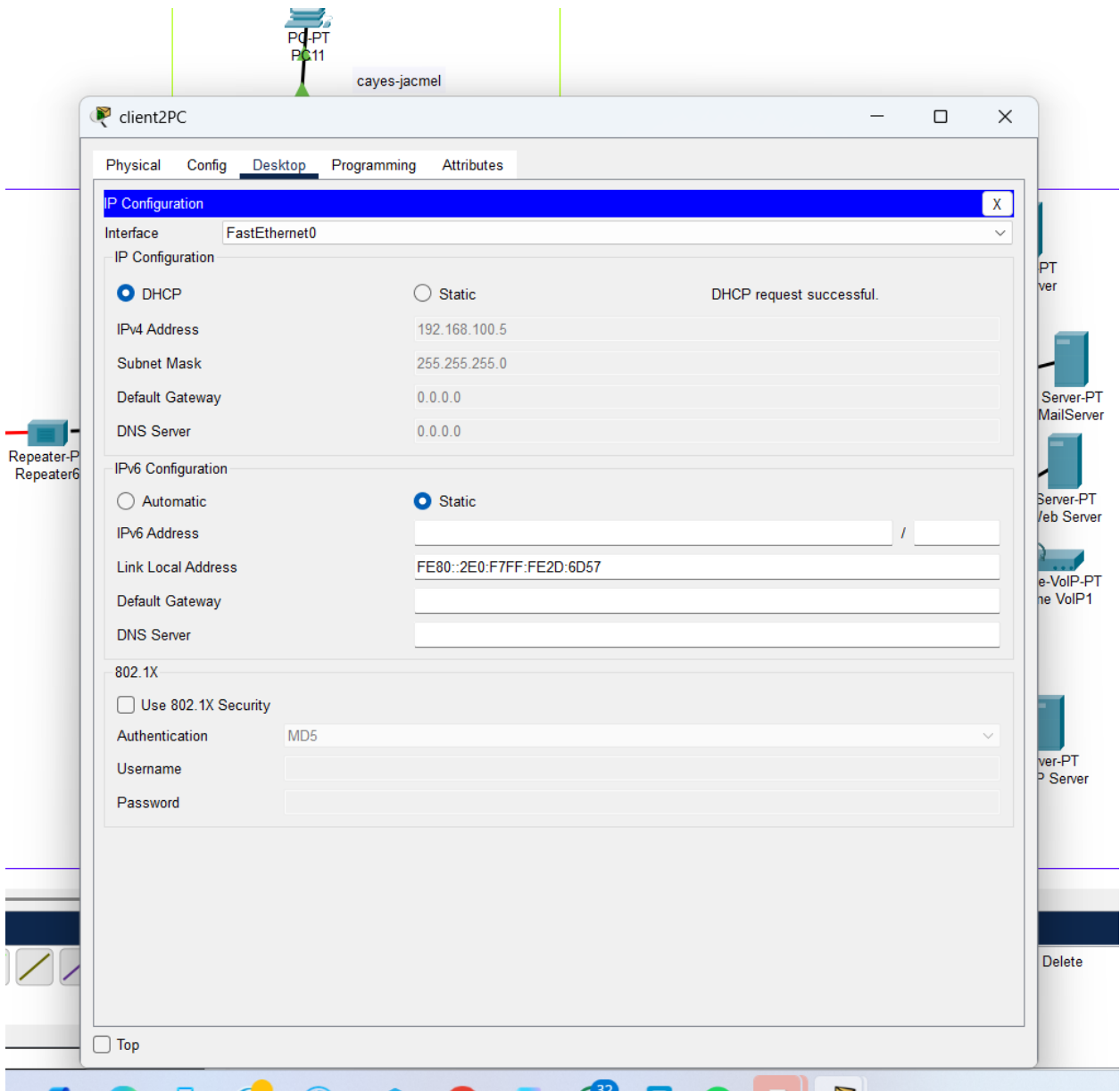


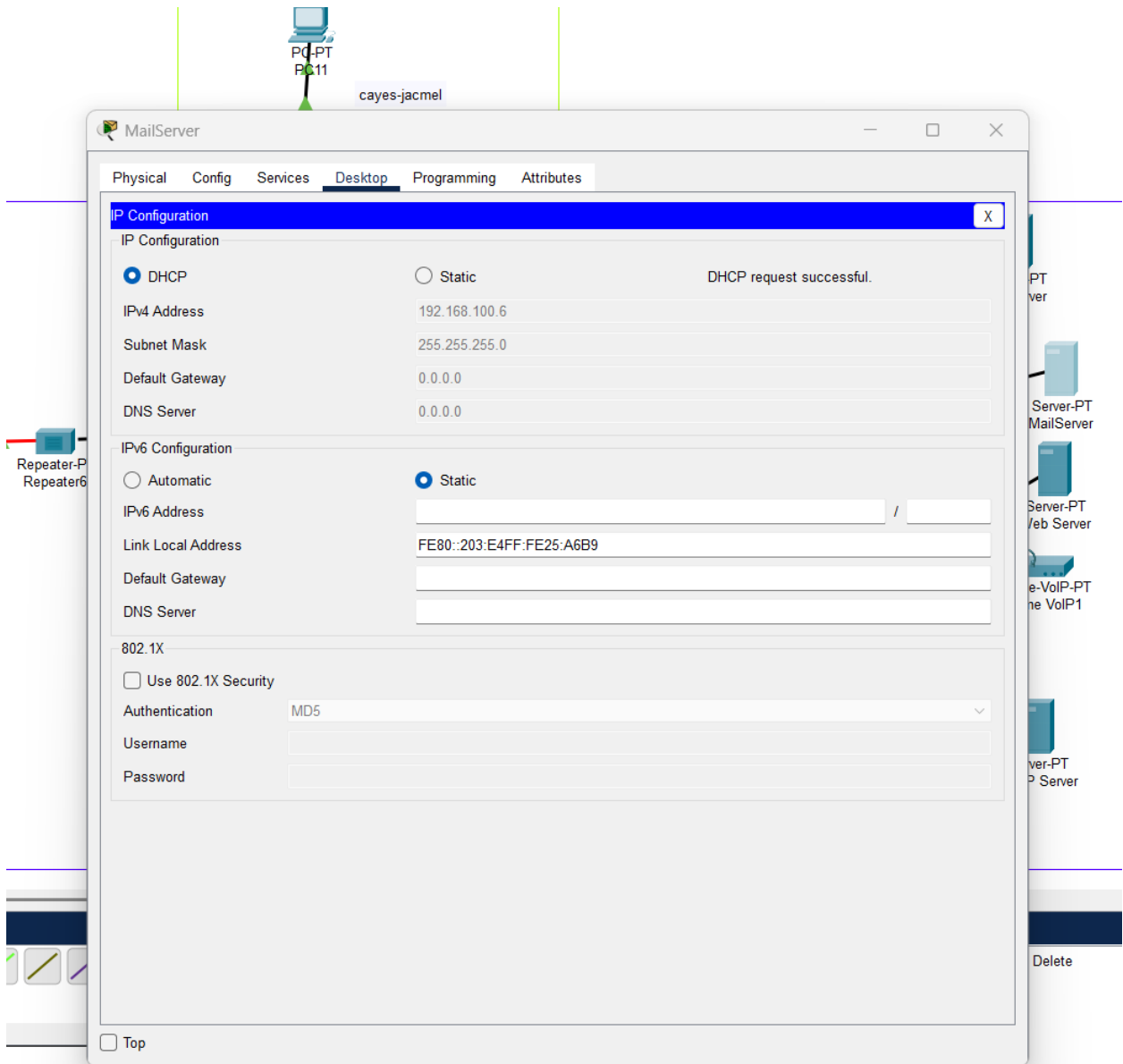
The screenshot shows the same network topology as the diagram above. Overlaid on the right is a terminal window for Router0, displaying the following configuration commands and their outputs:

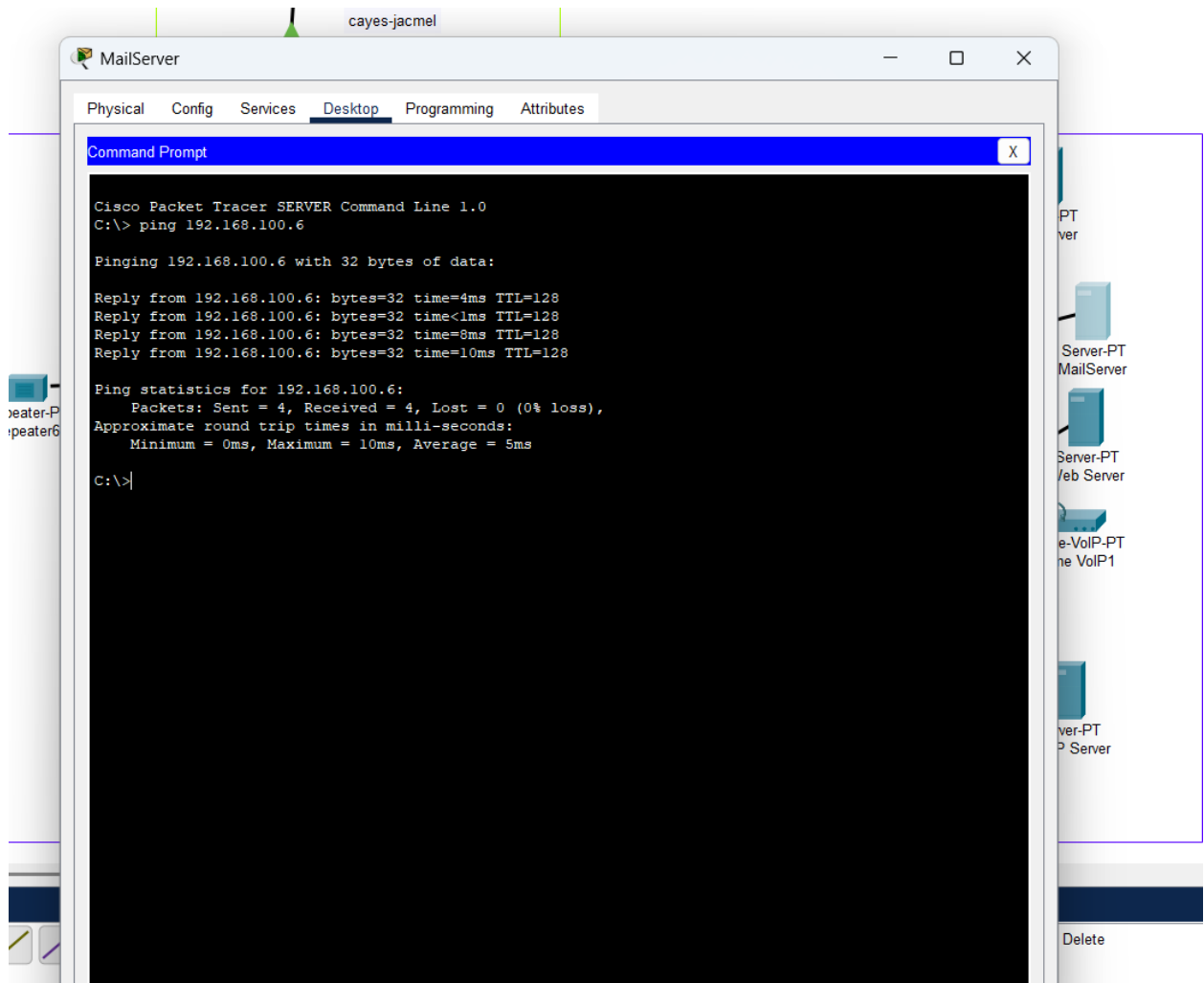
```

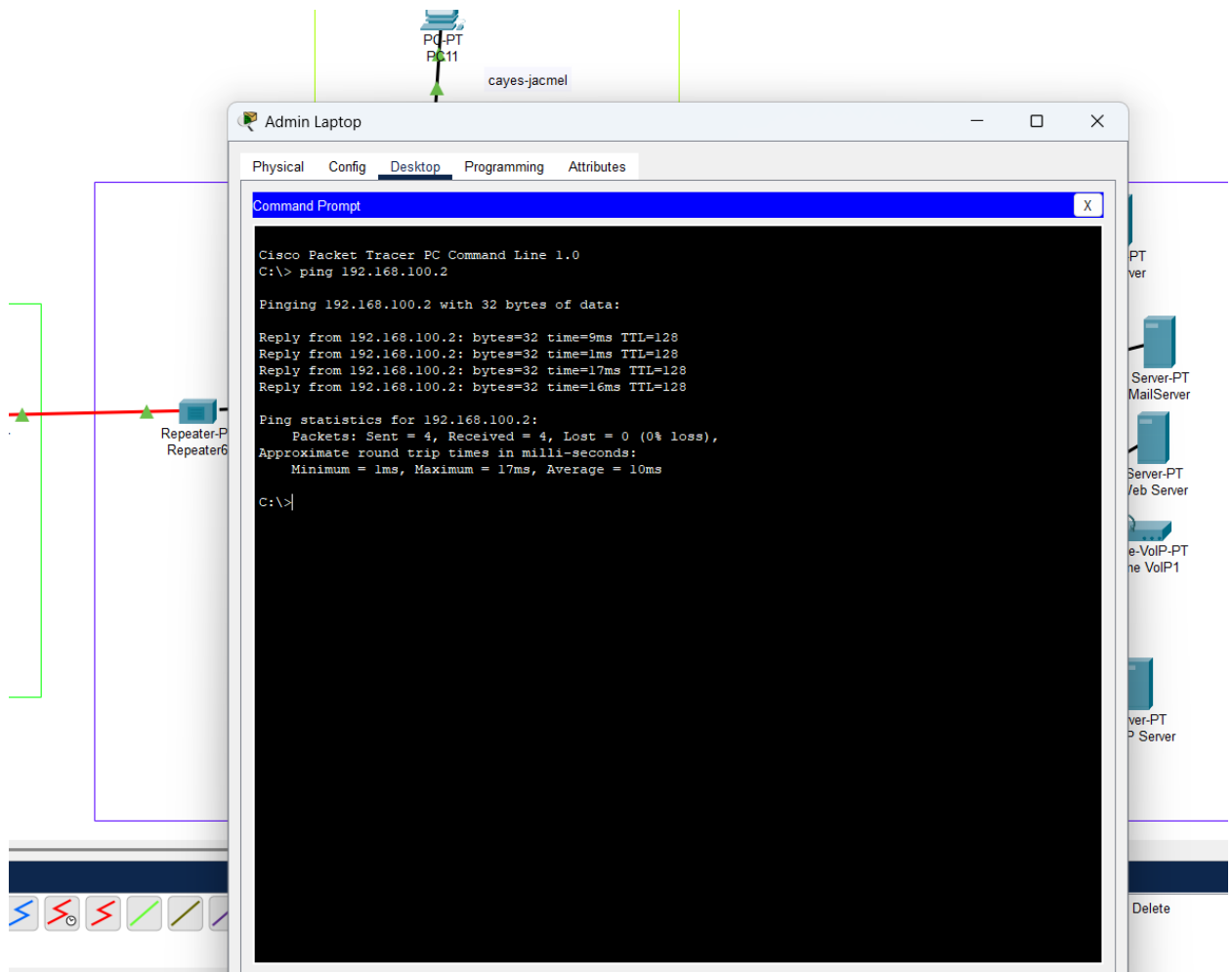
Router> enable
Router# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)# hostname jacmel
jacmel(config)# interface fastEthernet 0/0
jacmel(config-if)# ip address 192.168.300.1 255.255.255.0
% Invalid input detected at '' marker.
jacmel(config-if)# ip address 192.168.100.1 255.255.255.0
jacmel(config-if)# no shutdown
jacmel(config-if)#
%LINK-3-CHANGED: Interface FastEthernet0/0, changed state to up
%LINEPROTO-3-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
jacmel(config-if)# exit
jacmel(config)# interface fastEthernet 0/1
% Invalid input detected at '' marker.
jacmel(config)# interface fastEthernet 0/1
jacmel(config-if)# ip address 192.168.200.1 255.255.255.0
jacmel(config-if)# no shutdown
jacmel(config-if)#
%LINK-3-CHANGED: Interface FastEthernet0/1, changed state to up
%LINEPROTO-3-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
jacmel(config)# ipv6 dhcp pool port-de paix
% Invalid input detected at '' marker.
jacmel(config)# ipv6 dhcp pool port-de paix
% Invalid input detected at '' marker.
jacmel(config)#
  
```

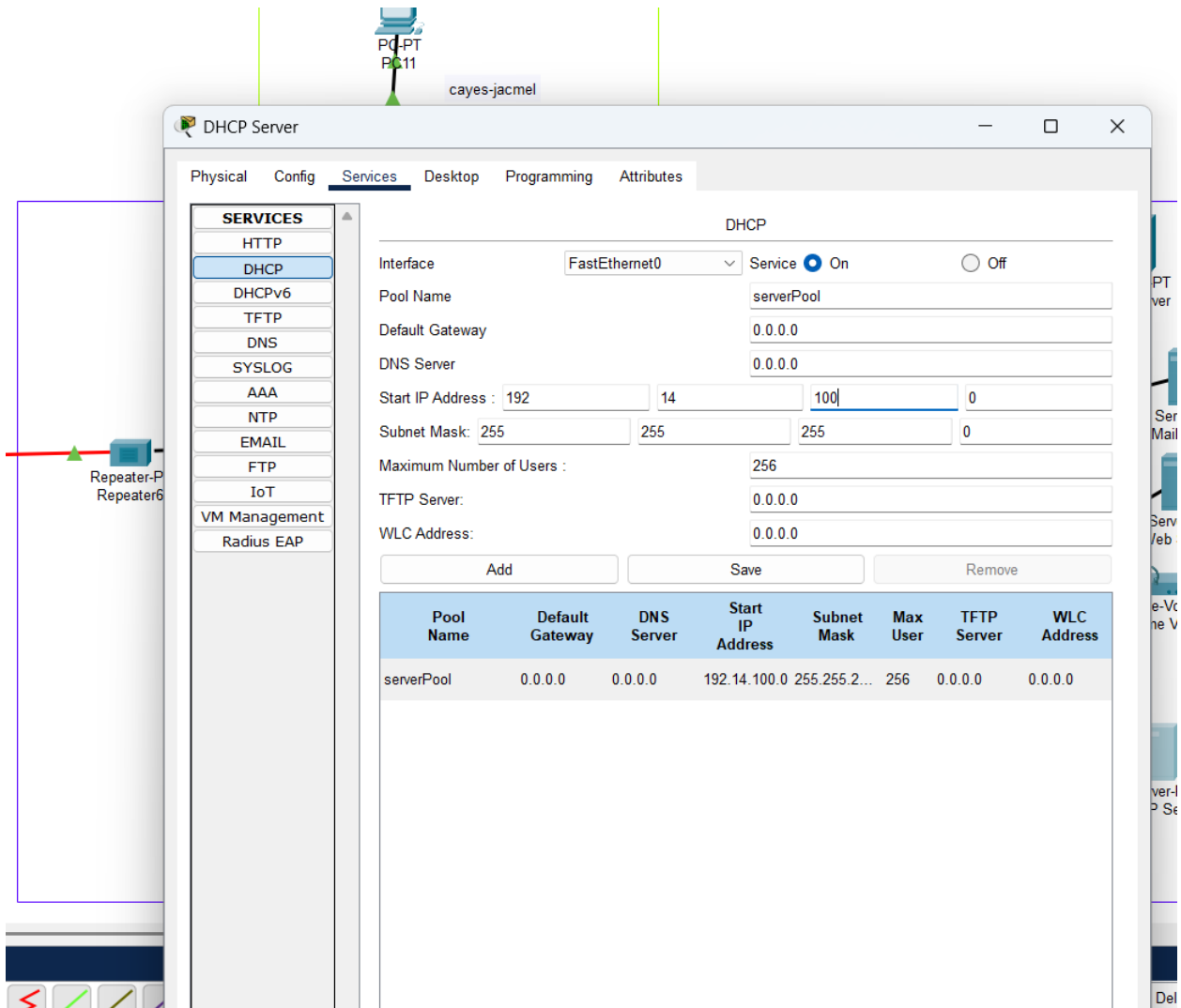
At the bottom left, a status bar shows the time as 01:01:17. At the bottom right, a 'Simulator' button is visible.



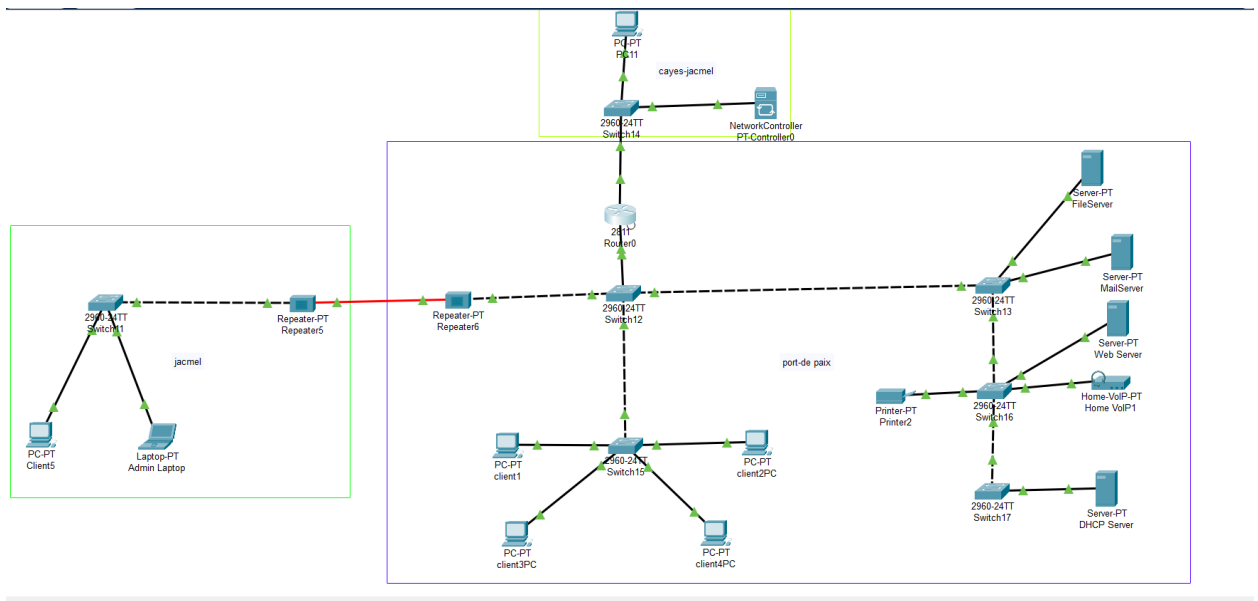








4.Reproduisez cette topologie en configurant les services DHCPv6, en utilisant le routeur comme serveur DHCP afin d'attribuer automatiquement les adresses IP aux différents hôtes du réseau.



Admin Laptop

Physical

Config

Desktop

Programming

Attributes

IP Configuration

Interface

FastEthernet0

IP Configuration

☒ DHCP

☐ Static

IPv4 Address

192.168.100.2

Subnet Mask

255.255.255.0

Default Gateway

0.0.0.0

DNS Server

0.0.0.0

IPv6 Configuration

☒ Automatic

☐ Static

IPv6 Address

2001:DB8:1:0:230:A3FF:FEDD:940B

/ 64

Link Local Address

FE80::230:A3FF:FEDD:940B

Default Gateway

FE80::201:63FF:FED6:D001

DNS Server

802.1X

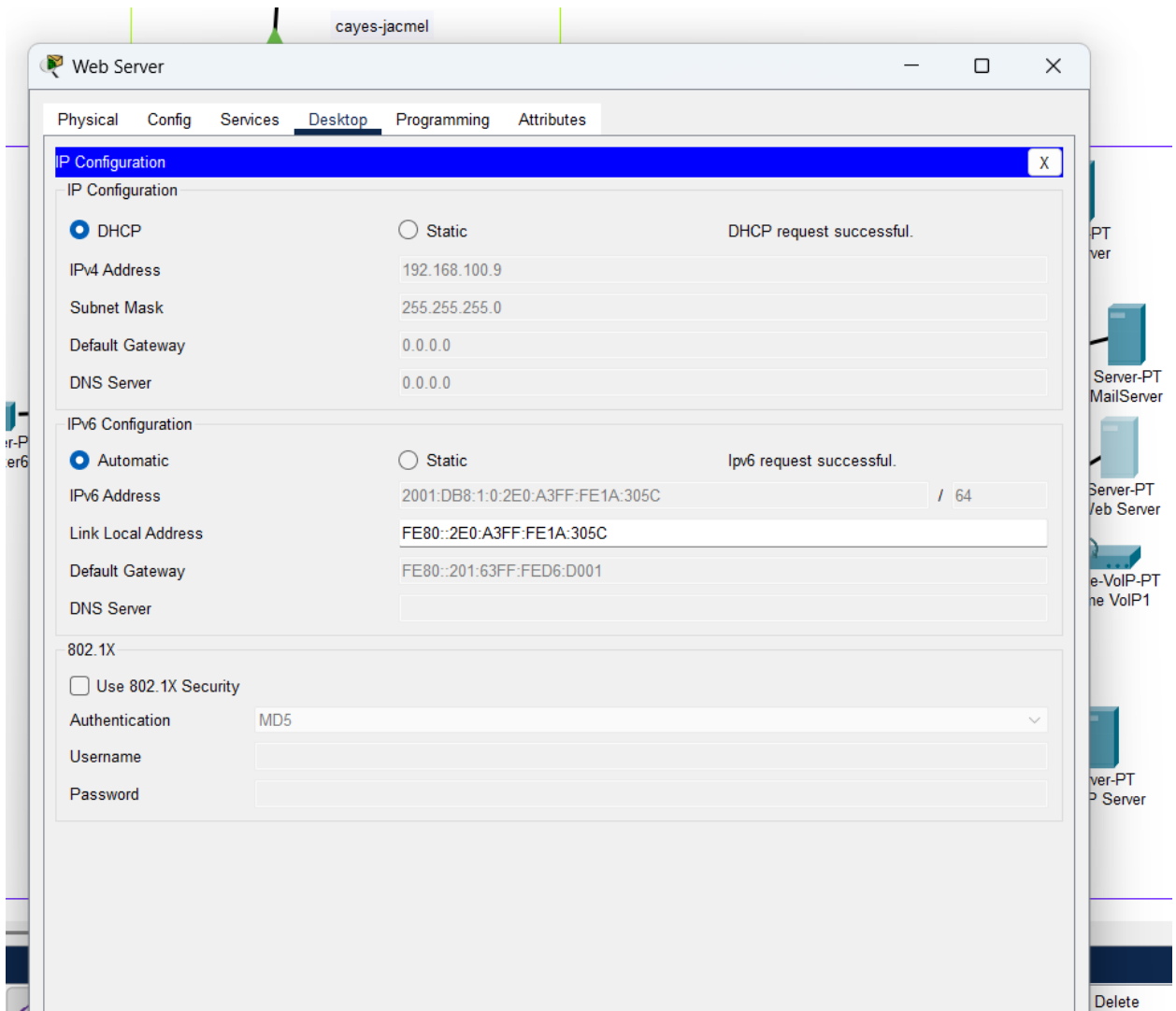
☐ Use 802.1X Security

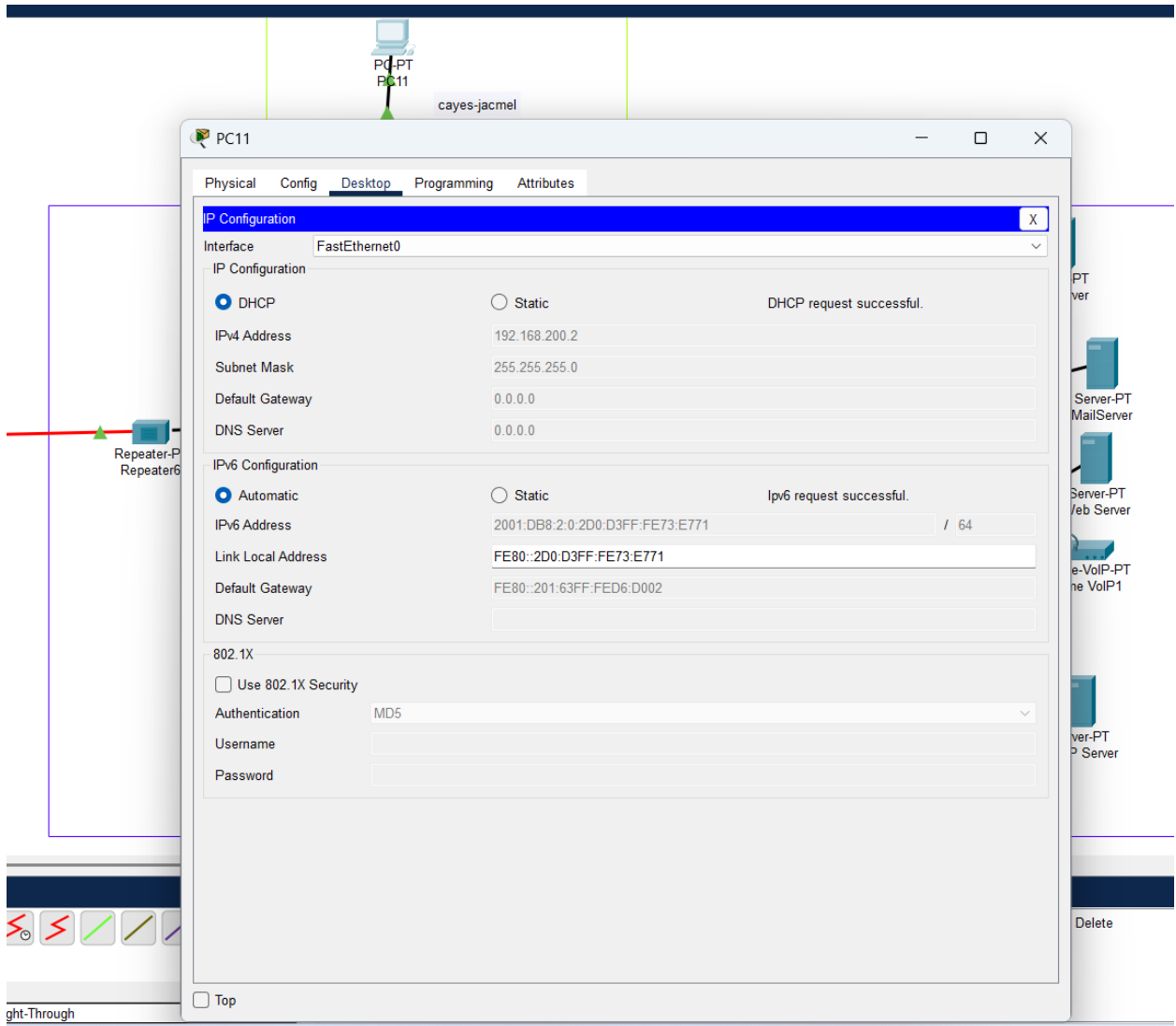
Authentication

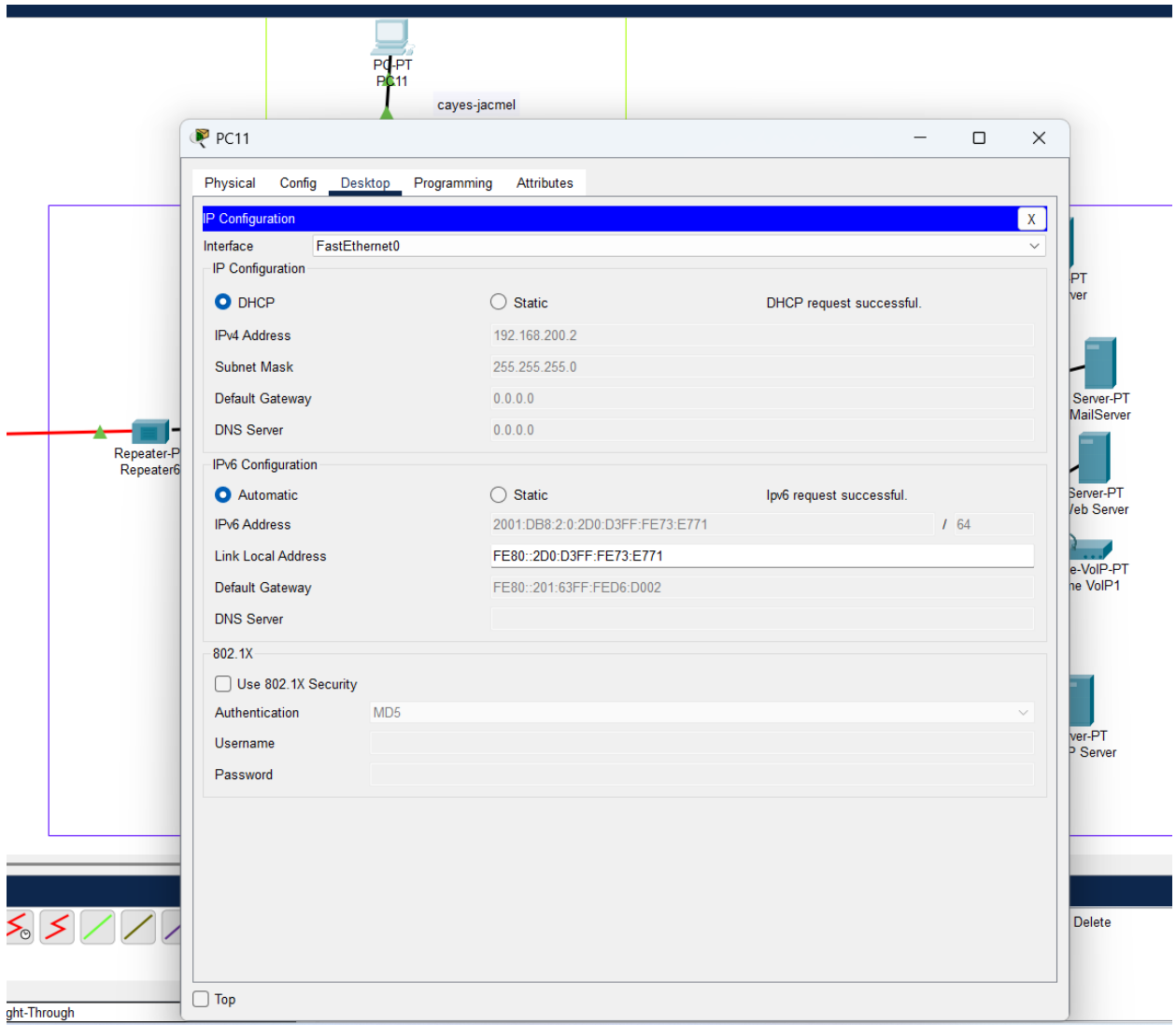
MD5

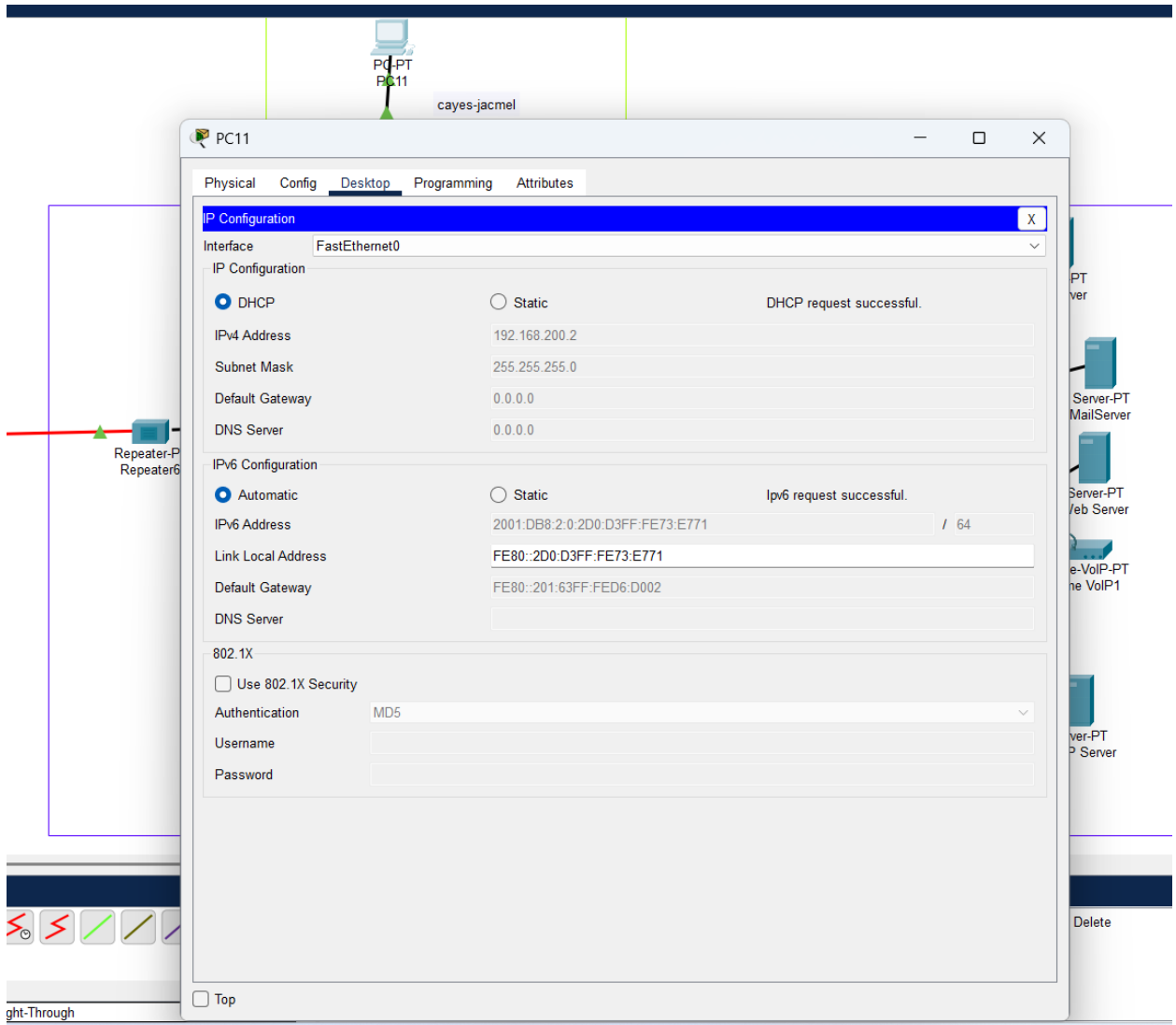
Username

Password









Physical

Config

Services

Desktop

Programming

Attributes

SERVICES

HTTP

DHCP

DHCPv6

TFTP

DNS

SYSLOG

AAA

NTP

EMAIL

FTP

IoT

VM Management

Radius EAP

DHCPv6

Interface

FastEthernet0

Service

On

Off

DHCPv6 Pool

2001:DB8:1::/64

DHCPv6 Pool

Pool List:

2001:DB8:1::/64

Create Pool

Remove Pool

DNS Server:

Domain Name:

IPv6 Address Prefix

Prefix	Prefix Length	Valid Lifetime	Preferred Lifetime
2001:DB8:1::	64	2592000	604800

Create

Edit

Remove

IPv6 Prefix-Delegation

Prefix	DUID	Local Pool	Valid Lifetime	Preferred Lifetime
--------	------	------------	----------------	--------------------

Create

Edit

Remove

IPv6 Local Pool

Pool Name	Prefix	Prefix Length
-----------	--------	---------------

Create

PT ver

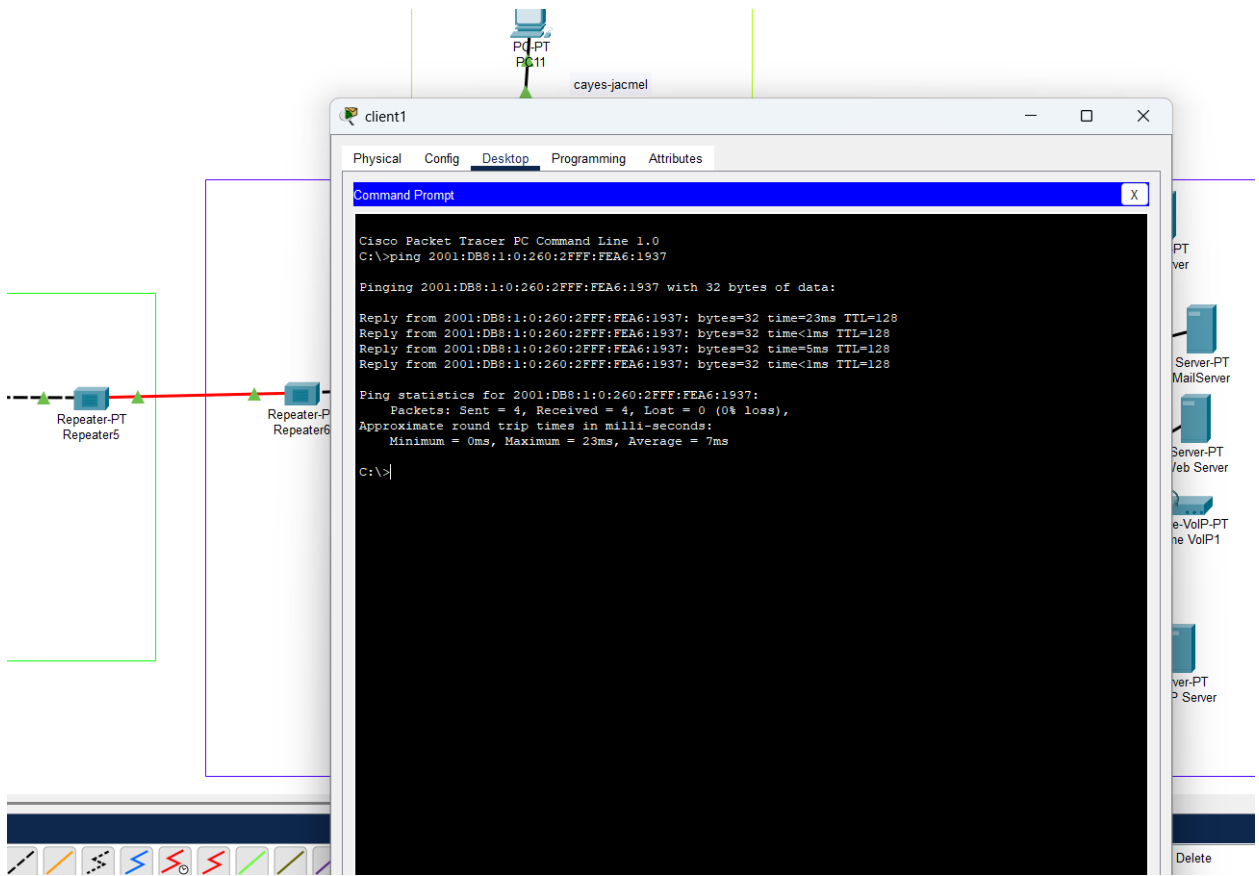
Server-PT MailServer

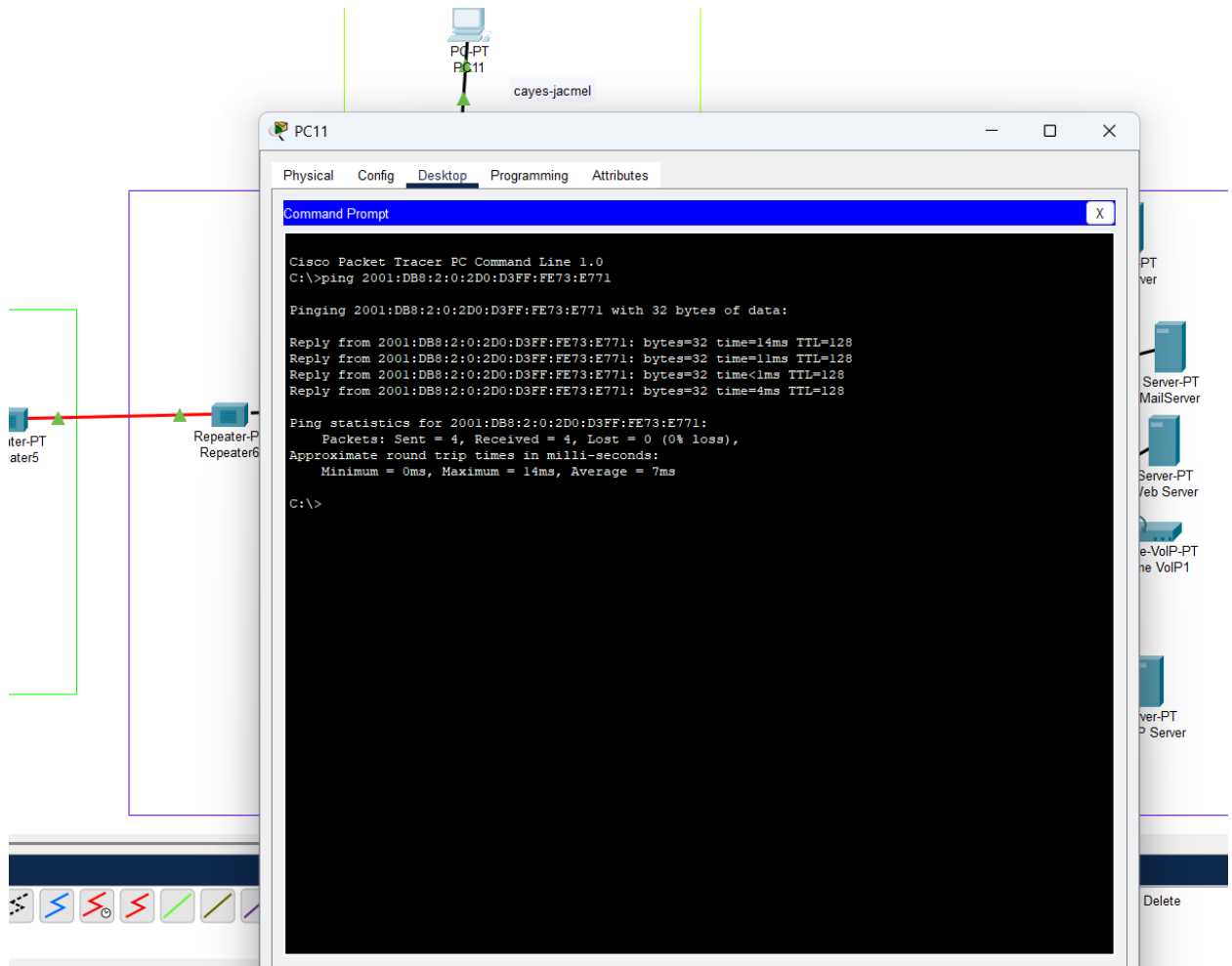
Server-PT /eb Server

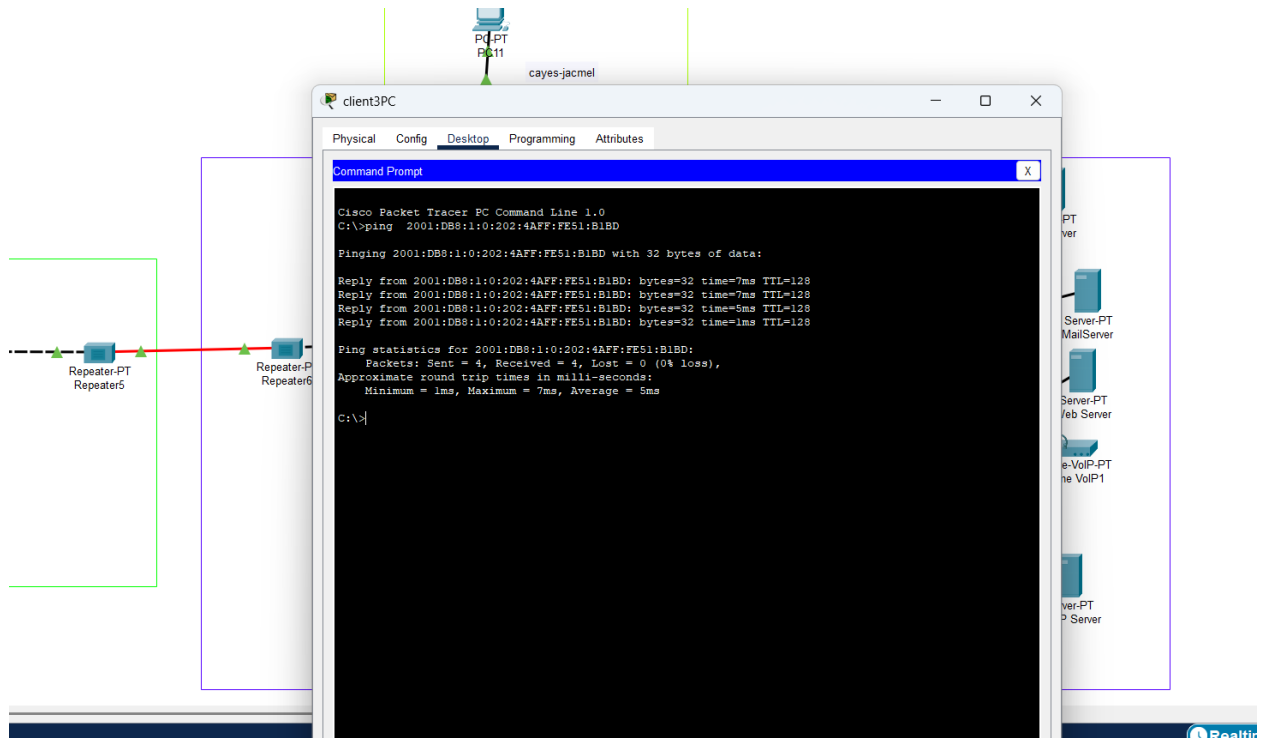
e-VolIP-PT he VolIP1

ver-PT P Server

Delete







J'ai passé beaucoup de temps à réaliser ce devoir, et j'ai rencontré beaucoup de difficultés. J'ai pris mon temps pour le faire avec patience, étape par étape. Malgré les défis que j'ai rencontrés, j'ai finalement réussi à résoudre chaque problème et à trouver une solution pour chacun. Ce fut un très beau travail. J'ai beaucoup appris grâce à cela.

L'objectif de ce TD est de :

1. Comprendre le fonctionnement du DHCP dans un réseau multi-LAN.
2. Mettre en place un serveur DHCP centralisé.
3. Configurer un routeur pour relayer les requêtes DHCP entre réseaux différents.
4. Configurer le service DHCP directement sur un routeur.
5. Vérifier l'attribution automatique d'adresses IP dans chaque LAN.
6. Comprendre l'adressage IPv6 et le rôle de DHCPv6.
7. Configurer un routeur comme serveur DHCPv6.

8. Attribuer automatiquement des adresses IPv6 aux hôtes.
9. Découvrir l'attribution automatique d'adresses IPv6 via DHCPv6.
10. Configurer un serveur DHCPv6 dans un seul réseau local.
11. Vérifier la communication entre les réseaux en IPv6.