

FACULTÉ DES SCIENCES ET TECHNOLOGIES (FST)

TROISIÈME ANNÉE

Rapport du travail de Laboratoire N° 6

Cours : Réseaux I

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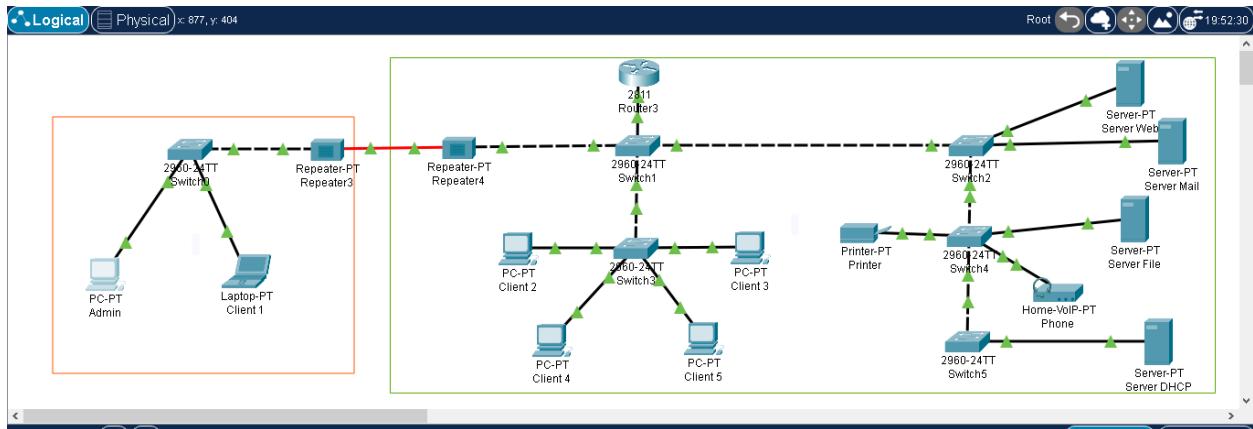
Professeur : Ismaël SAINT AMOUR

Le 6 Décembre 2025

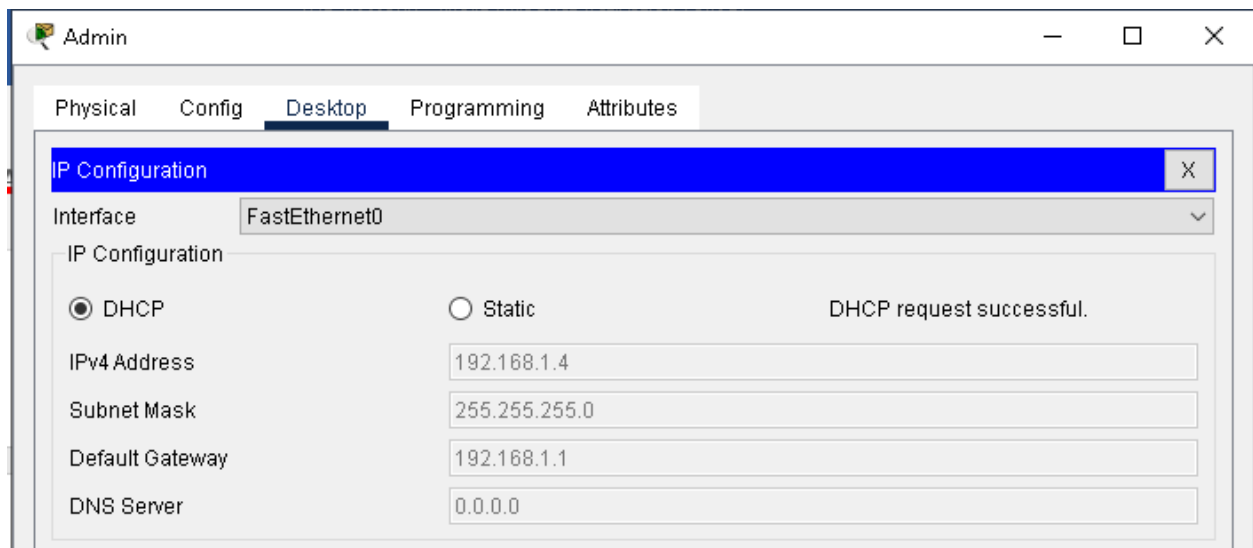
L'objectif de ce TD est de :

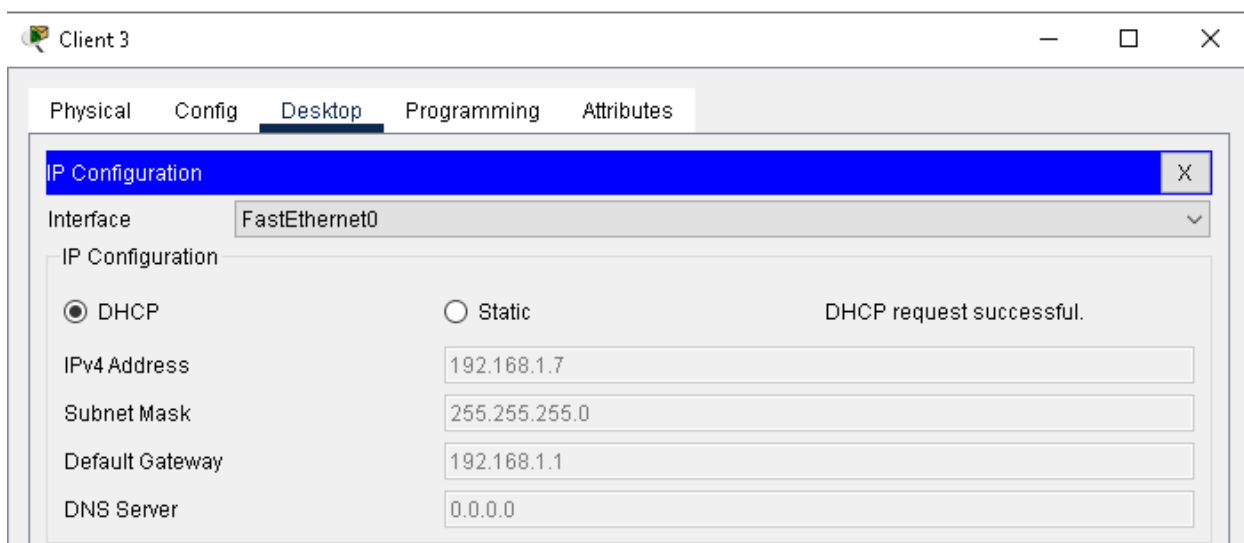
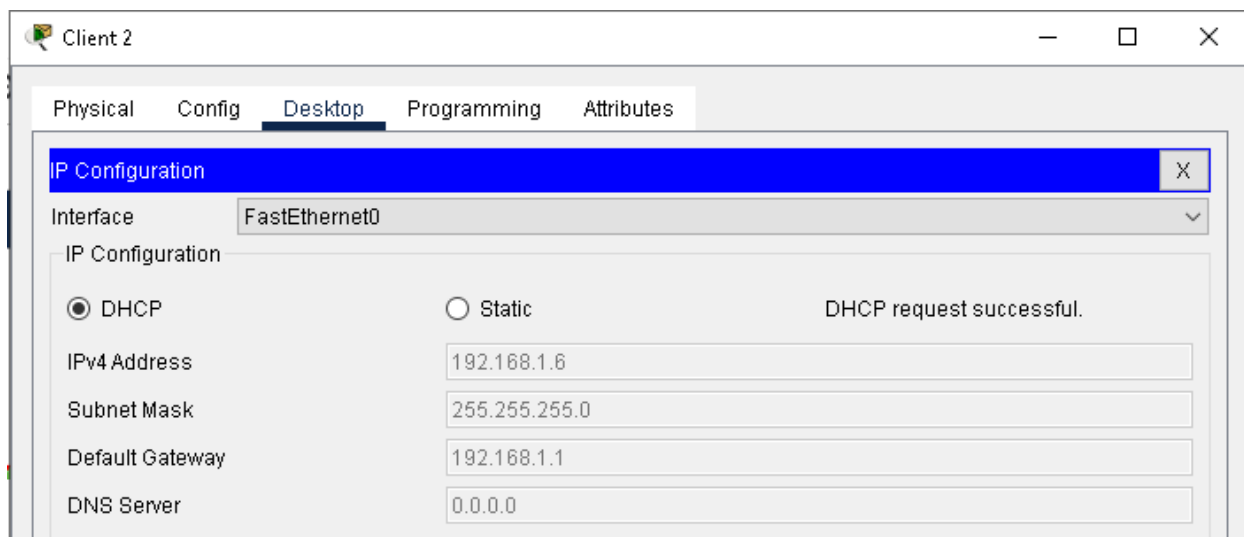
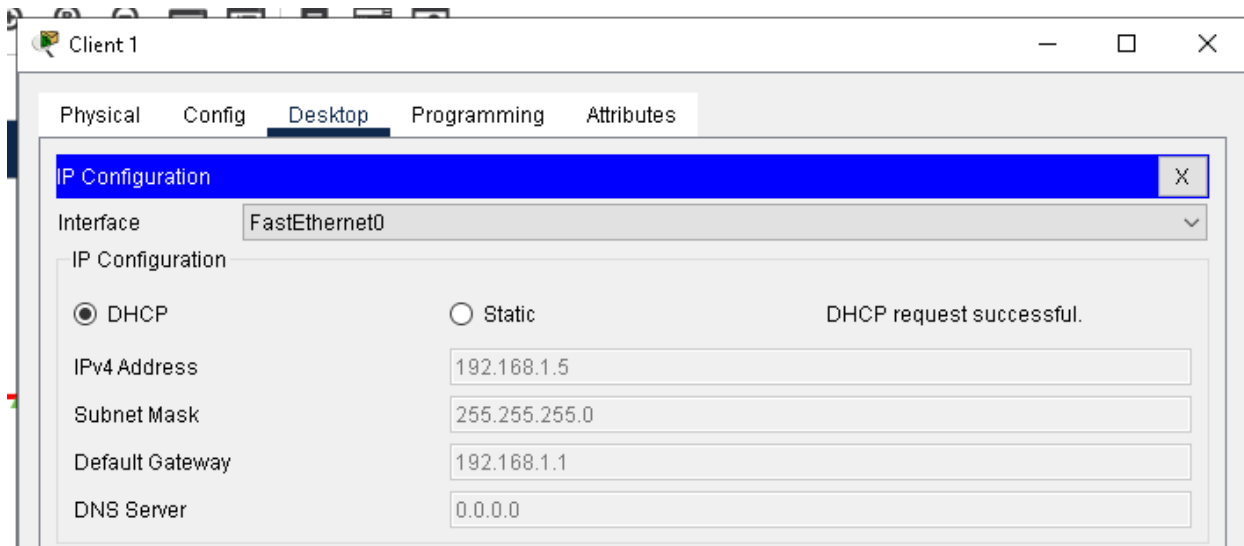
1. Comprendre le fonctionnement du DHCP dans un réseau multi-LAN.
2. Mettre en place un serveur DHCP centralisé.
3. Configurer un routeur pour relayer les requêtes DHCP entre réseaux différents.
4. Configurer le service DHCP directement sur un routeur.
5. Vérifier l'attribution automatique d'adresses 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.

1 – Reproduction de la topologie ci-dessous et attribution d'adresse ipv4 en utilisant les services DHCP.



- Réussite des attributions des adresses ipv4 des différents appareils





Client 4

Physical

Config

Desktop

Programming

Attributes

IP Configuration

InterfaceFastEthernet0

IP Configuration

☒ DHCP

☐ Static

DHCP request successful.

IPv4 Address192.168.1.8

Subnet Mask255.255.255.0

Default Gateway192.168.1.1

DNS Server0.0.0.0

Server File

Physical

Config

Services

Desktop

Programming

Attributes

IP Configuration

IP Configuration

☒ DHCP

☐ Static

DHCP request successful.

IPv4 Address192.168.1.12

Subnet Mask255.255.255.0

Default Gateway192.168.1.1

DNS Server0.0.0.0

Realtime

Simulation

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	Successful	Admin	Client 2	ICMP		0.000	N	0	(edit)	(delete)
	Successful	Client 1	Client 3	ICMP		0.000	N	1	(edit)	(delete)
	Successful	Client 2	Server D...	ICMP		0.000	N	2	(edit)	(delete)
	Successful	Client 1	Server Mail	ICMP		0.000	N	3	(edit)	(delete)
	Successful	Serv...	Admin	ICMP		0.000	N	4	(edit)	(delete)

Physical Config Desktop Programming Attributes

Command Prompt X

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.1.4

Pinging 192.168.1.4 with 32 bytes of data:

Reply from 192.168.1.4: bytes=32 time<1ms TTL=128
Reply from 192.168.1.4: bytes=32 time=13ms TTL=128
Reply from 192.168.1.4: bytes=32 time=13ms TTL=128
Reply from 192.168.1.4: bytes=32 time=13ms TTL=128

Ping statistics for 192.168.1.4:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 13ms, Average = 9ms

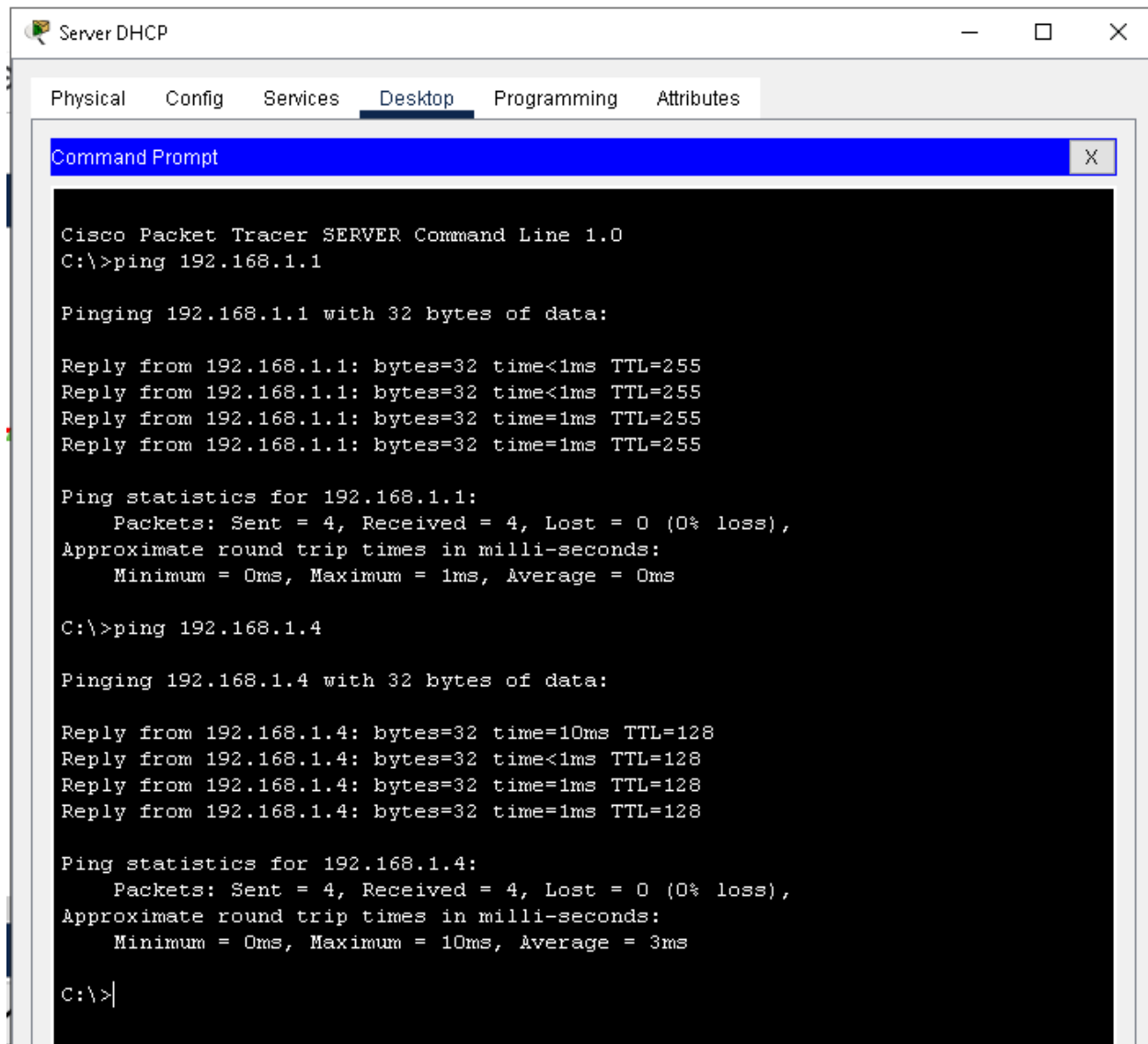
C:\>ping 192.168.1.10

Pinging 192.168.1.10 with 32 bytes of data:

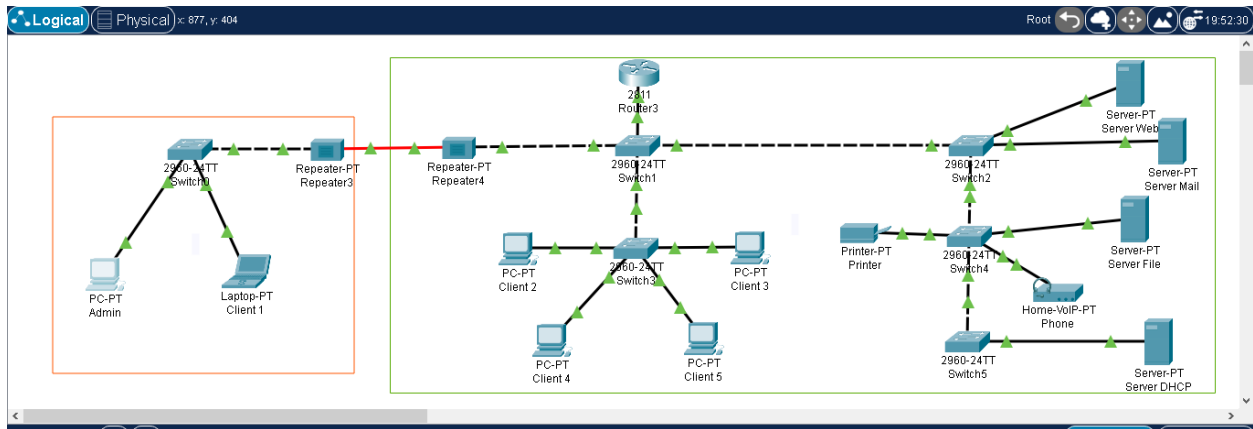
Reply from 192.168.1.10: bytes=32 time<1ms TTL=128
Reply from 192.168.1.10: bytes=32 time=1ms TTL=128
Reply from 192.168.1.10: bytes=32 time<1ms TTL=128
Reply from 192.168.1.10: bytes=32 time=1ms TTL=128

Ping statistics for 192.168.1.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\>|
```



2 – Reproduction de la topologie ci-dessous et attribution d'adresse ipv6 en utilisant les services DHCPv6.



- Test d'attribution d'adresse ipv6 réussie

Admin

Physical Config **Desktop** Programming Attributes

IP Configuration

Interface: FastEthernet0

IP Configuration

☒ DHCP ☐ Static

IPv4 Address: 192.168.1.10

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.1.1

DNS Server: 0.0.0.0

IPv6 Configuration

☒ Automatic ☐ Static

IPv6 Address: 2001:DB8:1:0:8B98:1A79:D220:C49E / 64

Link Local Address: FE80::2E0:F7FF:FECC:C6CB

Default Gateway: FE80::250:FFF:FEA5:8201

DNS Server: 0.0.0.0

802.1X

Client 1

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☒ DHCP ☐ Static

IPv4 Address 192.168.1.12

Subnet Mask 255.255.255.0

Default Gateway 192.168.1.1

DNS Server 0.0.0.0

IPv6 Configuration

☒ Automatic ☐ Static

IPv6 Address 2001:DB8:1:0:F698:931B:6955:4D30 / 64

Link Local Address FE80::201:64FF:FE7D:7838

Default Gateway FE80::250:FFF:FEA5:8201

DNS Server 0.0.0.0

802.1X

Server Web

Physical Config Services **Desktop** Programming Attributes

IP Configuration X

IP Configuration

☒ DHCP ☐ Static DHCP request successful.

IPv4 Address 192.168.1.8

Subnet Mask 255.255.255.0

Default Gateway 192.168.1.1

DNS Server 0.0.0.0

IPv6 Configuration

☒ Automatic ☐ Static ipv6 request successful.

IPv6 Address 2001:DB8:1:0:2C44:9FF1:73CD:57B9 / 64

Link Local Address FE80::2E0:A3FF:FEDE:5D5B

Default Gateway FE80::250:FFF:FEA5:8201

DNS Server 0.0.0.0

802.1X

Server Mail

Physical Config Services **Desktop** Programming Attributes

IP Configuration X

IP Configuration

☒ DHCP ☐ Static DHCP request successful.

IPv4 Address 192.168.1.6

Subnet Mask 255.255.255.0

Default Gateway 192.168.1.1

DNS Server 0.0.0.0

IPv6 Configuration

☒ Automatic ☐ Static ipv6 request successful.

IPv6 Address 2001:DB8:1:0:4F24:EBA7:B2D1:A45F / 64

Link Local Address FE80::203:E4FF:FE03:D73C

Default Gateway FE80::250:FFF:FEA5:8201

DNS Server 0.0.0.0

802.1X

☐ Use 802.1X Security

Client 4

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☒ DHCP ☐ Static

IPv4 Address 192.168.1.7

Subnet Mask 255.255.255.0

Default Gateway 192.168.1.1

DNS Server 0.0.0.0

IPv6 Configuration

☒ Automatic ☐ Static

IPv6 Address 2001:DB8:1:0:CB05:3E82:4CC:E997 / 64

Link Local Address FE80::260:47FF:FE83:88C7

Default Gateway FE80::250:FFF:FEA5:8201

DNS Server 0.0.0.0

Client 2

Physical

Config

Desktop

Programming

Attributes

IP Configuration

X

Interface

FastEthernet0

IP Configuration

☒ DHCP

☐ Static

IPv4 Address

192.168.1.4

Subnet Mask

255.255.255.0

Default Gateway

192.168.1.1

DNS Server

0.0.0.0

IPv6 Configuration

☒ Automatic

☐ Static

IPv6 Address

2001:DB8:1:0:5A06:CDC3:930D:867B

/

64

Link Local Address

FE80::260:3EFF:FEA9:7302

Default Gateway

FE80::250:FFF:FEA5:8201

DNS Server

0.0.0.0

802.1X

Physical Config Desktop Programming Attributes

Command Prompt

X

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 2001:DB8:1:0:2C44:9FF1:73CD:57B9

Pinging 2001:DB8:1:0:2C44:9FF1:73CD:57B9 with 32 bytes of data:

Reply from 2001:DB8:1:0:2C44:9FF1:73CD:57B9: bytes=32 time=1ms TTL=128
Reply from 2001:DB8:1:0:2C44:9FF1:73CD:57B9: bytes=32 time=2ms TTL=128
Reply from 2001:DB8:1:0:2C44:9FF1:73CD:57B9: bytes=32 time=38ms TTL=128
Reply from FE80::250:FFF:FEA5:8201: Destination host unreachable.

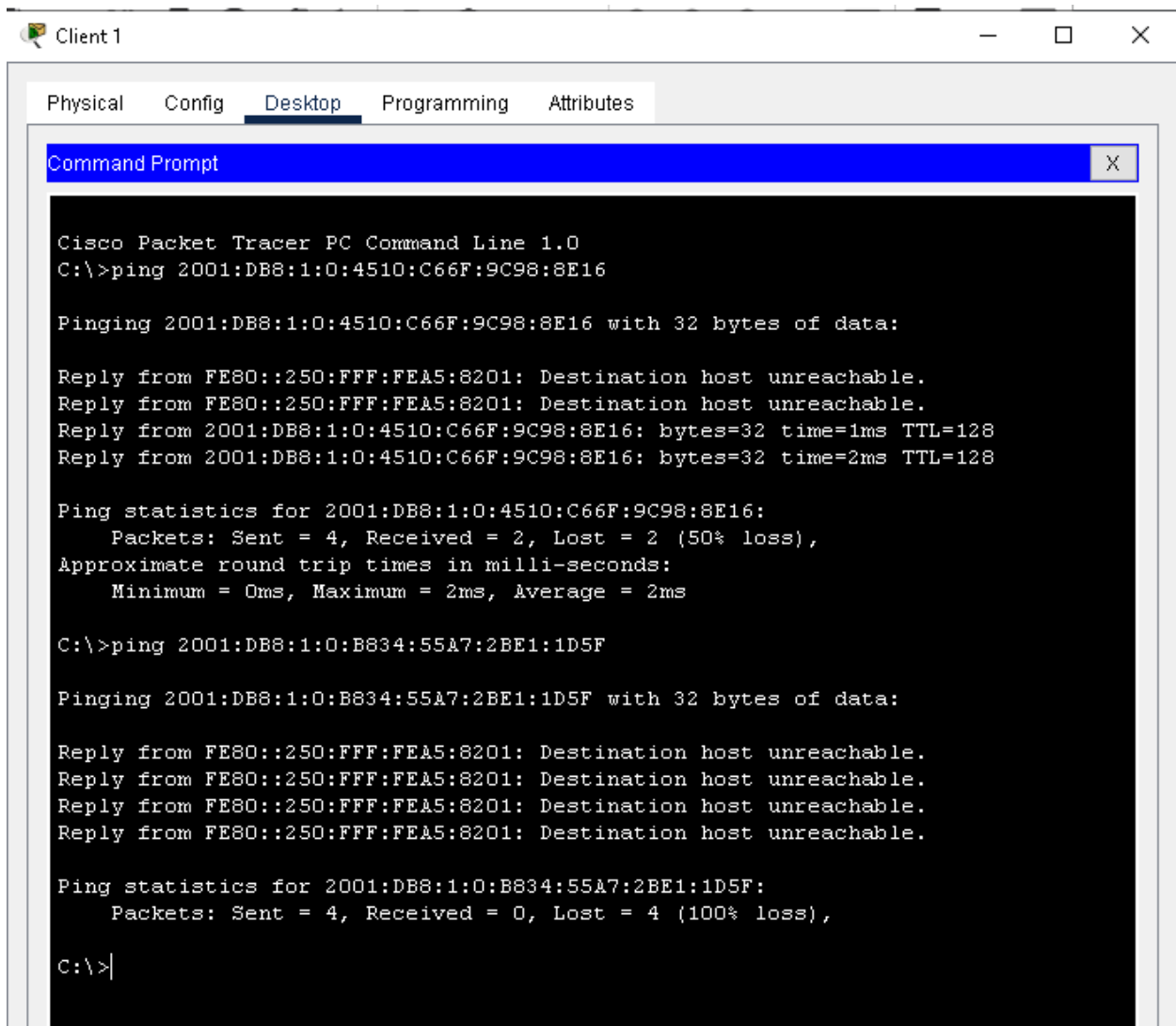
Ping statistics for 2001:DB8:1:0:2C44:9FF1:73CD:57B9:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 38ms, Average = 20ms

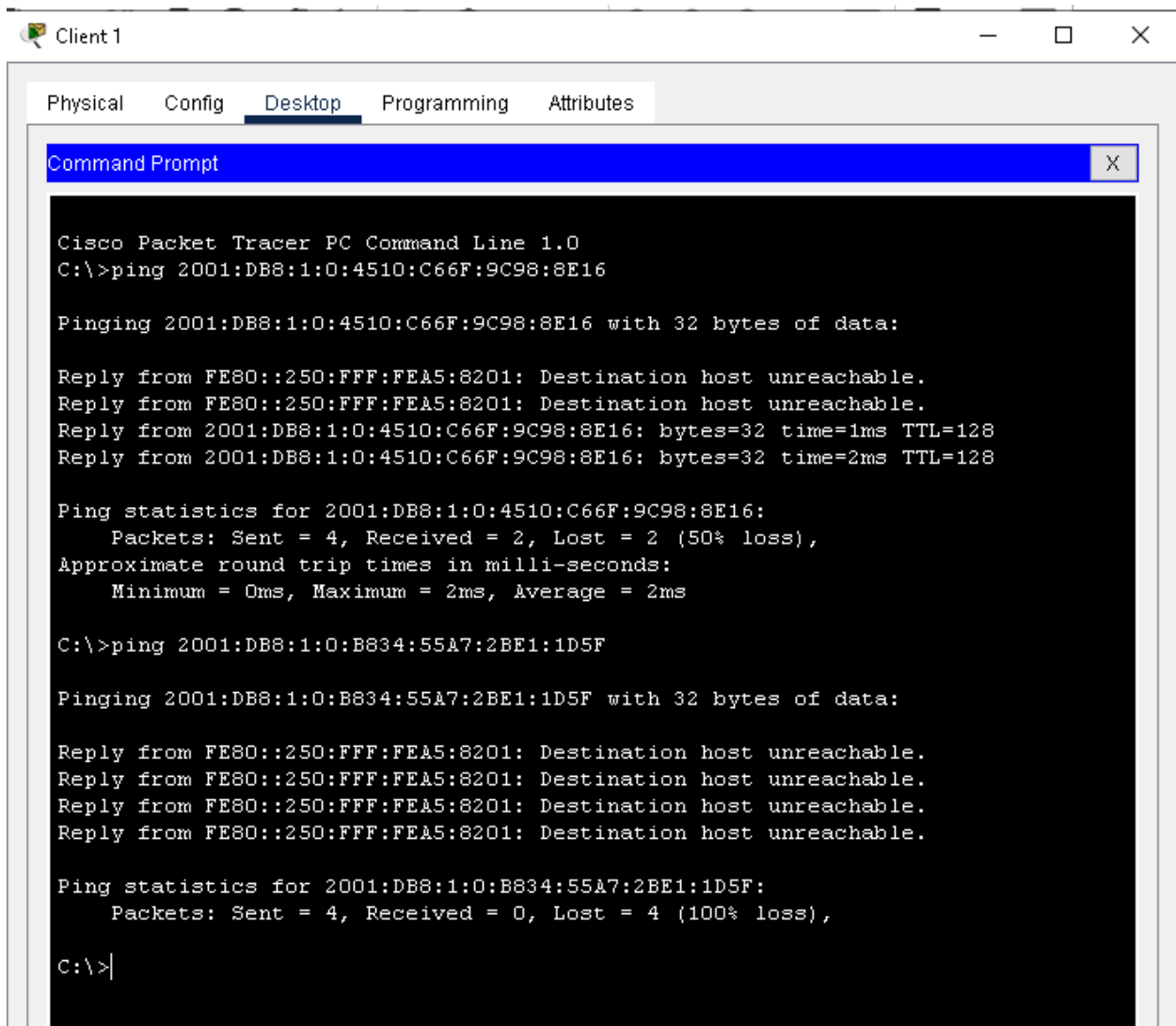
C:\>ping 2001:DB8:1:0:4510:C66F:9C98:8E16

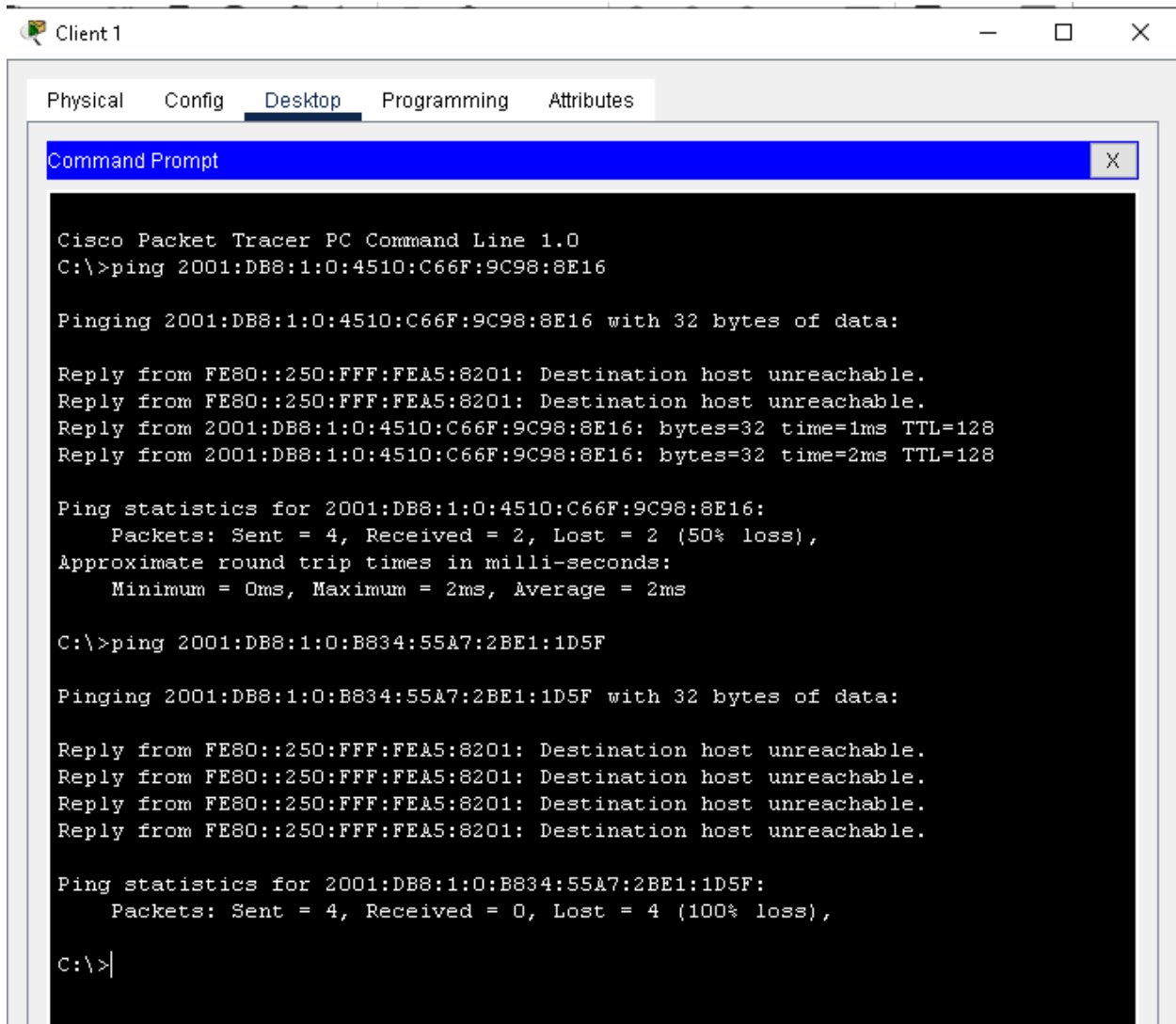
Pinging 2001:DB8:1:0:4510:C66F:9C98:8E16 with 32 bytes of data:

Reply from 2001:DB8:1:0:4510:C66F:9C98:8E16: bytes=32 time<1ms TTL=128
Reply from 2001:DB8:1:0:4510:C66F:9C98:8E16: bytes=32 time<1ms TTL=128
Reply from 2001:DB8:1:0:4510:C66F:9C98:8E16: bytes=32 time<1ms TTL=128
Reply from 2001:DB8:1:0:4510:C66F:9C98:8E16: bytes=32 time<1ms TTL=128

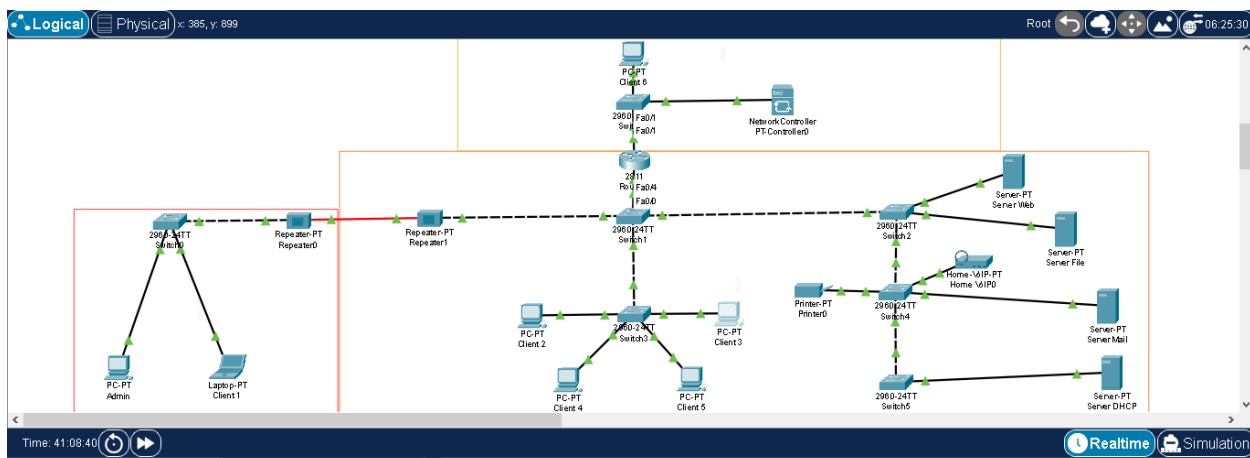
Ping statistics for 2001:DB8:1:0:4510:C66F:9C98:8E16:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

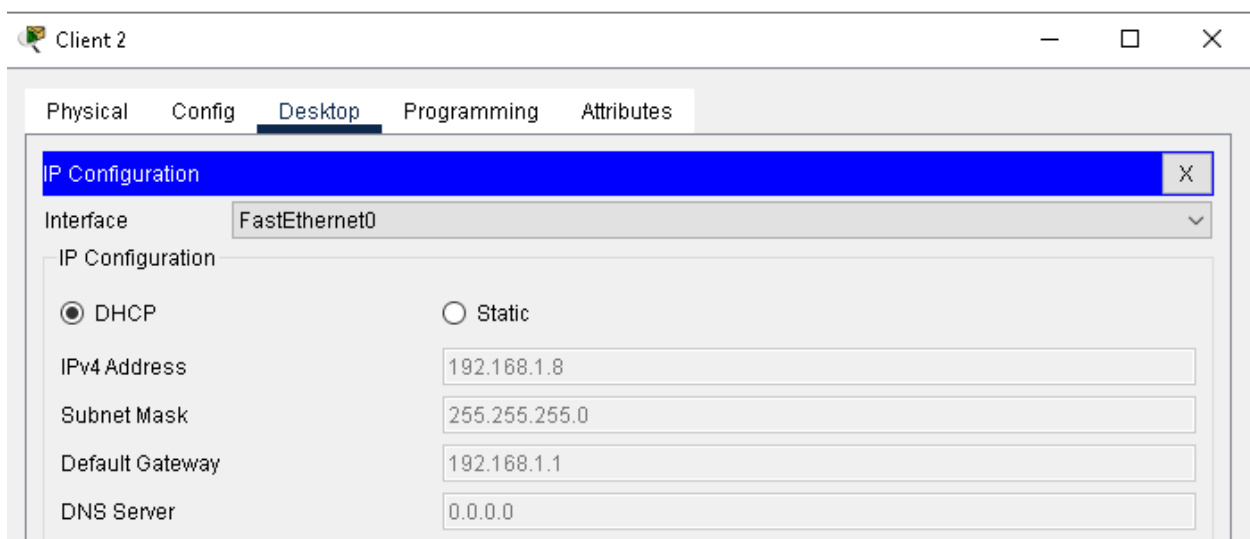
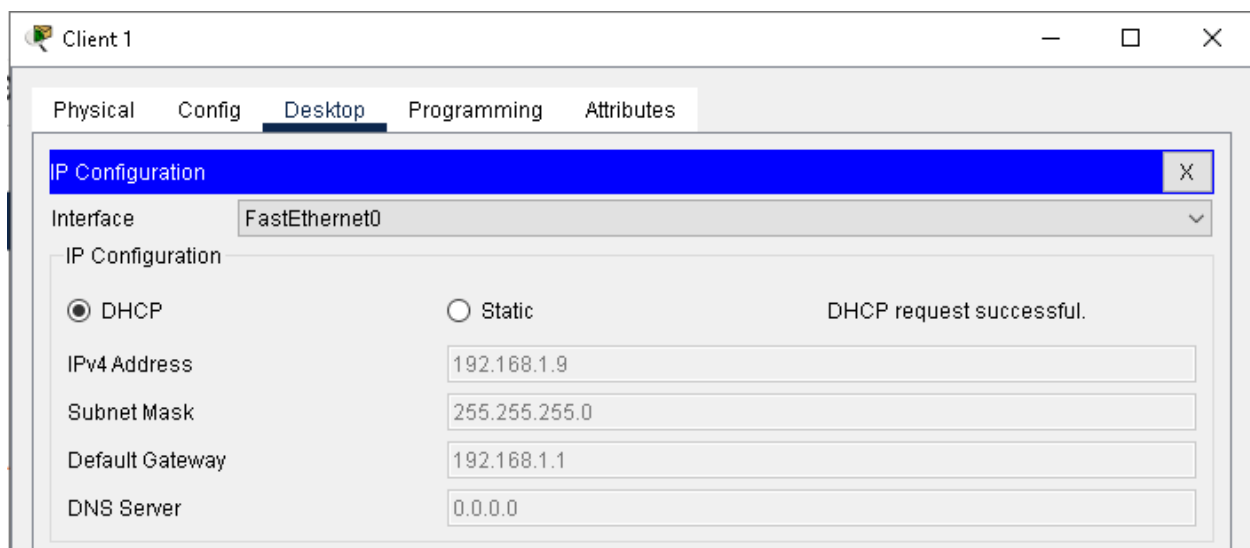
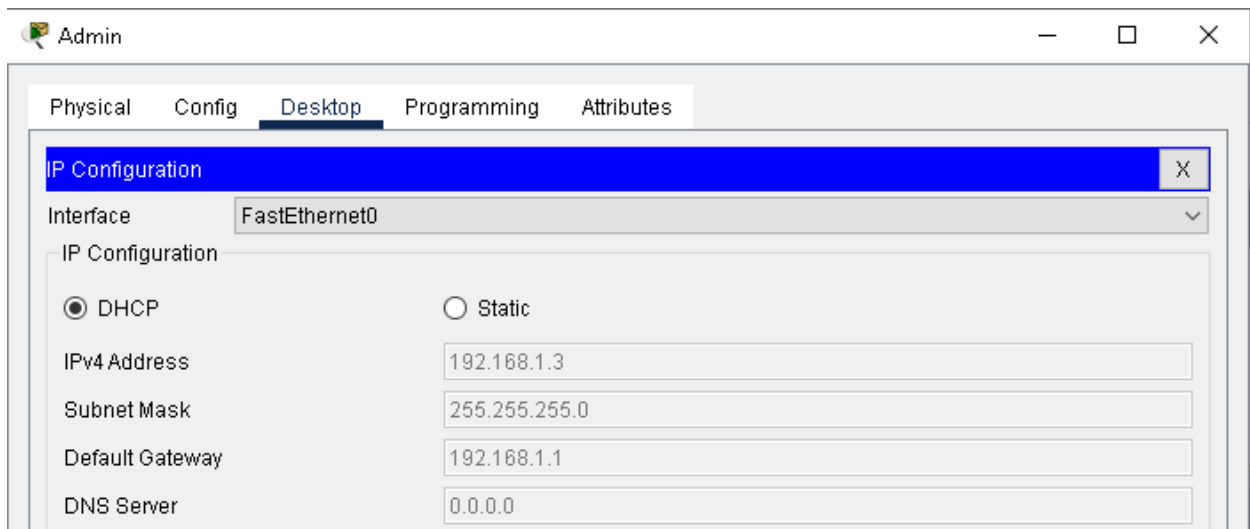






3- Reproduction de la topologie ci-dessous et utilisation du routeur comme serveur DHCP pour attribuer des adresses ipv4





Client 3

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☒ DHCP ☐ Static

IPv4 Address 192.168.1.7

Subnet Mask 255.255.255.0

Default Gateway 192.168.1.1

DNS Server 0.0.0.0

Client 4

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☒ DHCP ☐ Static DHCP request successful.

IPv4 Address 192.168.1.10

Subnet Mask 255.255.255.0

Default Gateway 192.168.1.1

DNS Server 0.0.0.0

Client 5

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☒ DHCP ☐ Static DHCP request successful.

IPv4 Address 192.168.1.11

Subnet Mask 255.255.255.0

Default Gateway 192.168.1.1

DNS Server 0.0.0.0

Client 6

Physical Config **Desktop** Programming Attributes

IP Configuration

Interface: FastEthernet0

IP Configuration

☒ DHCP ☐ Static

IPv4 Address: 192.168.2.2

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.2.1

DNS Server: 0.0.0.0

Server Web

Physical Config Services **Desktop** Programming Attributes

IP Configuration

IP Configuration

☒ DHCP ☐ Static

IPv4 Address: 192.168.1.5

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.1.1

DNS Server: 0.0.0.0

Realtime Simulation

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	P
	Successful	Client 6	Server D...	ICMP		0.000	
	Successful	Client 1	Client 5	ICMP		0.000	
	Successful	Admin	Server Mail	ICMP		0.000	
	Successful	Client 5	Client 6	ICMP		0.000	

Physical Config Desktop Programming Attributes

Command Prompt

X

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.2.2

Pinging 192.168.2.2 with 32 bytes of data:

Reply from 192.168.2.2: bytes=32 time=28ms TTL=127
Reply from 192.168.2.2: bytes=32 time=2ms TTL=127
Reply from 192.168.2.2: bytes=32 time<1ms TTL=127
Reply from 192.168.2.2: bytes=32 time=1ms TTL=127

Ping statistics for 192.168.2.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 28ms, Average = 7ms

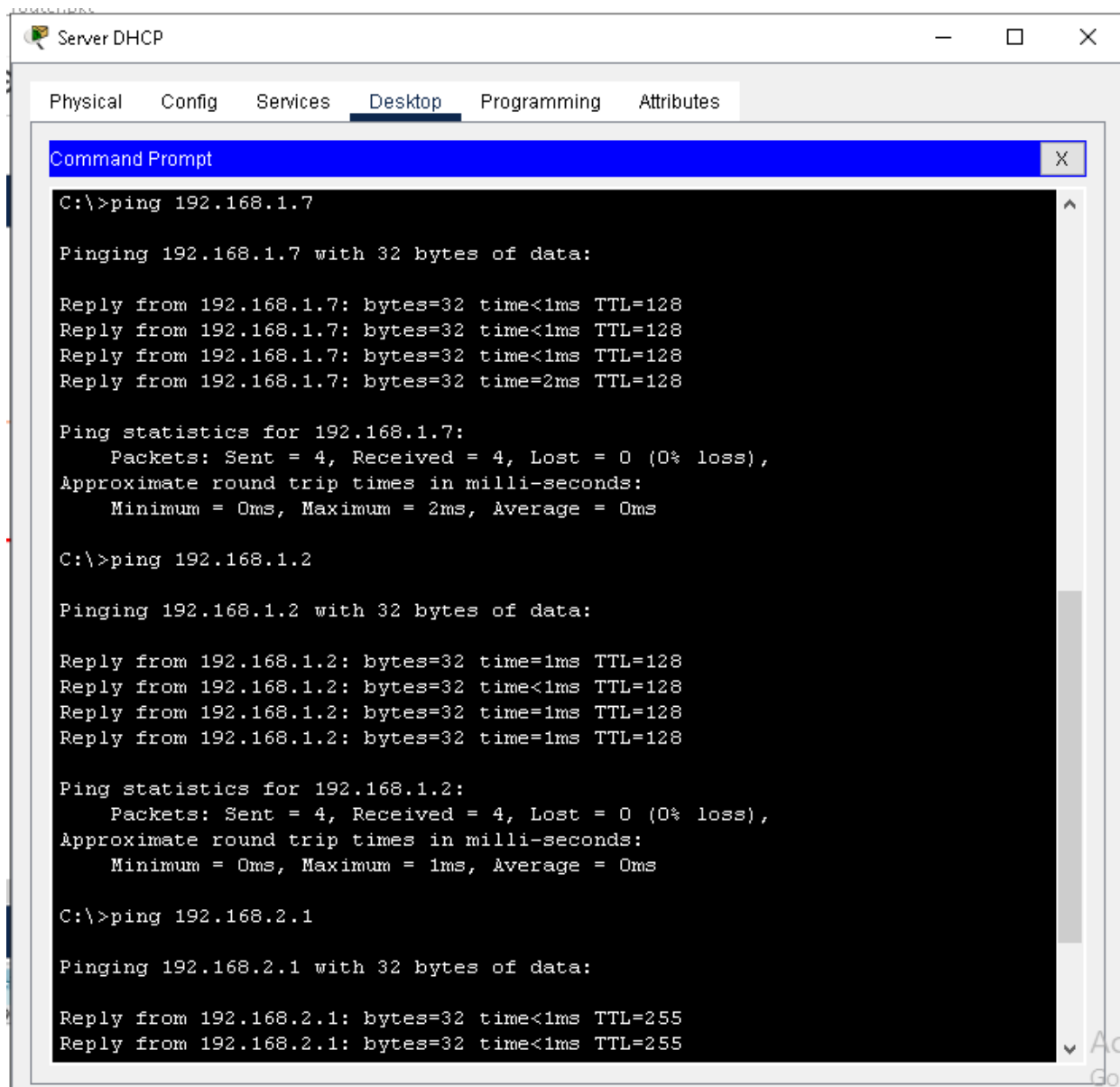
C:\>ping 192.168.1.5

Pinging 192.168.1.5 with 32 bytes of data:

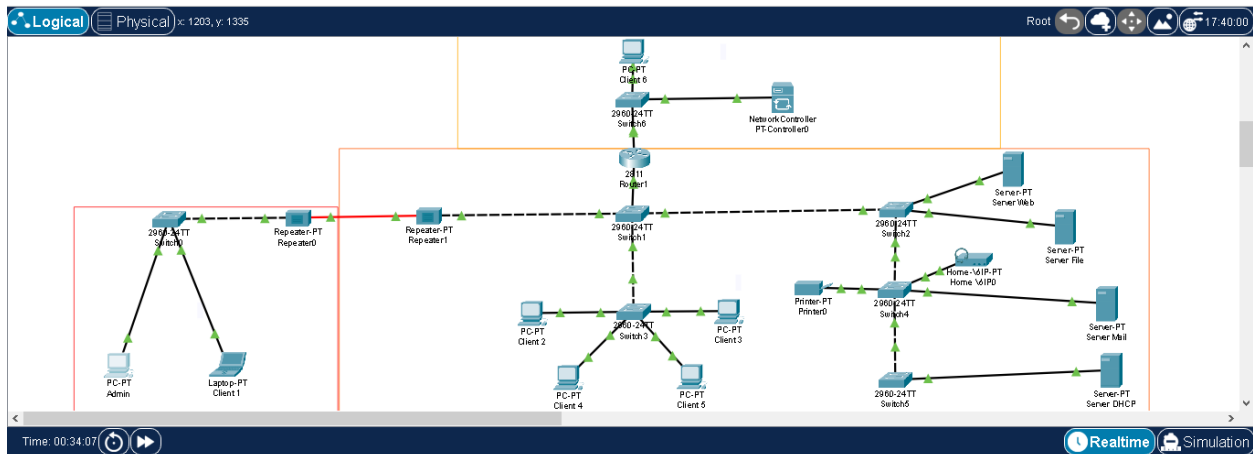
Reply from 192.168.1.5: bytes=32 time=10ms TTL=128
Reply from 192.168.1.5: bytes=32 time=26ms TTL=128
Reply from 192.168.1.5: bytes=32 time<1ms TTL=128
Reply from 192.168.1.5: bytes=32 time=24ms TTL=128

Ping statistics for 192.168.1.5:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 26ms, Average = 15ms

C:\>
```



4- Reproduction de la topologie ci-dessous et utilisation du routeur comme serveur DHCPv6 pour attribuer des adresses ipv6



Admin

Physical Config **Desktop** Programming Attributes

IP Configuration

Interface: FastEthernet0

IP Configuration

☒ DHCP ☐ Static DHCP request successful.

IPv4 Address: 192.168.1.11

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.1.1

DNS Server: 0.0.0.0

IPv6 Configuration

☒ Automatic ☐ Static ipv6 request successful.

IPv6 Address: 2001:DB8:1:0:206:2AFF:FE19:8BA / 64

Link Local Address: FE80::206:2AFF:FE19:8BA

Default Gateway: FE80::290:21FF:FE8B:5001

DNS Server:

Client 1

Physical

Config

Desktop

Programming

Attributes

IP Configuration

X

Interface

FastEthernet0

IP Configuration

☒ DHCP

☐ Static

IPv4 Address

192.168.1.11

Subnet Mask

255.255.255.0

Default Gateway

192.168.1.1

DNS Server

0.0.0.0

IPv6 Configuration

☒ Automatic

☐ Static

IPv6 Address

2001:DB8:1:0:201:63FF:FE37:D007

/

64

Link Local Address

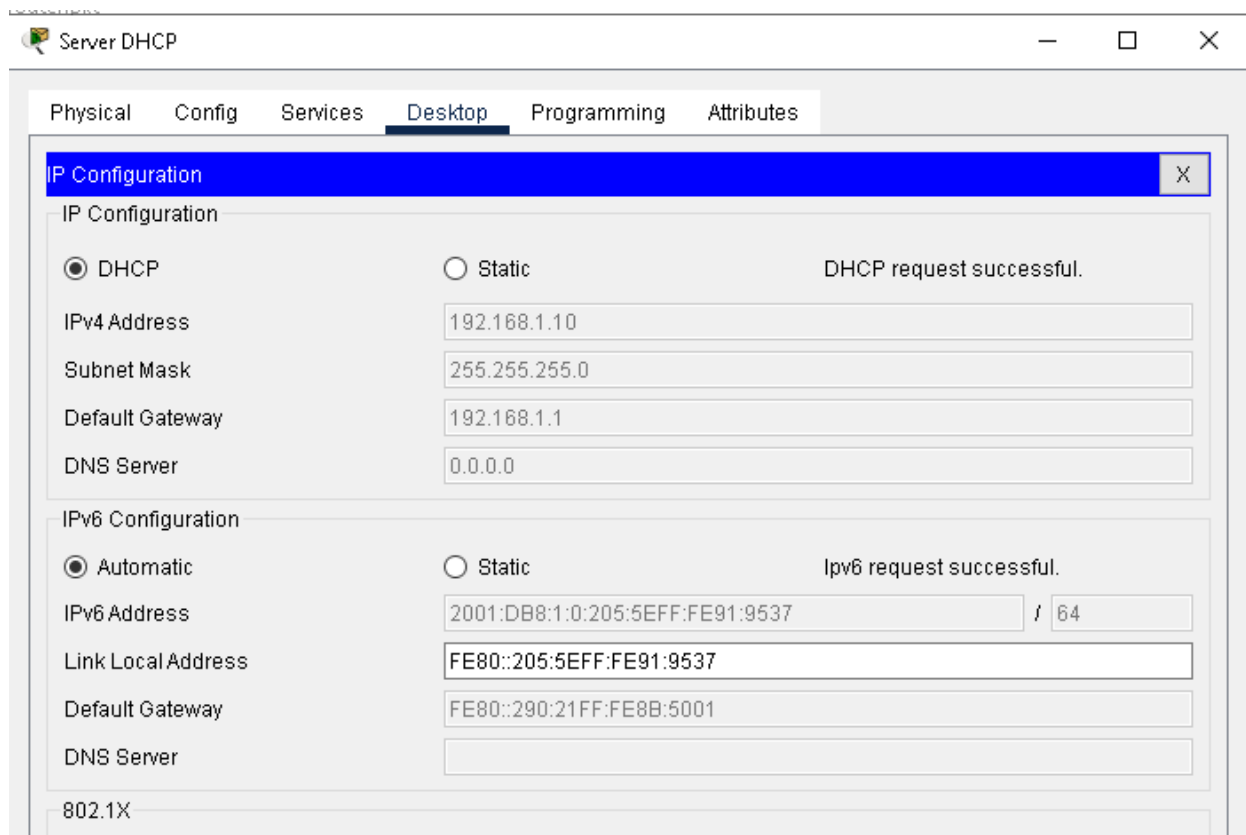
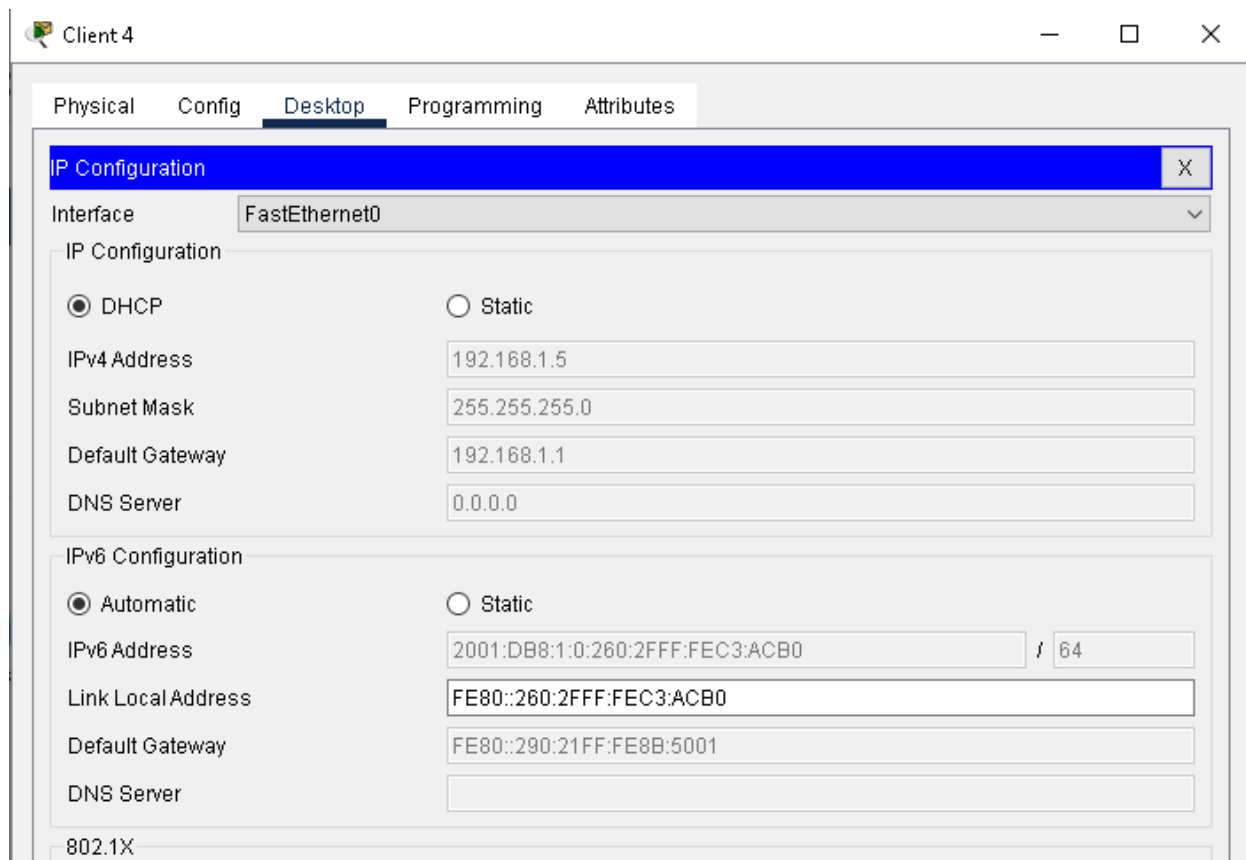
FE80::201:63FF:FE37:D007

Default Gateway

FE80::290:21FF:FE8B:5001

DNS Server

802.1X



Client 6

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☒ DHCP ☐ Static DHCP request successful.

IPv4 Address 192.168.2.2

Subnet Mask 255.255.255.0

Default Gateway 192.168.2.1

DNS Server 0.0.0.0

IPv6 Configuration

☒ Automatic ☐ Static ipv6 request successful.

IPv6 Address 2001:DB8:2:0:207:ECFF:FED6:6ED2 / 64

Link Local Address FE80::207:ECFF:FED6:6ED2

Default Gateway FE80::290:21FF:FE8B:5002

DNS Server

802.1X

Server File

Physical Config Services **Desktop** Programming Attributes

IP Configuration X

IP Configuration

☒ DHCP ☐ Static DHCP request successful.

IPv4 Address 192.168.1.10

Subnet Mask 255.255.255.0

Default Gateway 192.168.1.1

DNS Server 0.0.0.0

IPv6 Configuration

☒ Automatic ☐ Static ipv6 request successful.

IPv6 Address 2001:DB8:1:0:2E0:8FFF:FE30:EB52 / 64

Link Local Address FE80::2E0:8FFF:FE30:EB52

Default Gateway FE80::290:21FF:FE8B:5001

DNS Server

802.1X

Server Mail

Physical Config Services **Desktop** Programming Attributes

IP Configuration X

IP Configuration

☒ DHCP ☐ Static DHCP request successful.

IPv4 Address 192.168.1.4

Subnet Mask 255.255.255.0

Default Gateway 192.168.1.1

DNS Server 0.0.0.0

IPv6 Configuration

☒ Automatic ☐ Static ipv6 request successful.

IPv6 Address 2001:DB8:1:0:20D:BDFF:FE49:51A3 / 64

Link Local Address FE80::20D:BDFF:FE49:51A3

Default Gateway FE80::290:21FF:FE8B:5001

DNS Server

802.1X

Client 3

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☒ DHCP ☐ Static

IPv4 Address 192.168.1.6

Subnet Mask 255.255.255.0

Default Gateway 192.168.1.1

DNS Server 0.0.0.0

IPv6 Configuration

☒ Automatic ☐ Static

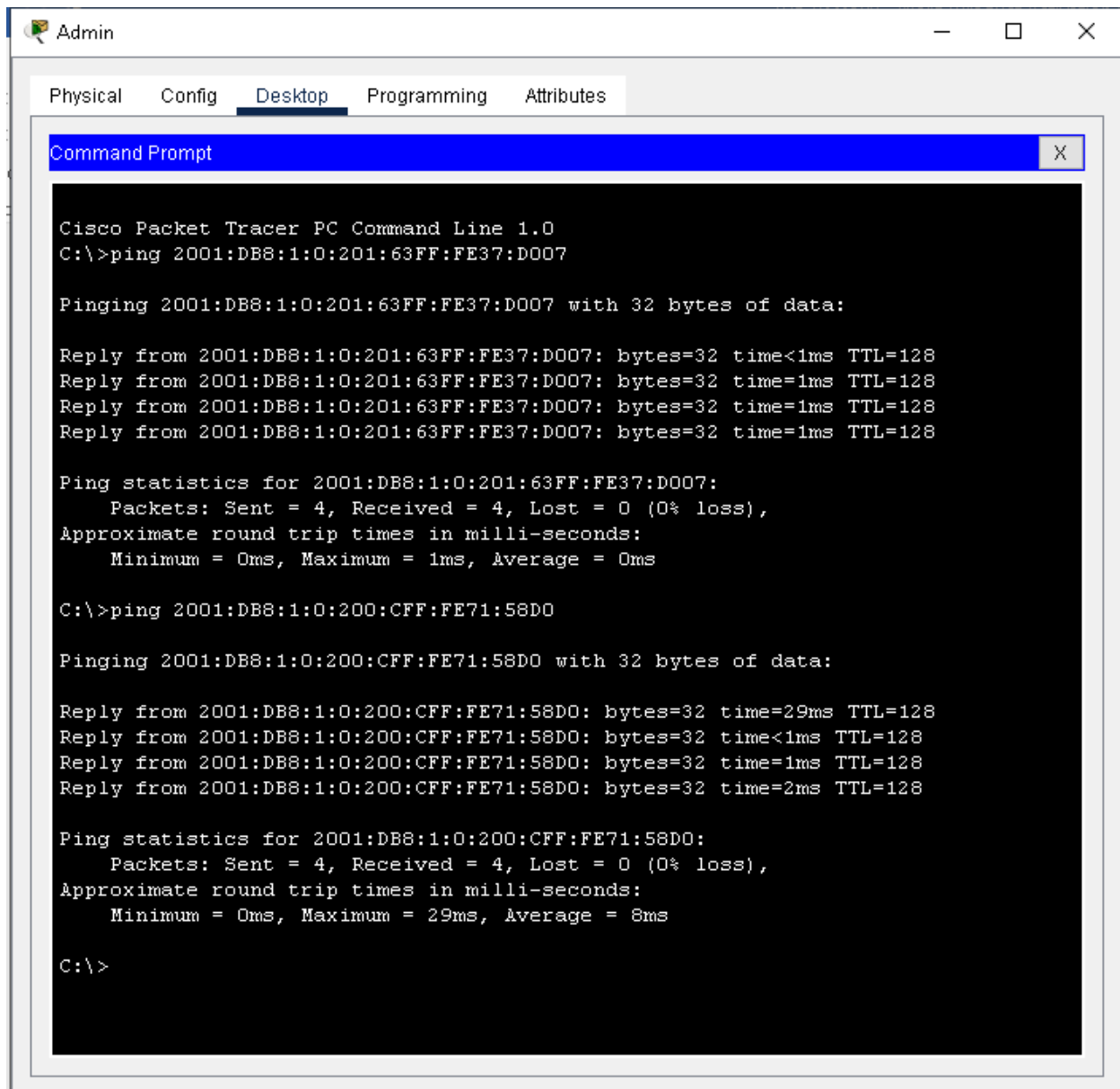
IPv6 Address 2001:DB8:1:0:250:FFF:FE53:8DB7 / 64

Link Local Address FE80::250:FFF:FE53:8DB7

Default Gateway FE80::290:21FF:FE8B:5001

DNS Server

802.1X



Command Prompt

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 2001:DB8:2:0:207:ECFF:FED6:6ED2

Pinging 2001:DB8:2:0:207:ECFF:FED6:6ED2 with 32 bytes of data:

Reply from 2001:DB8:2:0:207:ECFF:FED6:6ED2: bytes=32 time=28ms TTL=127
Reply from 2001:DB8:2:0:207:ECFF:FED6:6ED2: bytes=32 time<1ms TTL=127
Reply from 2001:DB8:2:0:207:ECFF:FED6:6ED2: bytes=32 time=1ms TTL=127
Reply from 2001:DB8:2:0:207:ECFF:FED6:6ED2: bytes=32 time=1ms TTL=127

Ping statistics for 2001:DB8:2:0:207:ECFF:FED6:6ED2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 28ms, Average = 7ms

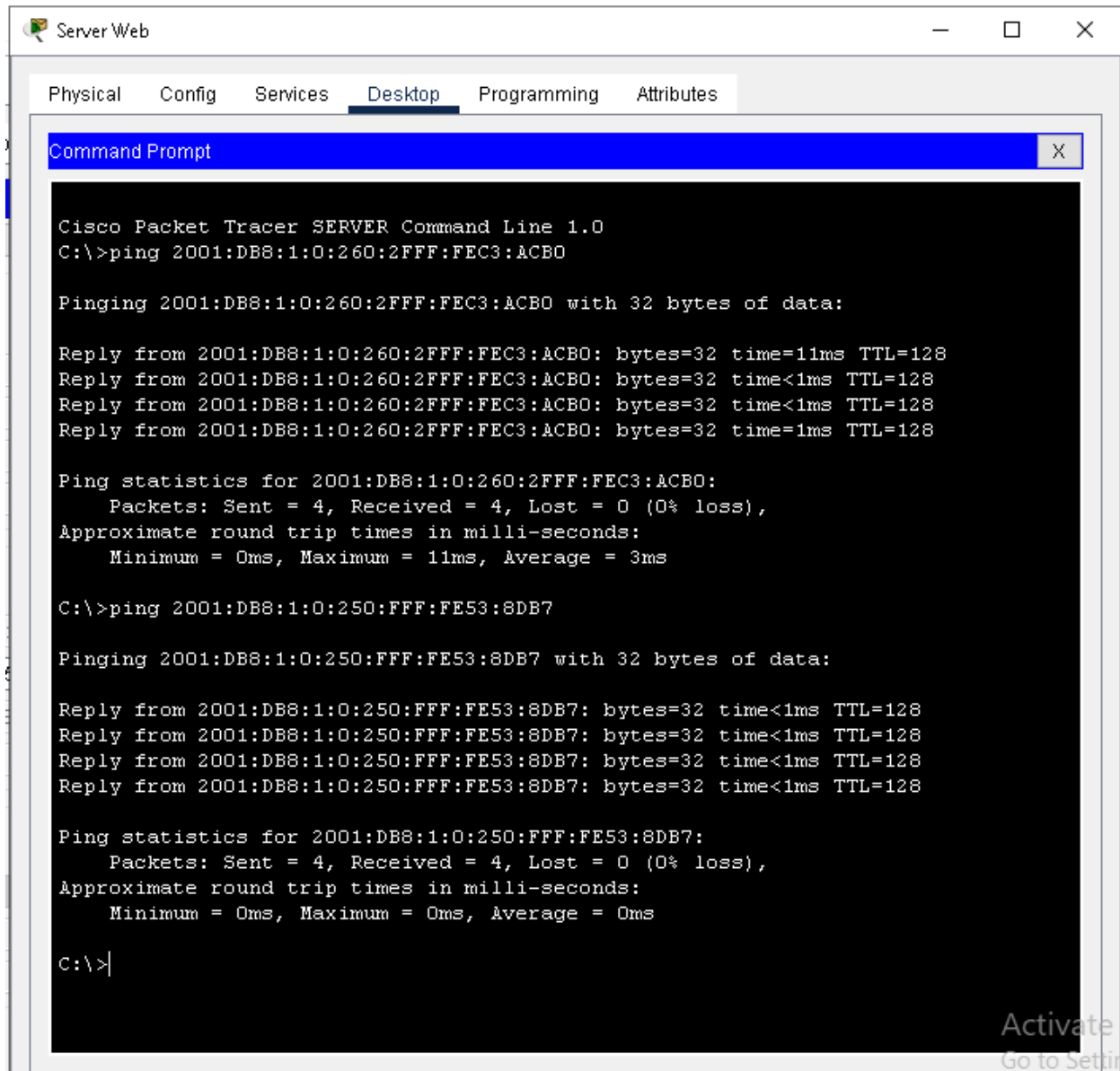
C:\>ping 2001:DB8:1:0:20D:BDFF:FE49:51A3

Pinging 2001:DB8:1:0:20D:BDFF:FE49:51A3 with 32 bytes of data:

Reply from 2001:DB8:1:0:20D:BDFF:FE49:51A3: bytes=32 time=28ms TTL=128
Reply from 2001:DB8:1:0:20D:BDFF:FE49:51A3: bytes=32 time=1ms TTL=128
Reply from 2001:DB8:1:0:20D:BDFF:FE49:51A3: bytes=32 time=28ms TTL=128
Reply from 2001:DB8:1:0:20D:BDFF:FE49:51A3: bytes=32 time=2ms TTL=128

Ping statistics for 2001:DB8:1:0:20D:BDFF:FE49:51A3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 28ms, Average = 14ms

C:\>|
```



Conclusion

Ce TD m'a permis de faire la configuration d'un serveur DHCP et d'utiliser un routeur comme relais en testant l'attribution automatique d'adresse ipv4 et ipv6.

