

Institut Universitaire des Sciences (IUS)

**Faculté des Sciences et Technologies
(FST)**

RAPPORT SUR LE TRAVAIL DE LABORATOIRE N° 5

Cours : Réseau 2

Soumis au Chargé de cours : **Ismael SAINT AMOUR**

Niveau L3

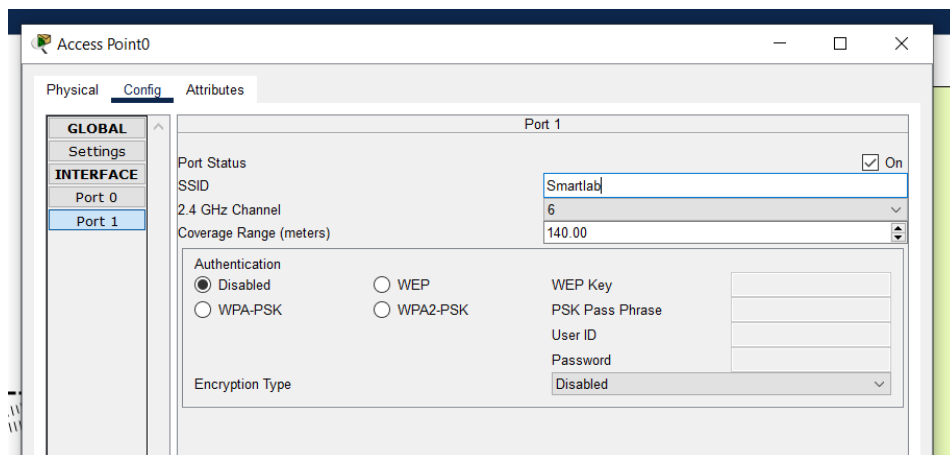
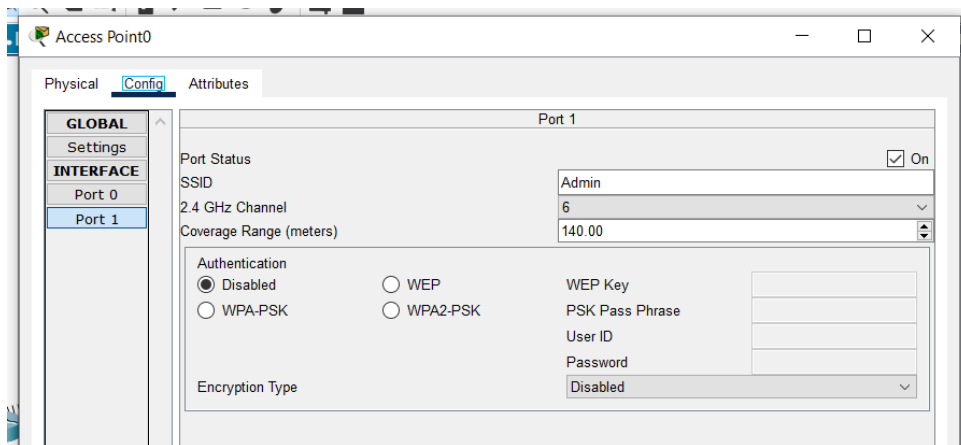
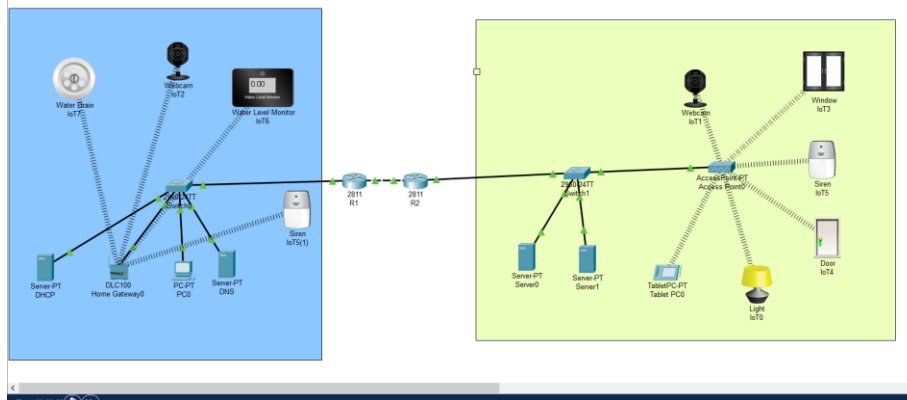
Préparé par : **Robaldo BADIO**

Date : Le 19 / 04 / 2025

Exécution du TD

Résultat sur les commandes et les tâches accompli sur le td5 partie 1 :

1. Reproduisons cette topologie en implémentant le Protocole de Routage OSPF dans un Réseau!



Home Gateway0

Physical Config GUI Attributes

GLOBAL

Settings

Algorithm Settings

INTERFACE

Internet

LAN

Wireless

Wireless Settings

SSID: S1

2.4 GHz Channel: 6 - 2.437GHz

Coverage Range (meters): 250.00

Authentication:

☒ Disabled ☐ WEP ☐ WPA-PSK ☐ WPA2-PSK ☐ WPA ☐ WPA2

WEP Key:

PSK Pass Phrase:

RADIUS Server Settings:

IP Address:

Shared Secret:

Encryption Type: Disabled

IoT6

Specifications Physical Config Attributes

GLOBAL

Settings

Algorithm Settings

Files

INTERFACE

Wireless0

Bluetooth

Wireless0

Port Status: ☒ On

Bandwidth: 300 Mbps

MAC Address: 0030.F2E5.E967

SSID: S1

Authentication:

☒ Disabled ☐ WEP ☐ WPA-PSK ☐ WPA2-PSK ☐ WPA ☐ WPA2

WEP Key:

PSK Pass Phrase:

User ID:

Password:

Method: MD5

User Name:

Password:

Encryption Type: Disabled

IP Configuration:

☒ DHCP ☐ Static

IPv4 Address: 192.168.25.112

Subnet Mask: 255.255.255.0

IPv6 Configuration:

☒ Automatic ☐ Static

IPv6 Address:

Link Local Address: FE80::230:F2FF:FEE5:E967

IoT2

Specifications Physical Config Attributes

GLOBAL

Settings

Algorithm Settings

Files

INTERFACE

Wireless0

Bluetooth

Wireless0

Port Status: ☒ On

Bandwidth: 300 Mbps

MAC Address: 00D0.BC2A.3362

SSID: S1

Authentication:

☒ Disabled ☐ WEP ☐ WPA-PSK ☐ WPA2-PSK ☐ WPA ☐ WPA2

WEP Key:

PSK Pass Phrase:

User ID:

Password:

Method: MD5

User Name:

Password:

Encryption Type: Disabled

IP Configuration:

☒ DHCP ☐ Static

IPv4 Address: 192.168.25.103

Subnet Mask: 255.255.255.0

IPv6 Configuration:

☒ Automatic ☐ Static

Tablet PC0

Physical **Config** Desktop Programming Attributes

GLOBAL

Settings

Algorithm Settings

INTERFACE

Wireless0

3G/4G Cell1

Bluetooth

Wireless0

Port Status ☒ On

Bandwidth 54 Mbps

MAC Address 0001.C764.1CE0

SSID Smartlab

Authentication

☒ Disabled ☐ WEP ☐ WPA-PSK ☐ WPA2-PSK ☐ WPA ☐ WPA2 ☐ 802.1X

Method: MD5

WEP Key

PSK Pass Phrase

User ID

Password

User Name

Password

Encryption Type Disabled

IP Configuration

☐ DHCP ☒ Static

IPv4 Address

Subnet Mask

IPv6 Configuration

IoT4

Specifications Physical **Config** Attributes

GLOBAL

Settings

Algorithm Settings

Files

INTERFACE

Wireless0

Bluetooth

Wireless0

Port Status ☒ On

Bandwidth 300 Mbps

MAC Address 0002.4A45.A491

SSID Smartlab

Authentication

☒ Disabled ☐ WEP ☐ WPA-PSK ☐ WPA2-PSK ☐ WPA ☐ WPA2 ☐ 802.1X

Method: MD5

WEP Key

PSK Pass Phrase

User ID

Password

User Name

Password

Encryption Type Disabled

IP Configuration

☒ DHCP ☐ Static

IPv4 Address 192.168.25.106

Subnet Mask 255.255.255.0

IPv6 Configuration

☒ Automatic ☐ Static

IPv6 Address

Link Local Address FE80::202:4AFF:FE45:A491

IoT1

SpecificationsPhysicalConfigAttributes

GLOBAL

Settings

Algorithm Settings

Files

INTERFACE

Wireless0

Bluetooth

Wireless0

Port Status

Bandwidth

MAC Address

SSID

Authentication

Encryption Type

IP Configuration

IPv6 Configuration

☒ On

300 Mbps

0004.9A22.564A

Smarlab

☒ Disabled

☐ WPA-PSK

☐ WPA

☐ 802.1X

☐ WEP

☐ WPA2-PSK

☐ WPA2

Method:

WEP Key

PSK Pass Phrase

User ID

Password

User Name

Password

MD5

Disabled

☒ DHCP

☐ Static

192.168.25.101

255.255.255.0

☒ Automatic

☐ Static

FE80::204:9AFF:FE22:564A

IoT3

SpecificationsPhysicalConfigAttributes

GLOBAL

Settings

Algorithm Settings

Files

INTERFACE

Wireless0

Bluetooth

Wireless0

Port Status

Bandwidth

MAC Address

SSID

Authentication

Encryption Type

IP Configuration

IPv6 Configuration

☒ On

300 Mbps

0001.967E.DEB4

Smarlab

☒ Disabled

☐ WPA-PSK

☐ WPA

☐ 802.1X

☐ WEP

☐ WPA2-PSK

☐ WPA2

Method:

WEP Key

PSK Pass Phrase

User ID

Password

User Name

Password

MD5

Disabled

☒ DHCP

☐ Static

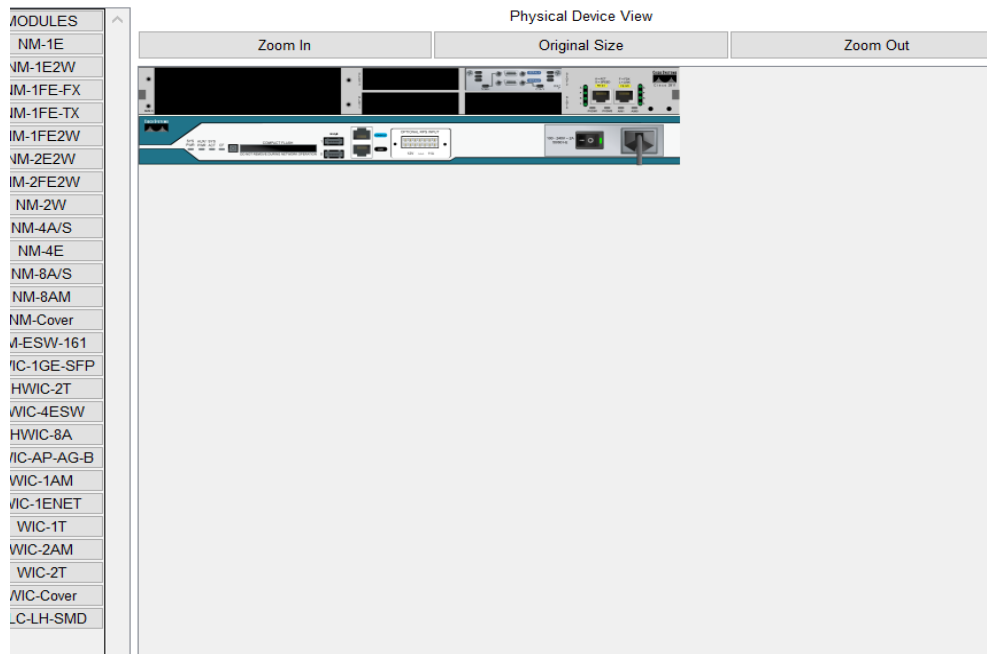
192.168.25.105

255.255.255.0

☒ Automatic

☐ Static

FE80::201:96FF:FE7E:DEB4



```

%SYS-5-CONFIG_I: Configured from console by console

Router#enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#ip address 192.168.1.1 255.255.255.0
Router(config-if)#no shutdown
Router(config-if)#exit
Router(config)#interface FastEthernet0/1
Router(config-if)#ip address 192.168.2.1 255.255.255.0
Router(config-if)#no shutdown
Router(config-if)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#write memory
Building configuration...
[OK]
Router#
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

Router#en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#router ospf 1
Router(config-router)#router-id 1.1.1.1
Router(config-router)#network 192.168.1.0 0.0.0.255 area 0
Router(config-router)#network 192.168.2.0 0.0.0.255 area 0
Router(config-router)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#write memory
Building configuration...
[OK]
Router#
00:08:28: %OSPF-5-ADJCHG: Process 1, Nbr 2.2.2.2 on FastEthernet0/0 from LOADING to FULL, Loading Done

Router#show ip ospf neighbor
Neighbor ID Pri State Dead Time Address Interface
2.2.2.2 1 FULL/BDR 00:00:39 192.168.1.2 FastEthernet0/0
Router#show ip route ospf
O 192.168.3.0 [110/2] via 192.168.1.2, 00:02:21, FastEthernet0/0
Router#

```

```

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

Press RETURN to get started!

Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#ip address 192.168.1.2 255.255.255.0
Router(config-if)#no shutdown
Router(config-if)#exit
Router(config)#interface FastEthernet0/1
Router(config-if)#ip address 192.168.3.1 255.255.255.0
Router(config-if)#no shutdown
Router(config-if)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#write memory
Building configuration...
[OK]
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#router ospf 1
Router(config-router)#router-id 2.2.2.2
Router(config-router)#network 192.168.1.0 0.0.0.255 area 0
Router(config-router)#network 192.168.3.0 0.0.0.255 area 0
Router(config-router)#
Router(config-router)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#write me
00:03:45: %OSPF-5-ADJCHG: Process 1, Nbr 1.1.1.1 on FastEthernet0/0 from LOADING to FULL, Loading Done
Building configuration...
[OK]
Router#show ip ospf neighbor

Neighbor ID    Pri   State           Dead Time   Address        Interface
1.1.1.1        1     FULL/DR         00:00:35    192.168.1.1    FastEthernet0/0
Router#show ip route ospf
0 192.168.2.0 [110/2] via 192.168.1.1, 00:02:31, FastEthernet0/0
Router#

```

DNS

Physical Config **Services** Desktop Programming Attributes

SERVICES

HTTP

DHCP

DHCPv6

TFTP

DNS

SYSLOG

AAA

NTP

EMAIL

FTP

IoT

VM Management

Radius EAP

DNS

DNS Service ☒ On ☐ Off

Resource Records
Name Type **A Record**

Address

Add

Save

Remove

No.	Name	Type	Detail
-----	------	------	--------

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: **0.0.0.0**

DNS Server: **0.0.0.0**

Start IP Address: **169** **254** **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**

Add **Save** **Remove**

Pool Name	Default Gateway	DNS Server	Start IP Address	Subnet Mask	Max User	TFTP Server	WLC Address
serverPool	0.0.0.0	0.0.0.0	169.254.0.0	255.255.0.0	512	0.0.0.0	0.0.0.0

Physical Config **Desktop** Programming Attributes

IP Configuration [X]

Interface: **FastEthernet0**

IP Configuration

☒ DHCP ☐ Static DHCP request successful.

IPv4 Address: **192.168.2.16**

Subnet Mask: **255.255.255.0**

Default Gateway: **192.168.2.1**

DNS Server: **8.8.8.8**

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address: **/**

Link Local Address: **FE80::206:2AFF:FE06:AD18**

Default Gateway:

DNS Server:

802.1X

☐ Use 802.1X Security

Authentication: **MD5**

Username:

Password:

Physical Config **Services** **Desktop** Programming Attributes

IP Configuration [X]

IP Configuration

☒ DHCP ☐ Static DHCP request successful.

IPv4 Address: **192.168.3.4**

Subnet Mask: **255.255.255.0**

Default Gateway: **192.168.3.1**

DNS Server: **8.8.8.8**

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address: **/**

Link Local Address: **FE80::210:11FF:FE02:2CD4**

Default Gateway:

DNS Server:

802.1X

☐ Use 802.1X Security

Authentication: **MD5**

Username:

Password:

Server1

Physical Config Services **Desktop** Programming Attributes

IP Configuration X

IP Configuration

☒ DHCP ☐ Static DHCP request successful.

IPv4 Address 192.168.3.5

Subnet Mask 255.255.255.0

Default Gateway 192.168.3.1

DNS Server 8.8.8.8

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address /

Link Local Address FE80::204:9AFF:FE9A:E975

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

Authentication MD5

Username

Password

Tablet PC0

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface Wireless0

IP Configuration

☒ DHCP ☐ Static DHCP request successful.

IPv4 Address 192.168.3.6

Subnet Mask 255.255.255.0

Default Gateway 192.168.3.1

DNS Server 8.8.8.8

IPv6 Configuration

☒ Automatic ☐ Static IPv6 request failed.

IPv6 Address /

Link Local Address FE80::201:C7FF:FE64:1CE0

Default Gateway

DNS Server

IoT4

SpecificationsPhysicalConfigAttributes

GLOBAL

Settings

Algorithm Settings

Files

INTERFACE

Wireless0

Bluetooth

Global Settings

Display NameIoT4

Serial NumberPTT081047B2-

InterfacesWireless0

Gateway/DNS IPv4

☒ DHCP

☐ Static

Default Gateway192.168.3.1

DNS Server8.8.8.8

Gateway/DNS IPv6

☒ Automatic

☐ Static

Default Gateway

DNS Server

IoT Server

☒ None

☐ Home Gateway

☐ Remote Server

Server Address

User Name

Password

Connect

IoT0

SpecificationsPhysicalConfigAttributes

GLOBAL

Settings

Algorithm Settings

Files

INTERFACE

Wireless0

Bluetooth

Global Settings

Display NameIoT0

Serial NumberPTT08100X9N-

InterfacesWireless0

Gateway/DNS IPv4

☒ DHCP

☐ Static

Default Gateway192.168.3.1

DNS Server8.8.8.8

Gateway/DNS IPv6

☒ Automatic

☐ Static

Default Gateway

DNS Server

IoT Server

☒ None

☐ Home Gateway

☐ Remote Server

Server Address

User Name

Password

Connect

GLOBAL
Settings
Algorithm Settings
Files
INTERFACE
Wireless0
Bluetooth

Global Settings

Display Name	IoT1
Serial Number	PTT0810EG17-
Interfaces	Wireless0
Gateway/DNS IPv4	
<input checked="" type="radio"/> DHCP	
<input type="radio"/> Static	
Default Gateway	192.168.3.1
DNS Server	8.8.8.8
Gateway/DNS IPv6	
<input checked="" type="radio"/> Automatic	
<input type="radio"/> Static	
Default Gateway	
DNS Server	
IoT Server	
<input checked="" type="radio"/> None	
<input type="radio"/> Home Gateway	
<input type="radio"/> Remote Server	
Server Address	
User Name	
Password	

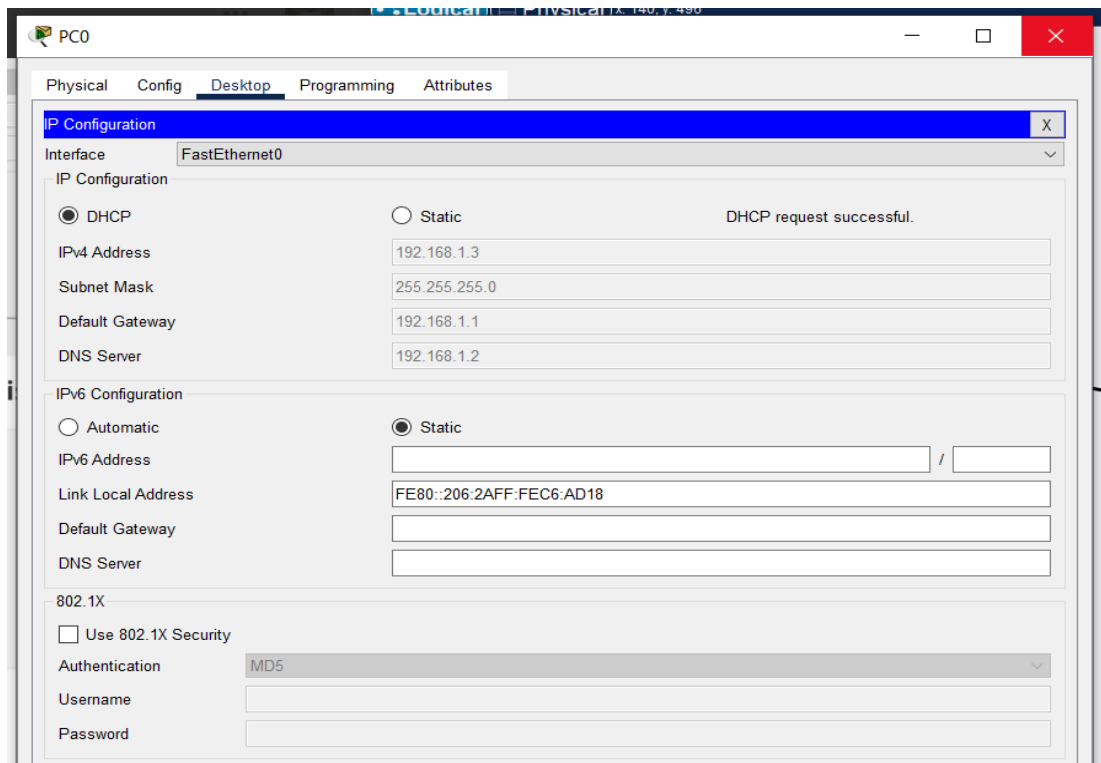
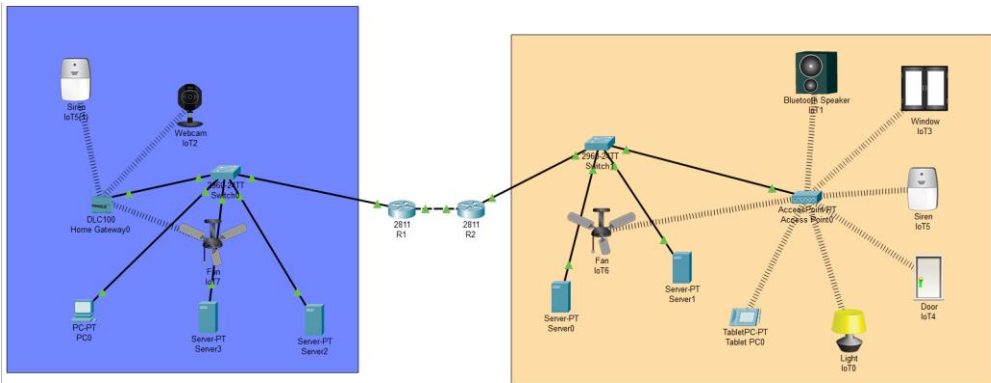
Connect

Résultat sur les commandes et les tâches accompli sur le td5 partie 2 :

2. Choisissons une topologie réseau de mon choix en impérativement inclure au minimum deux routeurs.

Exigences du travail :

- Intégrer des objets connectés (IoT) dans votre topologie ;
- Mettre en place des conditions spécifiques sur les IOT



```

L      192.168.3.1/32 is directly connected, FastEthernet0/1

Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet 0/0
Router(config-if)#ip address 192.168.3.1 255.255.255.0
% 192.168.3.0 overlaps with FastEthernet0/1
Router(config-if)#no shutdown
Router(config-if)#exit
Router(config)#interface FasEthernet )/1
      ^
% Invalid input detected at '^' marker.

Router(config)#interface FastEthernet0/1
Router(config-if)#ip address 192.168.2.1 255.255.255.0
Router(config-if)#ip address 192.168.3.1 255.255.255.0
Router(config-if)#no shutdown
Router(config-if)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#write memory
Building configuration...
[OK]
Router#enable
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#ip dhcp pool Network1
Router(dhcp-config)#network 192.168.3.0 255.255.255.0
Router(dhcp-config)#default-router 192.168.3.1
Router(dhcp-config)#dns-server 192.168.3.2
Router(dhcp-config)#ip dhcp excluded-address 192.168.3.1 192.168.3.1
Router(config)#ip dhcp excluded-address 192.168.3.1 192.168.3.2
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#write memory
Building configuration...
[OK]
Router#

```

Copy

The screenshot shows the 'Server0' configuration window with the 'Desktop' tab selected. The 'IP Configuration' section is expanded, showing the following settings:

- IP Configuration:**
 - ☒ DHCP (Selected) DHCP request successful.
 - ☐ Static
 - IPv4 Address: 192.168.3.6
 - Subnet Mask: 255.255.255.0
 - Default Gateway: 192.168.3.1
 - DNS Server: 192.168.3.2
- IPv6 Configuration:**
 - ☐ Automatic
 - ☒ Static
 - IPv6 Address: [Empty field] / [Empty field]
 - Link Local Address: FE80::210:11FF:FE02:2CD4
 - Default Gateway: [Empty field]
 - DNS Server: [Empty field]
- 802.1X:**
 - ☐ Use 802.1X Security
 - Authentication: MD5 (Dropdown menu)
 - Username: [Empty field]
 - Password: [Empty field]

On the right side of the window, a network diagram is partially visible, showing a connection to 'Server-PT server0'.

Server1

Physical Config Services **Desktop** Programming Attributes

IP Configuration X

IP Configuration

☒ DHCP ☐ Static DHCP request successful.

IPv4 Address 192.168.3.7

Subnet Mask 255.255.255.0

Default Gateway 192.168.3.1

DNS Server 192.168.3.2

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address /

Link Local Address FE80::204:9AFF:FE9A:E975

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

Authentication MD5

Username

Password

DHCP

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 server DHCP

Default Gateway 192.168.1.1

DNS Server 192.168.1.2

Start IP Address : 192 168 1 0

Subnet Mask: 255 255 255 0

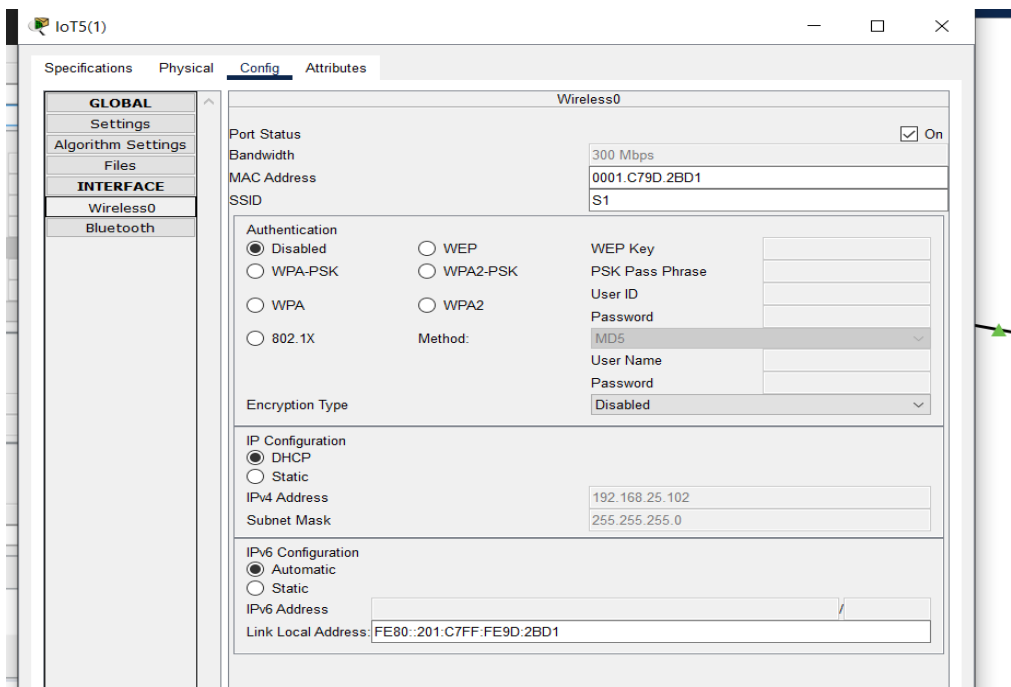
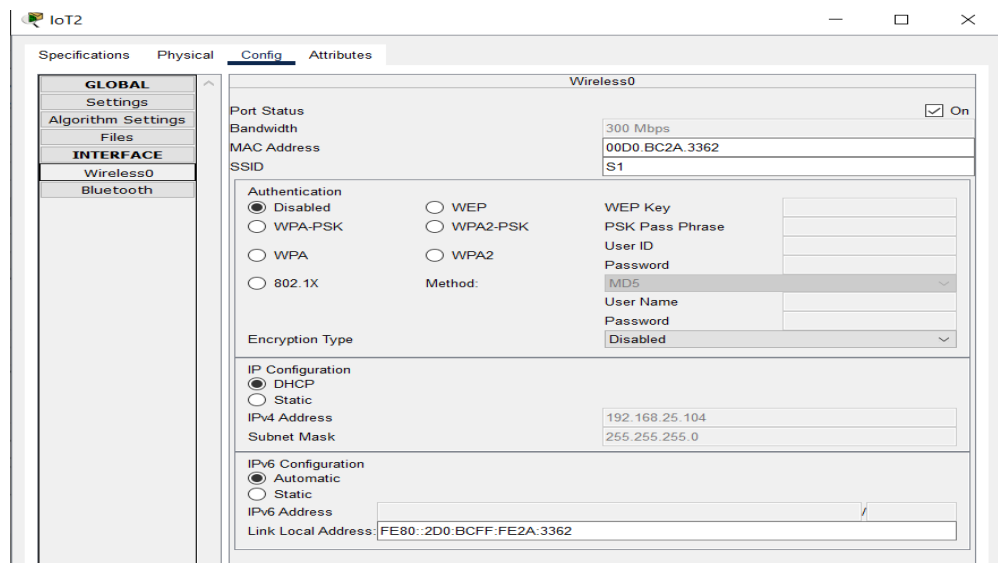
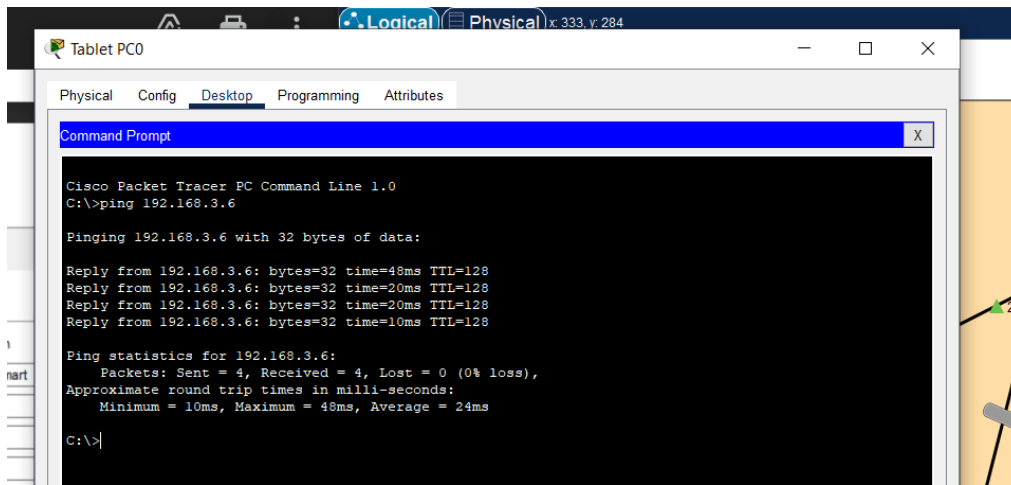
Maximum Number of Users : 512

TFTP Server: 0.0.0.0

WLC Address: 0.0.0.0

Add Save Remove

Pool Name	Default Gateway	DNS Server	Start IP Address	Subnet Mask	Max User	TFTP Server	WLC Address
serverPool	192.168.1.1	192.168.1.2	192.168.1.0	255.255.2...	512	0.0.0.0	0.0.0.0



IoT6

Specifications Physical **Config** Attributes

GLOBAL

Settings

Algorithm Settings

Files

INTERFACE

Wireless0

Bluetooth

Wireless0

Port Status ☒ On

Bandwidth 54 Mbps

MAC Address 00E0.A3B6.7CE6

SSID Smartlab

Authentication

☒ Disabled ☐ WEP ☐ WPA2-PSK ☐ WPA ☐ WPA2 ☐ 802.1X

Method: MD5

WEP Key

PSK Pass Phrase

User ID

Password

User Name

Password

Encryption Type Disabled

IP Configuration

☒ DHCP ☐ Static

IPv4 Address 192.168.3.2

Subnet Mask 255.255.255.0

IPv6 Configuration

☒ Automatic ☐ Static

IPv6 Address

Link Local Address: FE80::2E0:A3FF:FE66:7CE6

IoT1

Specifications Physical **Config** Attributes

GLOBAL

Settings

Algorithm Settings

Files

INTERFACE

Wireless0

Bluetooth

Wireless0

Port Status ☒ On

Bandwidth 54 Mbps

MAC Address 000C.8530.E498

SSID Smartlab

Authentication

☒ Disabled ☐ WEP ☐ WPA2-PSK ☐ WPA ☐ WPA2 ☐ 802.1X

Method: MD5

WEP Key

PSK Pass Phrase

User ID

Password

User Name

Password

Encryption Type Disabled

IP Configuration

☒ DHCP ☐ Static

IPv4 Address 192.168.3.3

Subnet Mask 255.255.255.0

IPv6 Configuration

☒ Automatic ☐ Static

IPv6 Address

Link Local Address: FE80::20C:85FF:FE30:E498

IoT5

Specifications Physical **Config** Attributes

GLOBAL

Settings

Algorithm Settings

Files

INTERFACE

Wireless0

Bluetooth

Wireless0

Port Status ☒ On

Bandwidth 54 Mbps

MAC Address 00D0:BAC8:7924

SSID Smartlab

Authentication

☒ Disabled ☐ WEP ☐ WPA2-PSK ☐ WPA ☐ WPA2 ☐ 802.1X

Method: MD5

WEP Key

PSK Pass Phrase

User ID

Password

User Name

Password

Encryption Type Disabled

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 169.254.121.36

Subnet Mask 255.255.0.0

IPv6 Configuration

☒ Automatic ☐ Static

IPv6 Address

Link Local Address: FE80::2D0:BAFF:FEC8:7924

IoT0

Specifications Physical **Config** Attributes

GLOBAL

Settings

Algorithm Settings

Files

INTERFACE

Wireless0

Bluetooth

Wireless0

Port Status ☒ On

Bandwidth 18 Mbps

MAC Address 00D0:5841:3233

SSID Smartlab

Authentication

☒ Disabled ☐ WEP ☐ WPA2-PSK ☐ WPA ☐ WPA2 ☐ 802.1X

Method: MD5

WEP Key

PSK Pass Phrase

User ID

Password

User Name

Password

Encryption Type Disabled

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 169.254.50.51

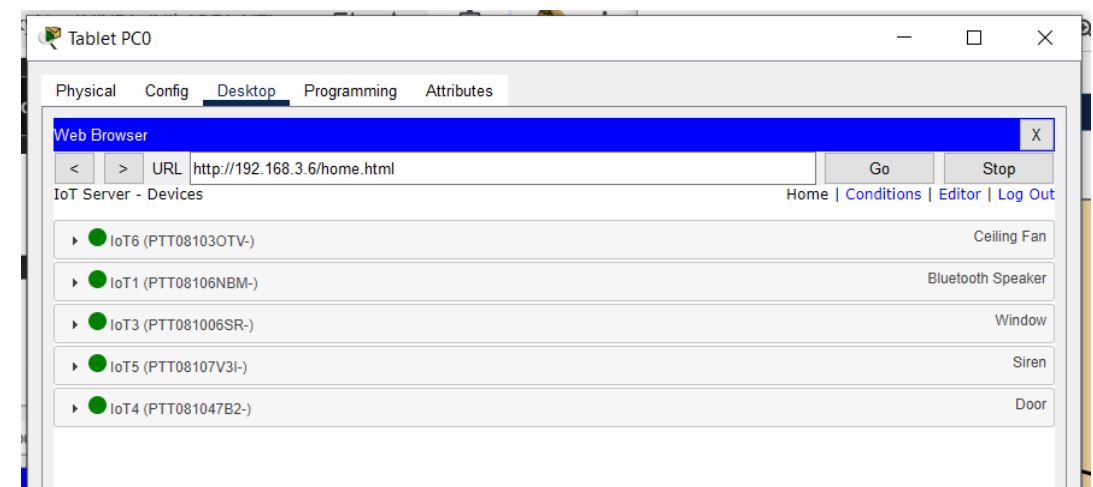
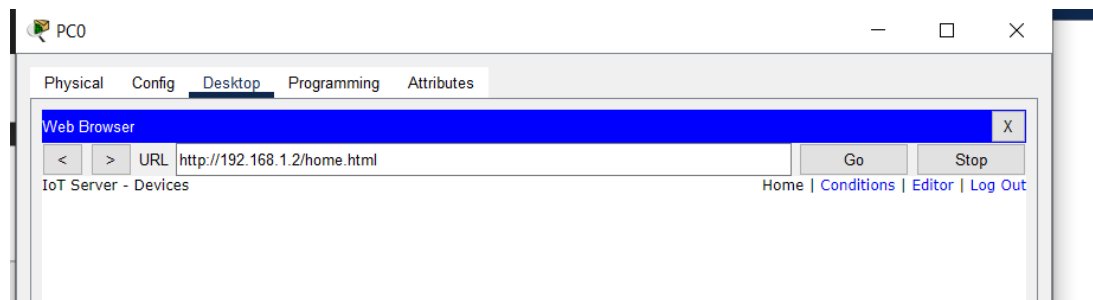
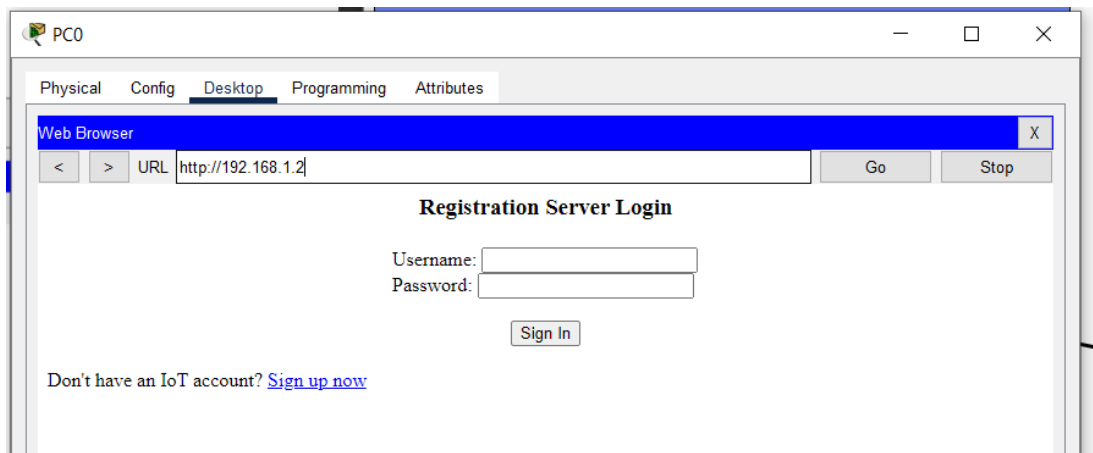
Subnet Mask 255.255.0.0

IPv6 Configuration

☒ Automatic ☐ Static

IPv6 Address

Link Local Address: FE80::2D0:58FF:FE41:3233



En conclusion, Je peux dire que ce TD me permet de comprendre le protocole OSPF et de le configurer pour un routage dans un réseau. Il permet aussi à explorer la création d'un réseau Smart Home avec des appareils IoT (ampoules, caméras, thermostats, etc...). Enfin, j'apprends comment contrôler des objets IoT via Smartphone/Tablette ou PC, il renforce mes compétences en gestion de réseaux, tout en illustrant les applications concrètes de l'IoT.