

# INSTITUT UNIVERSITAIRE DES SCIENCES - IUS

## Faculté des Sciences et Technologie - FST

Niveau L3 Sciences Informatiques

**NOM** : FABIEN

**Prenom** : Marie Béatrice

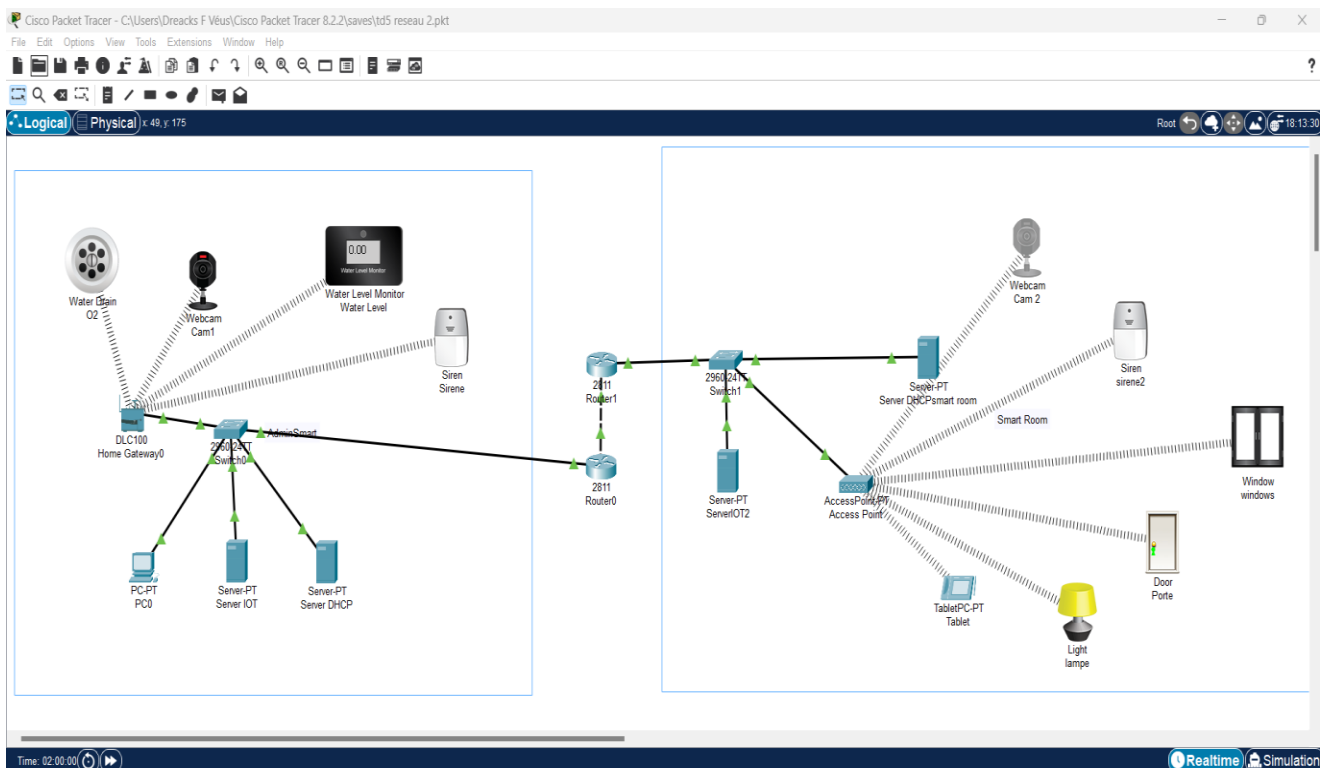
Soumis au chargé de cours Ismael SAINT AMOUR

**Date**: 19 avril 2025

**TD5**-Dans ce TD, nous allons implémenter **OSPF** (Open Shortest Path First) dans un réseau d'entreprise. L'OSPF est un protocole de routage dynamique très utilisé dans les grandes entreprises et organisations en raison de sa capacité à s'adapter aux modifications du réseau rapidement, et de mettre en place un réseau **Smart Home** basé sur **IoT** dans **Cisco Packet Tracer**. Nous allons configurer des objets connectés (IoT) et les contrôler via un **serveur Home Gateway**.

### Implémentation du Protocole de Routage OSPF

Topologie du réseau :



## Configuration les points Accès et les IOT

Access Point

Physical **Config** Attributes

**GLOBAL**

Settings

**INTERFACE**

Port 0

**Port 1**

Port 1

Port Status ☒ On

SSID smartroom

2.4 GHz Channel 6

Coverage Range (meters) 140.00

Authentication

☒ Disabled ☐ WEP ☐ WPA-PSK ☐ WPA2-PSK

WEP Key

PSK Pass Phrase

User ID

Password

Encryption Type Disabled

☐ Top

O2

Specifications Physical **Config** Attributes

**GLOBAL**

Settings

Algorithm Settings

Files

**INTERFACE**

Wireless0

Bluetooth

Wireless0

Port Status ☒ On

Bandwidth 300 Mbps

MAC Address 0001.9622.6209

SSID adminsmart

Authentication

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

Method:

WEP Key

PSK Pass Phrase

User ID

Password

MD5

User Name

Password

Encryption Type Disabled

IP Configuration

☒ DHCP ☐ Static

IPv4 Address 192.168.25.108

Subnet Mask 255.255.255.0

IPv6 Configuration

☒ Automatic ☐ Static

IPv6 Address /

Link Local Address: FE80::201:96FF:FE22:6209

☐ Top

# Configuration des serveurs DHCP et IOT

Server DHCP

Physical Config Services **Desktop** Programming Attributes

IP Configuration [X]

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 192.168.1.3

Subnet Mask 255.255.255.0

Default Gateway 192.168.1.1

DNS Server 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address /

Link Local Address FE80::20C:85FF:FE69:8869

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

Authentication MD5

Username

Password

☐ Top

Server IOT

Physical Config Services **Desktop** Programming Attributes

IP Configuration [X]

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 192.168.1.2

Subnet Mask 255.255.255.0

Default Gateway 192.168.1.1

DNS Server 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address /

Link Local Address FE80::201:42FF:FEAB:AC33

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

Authentication MD5

Username

Password

☐ Top

Server IOT

Physical Config **Services** Desktop Programming Attributes

**SERVICES**

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

Registration Server

This service runs on top of the HTTP or HTTPS service.

Service ☒ On ☐ Off

Delete

☐ Top

Server DHCPsmart room

Physical Config Services **Desktop** Programming Attributes

IP Configuration X

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

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address /

Link Local Address FE80::204:9AFF:FE34:C36

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

Authentication MD5

Username

Password

☐ Top

Server DHCPsmart room

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 serversmartroom

Default Gateway 192.168.2.1

DNS Server 0.0.0.0

Start IP Address : 192 168 2 3

Subnet Mask: 255 255 255 0

Maximum Number of Users : 253

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
serversmartroom	192.168.2.1	0.0.0.0	192.168.2.3	255.255.255.0	253	0.0.0.0	0.0.0.0
serverPool	0.0.0.0	0.0.0.0	192.168.2.0	255.255.255.0	512	0.0.0.0	0.0.0.0

☐ Top

Server 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 serverAdminsmart

Default Gateway 192.168.1.1

DNS Server 0.0.0.0

Start IP Address : 192 168 1 4

Subnet Mask: 255 255 255 0

Maximum Number of Users : 252

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
serverAdminsmart	192.168.1.1	0.0.0.0	192.168.1.4	255.255.255.0	252	0.0.0.0	0.0.0.0
serverPool	0.0.0.0	0.0.0.0	192.168.1.0	255.255.255.0	512	0.0.0.0	0.0.0.0

☐ Top

# Configuration de base des routeurs

 Router0

Physical

Config

CLI

Attributes

IOS Command Line Interface

A summary of U.S. laws governing Cisco cryptographic products may be found at:  
<http://www.cisco.com/wwl/export/crypto/tool/stqrg.html>

If you require further assistance please contact us by sending email to  
[export@cisco.com](mailto:export@cisco.com).

cisco 2811 (MPC860) processor (revision 0x200) with 60416K/5120K bytes of memory  
Processor board ID JAD05190MTZ (4292891495)  
2 FastEthernet interface(s)  
DRAM configuration is 64 bits wide with parity disabled.  
255K bytes of non-volatile configuration memory.  
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#conf t  
Enter configuration commands, one per line. End with CNTL/Z.  
Router(config)#interface f0/0  
Router(config-if)#ip address 192.168.1.1 255.255.255.0  
Router(config-if)#no shutdown

Router(config-if)#  
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

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


Router(config-if)#interface f0/1  
Router(config-if)#ip address 192.168.2.1 255.255.255.0  
Router(config-if)#no shutdown

Router(config-if)#  
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up

Copy

Paste

☐ Top

 Router1

Physical

Config

CLI

Attributes

IOS Command Line Interface

cisco 2811 (MPC860) processor (revision 0x200) with 60416K/5120K bytes of memor  
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--- System Configuration Dialog ---

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

Press RETURN to get started!

Router>conf t  
^  
% Invalid input detected at '^' marker.

Router>enable  
Router#conf t  
Enter configuration commands, one per line. End with CNTL/Z.  
Router(config)#interface f0/1  
Router(config-if)#ip address 192.168.2.1 255.255.255.0  
Router(config-if)#no shutdown

Router(config-if)#  
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up

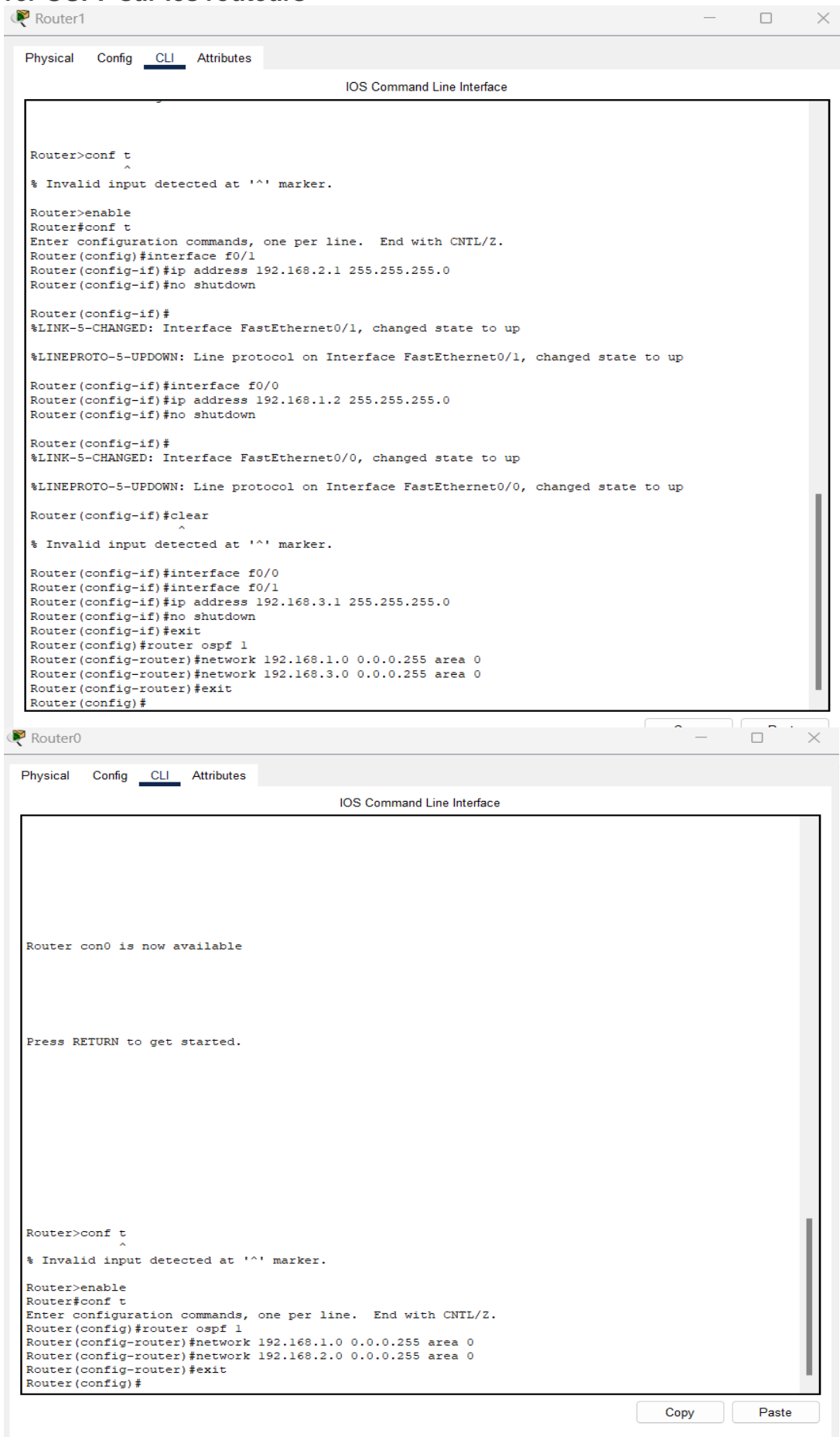
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up

Router(config-if)#interface f0/0  
Router(config-if)#ip address 192.168.1.2 255.255.255.0  
Router(config-if)#no shutdown

Router(config-if)#  
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

# Configuration du protocole OSPF

## Activer OSPF sur les routeurs



The image displays two screenshots of a network simulator interface, showing the configuration of OSPF on two routers, Router1 and Router0.

**Router1 Configuration:**

```
Router1>conf t
^
% Invalid input detected at '^' marker.

Router1>enable
Router1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router1(config)#interface f0/1
Router1(config-if)#ip address 192.168.2.1 255.255.255.0
Router1(config-if)#no shutdown

Router1(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up

Router1(config-if)#interface f0/0
Router1(config-if)#ip address 192.168.1.2 255.255.255.0
Router1(config-if)#no shutdown

Router1(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

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

Router1(config-if)#clear
^
% Invalid input detected at '^' marker.

Router1(config-if)#interface f0/0
Router1(config-if)#interface f0/1
Router1(config-if)#ip address 192.168.3.1 255.255.255.0
Router1(config-if)#no shutdown
Router1(config-if)#exit
Router1(config)#router ospf 1
Router1(config-router)#network 192.168.1.0 0.0.0.255 area 0
Router1(config-router)#network 192.168.3.0 0.0.0.255 area 0
Router1(config-router)#exit
Router1(config)#
```

**Router0 Configuration:**

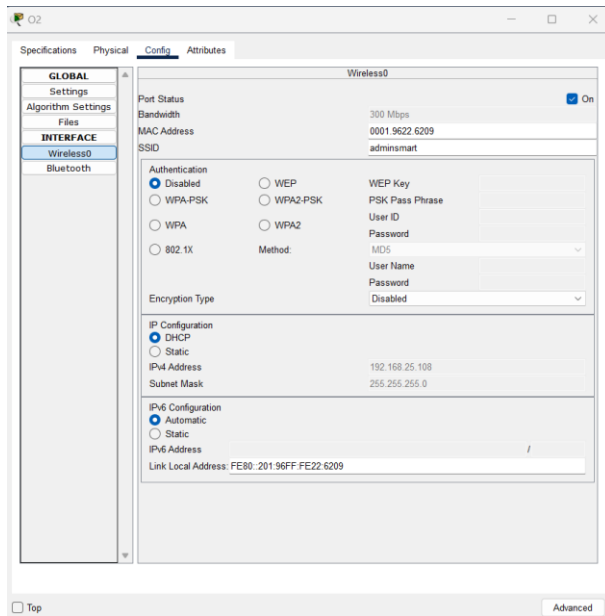
```
Router0 con0 is now available

Press RETURN to get started.

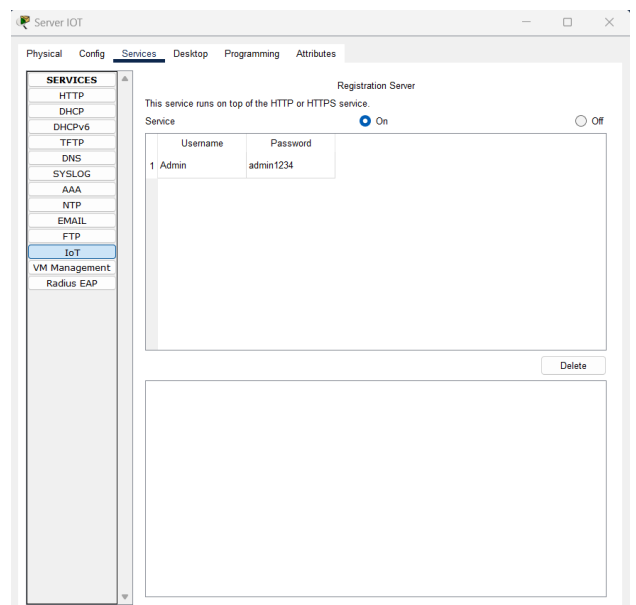
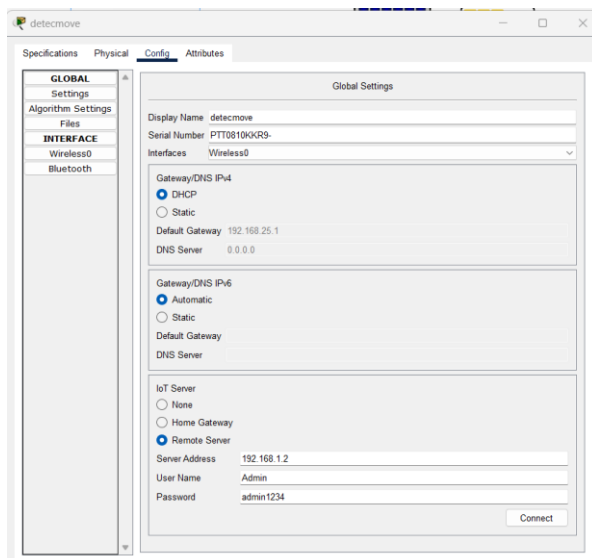
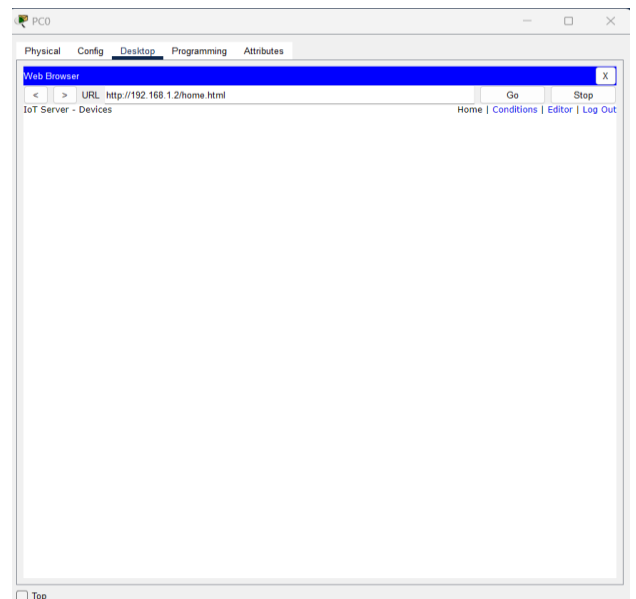
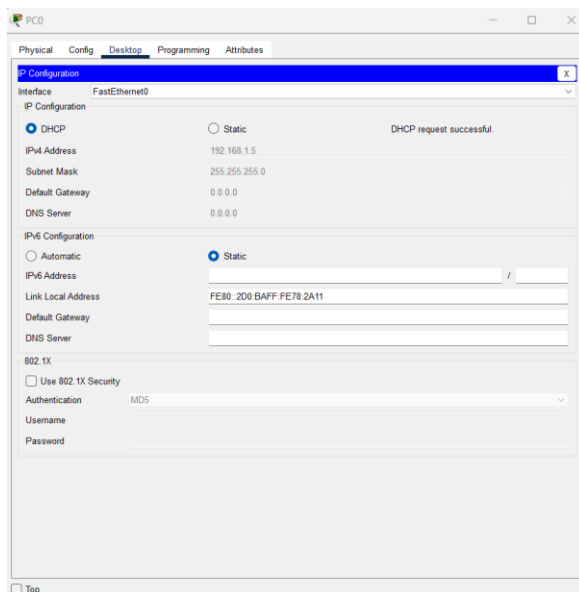
Router0>conf t
^
% Invalid input detected at '^' marker.

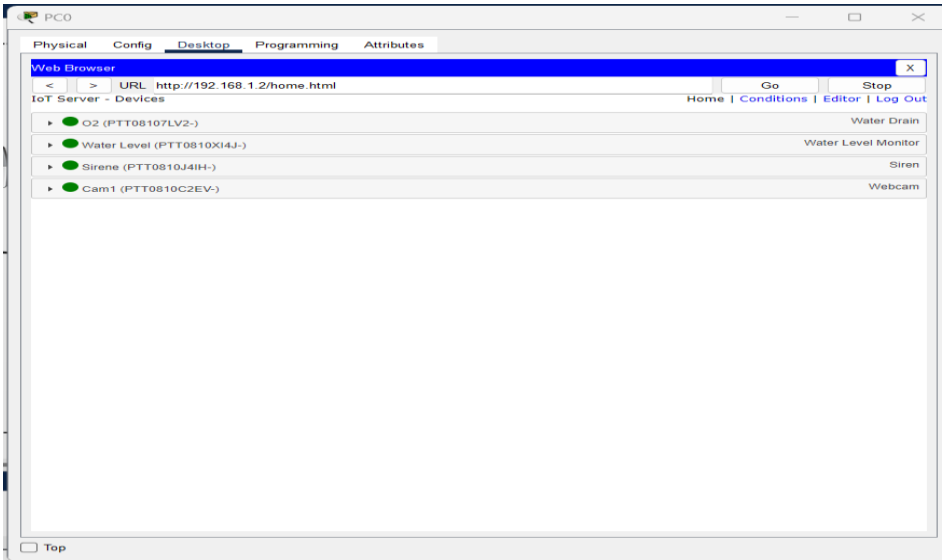
Router0>enable
Router0#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router0(config)#router ospf 1
Router0(config-router)#network 192.168.1.0 0.0.0.255 area 0
Router0(config-router)#network 192.168.2.0 0.0.0.255 area 0
Router0(config-router)#exit
Router0(config)#
```

# Activation des services IOT



## Registration au server





Active la camera si l'O2 est active. (Condition)

