Projet Inter-VLAN sur Cisco Packet Tracer

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Sommaire

Qu’est-ce qu’un VLAN?

Un réseau local virtuel, communément appelé VLAN (pour *Virtual LAN*), est un réseau informatique logique indépendant. De nombreux VLAN peuvent coexister sur un même commutateur réseau ou « Switch ».

Qu’est-ce qu’un inter-VLAN?

Le routage inter-VLAN est un processus qui permet de transférer du trafic réseau d'un VLAN à un autre à l'aide d'un périphérique de couche 3 comme un routeur.

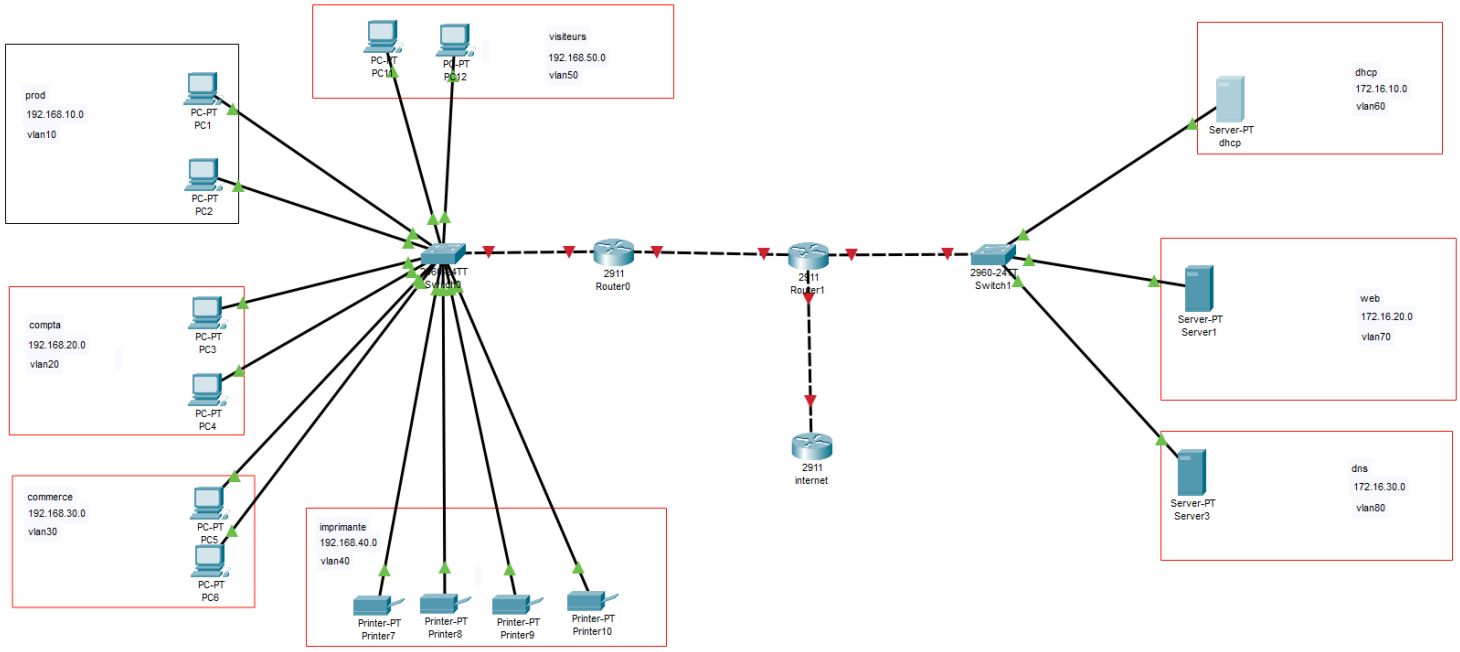
Objectif du projet

L’objectif de ce projet est de créer une connexion inter-VLAN sur le logiciel de simulation Cisco packet tracer en vue de le reproduire dans la réalité dans des futurs projets.

Installation

1/Crée un réseau virtuel

Lancer Cisco packet tracer et recrée votre infrastructure réseau

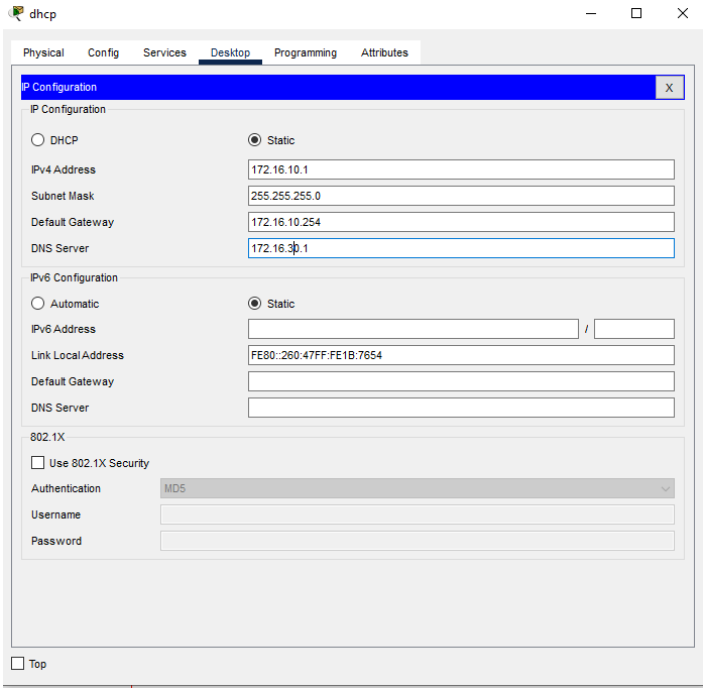


2/Configurer toutes les machines

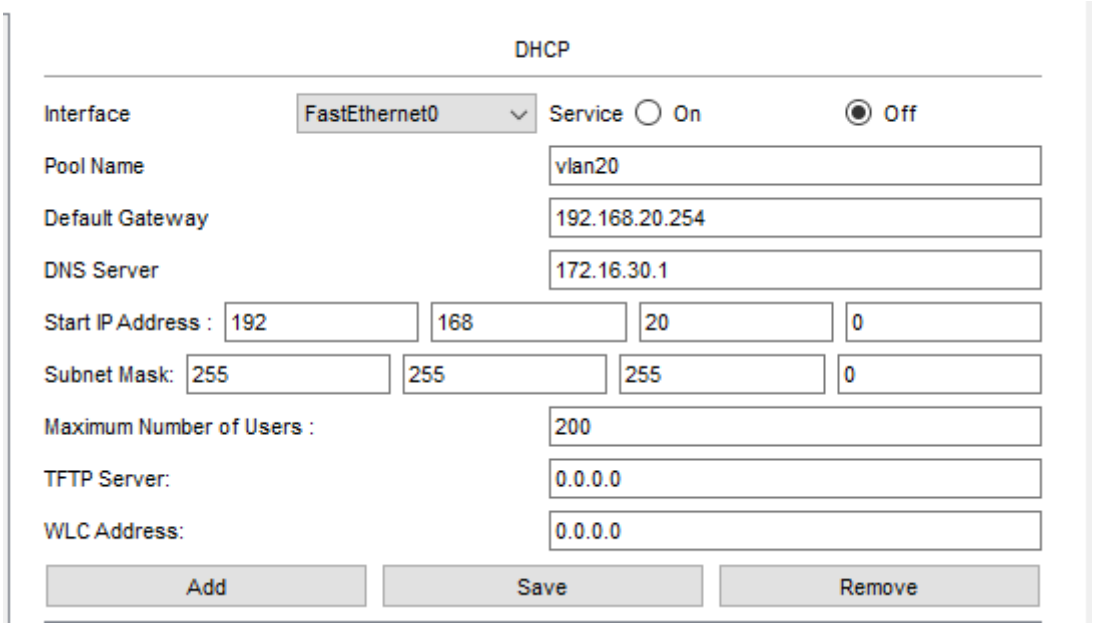
2.1/Configurer vos serveurs

2.1.1/Serveur DHCP

Attribuer une adresse ip à votre serveur DHCP



Faire la configuration de votre serveur DHCP en fonction des vlan utilisés

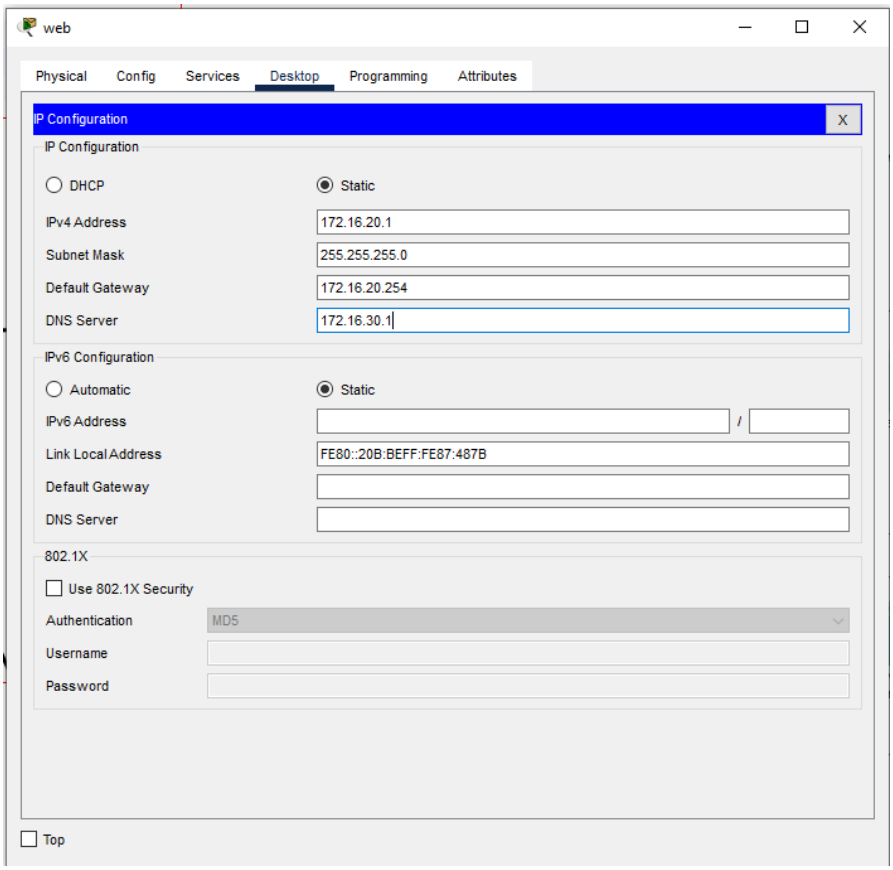


Pool Name	Default Gateway	DNS Server	Start IP Address	Subnet Mask	Max User	TFTP Server	WLC Address
vlan80	192.168.80.254	172.16.30.1	192.168.80.0	255.255.255.0	200	0.0.0.0	0.0.0.0
vlan70	192.168.70.254	172.16.30.1	192.168.70.0	255.255.255.0	200	0.0.0.0	0.0.0.0
vlan60	192.168.60.254	172.16.30.1	192.168.60.0	255.255.255.0	200	0.0.0.0	0.0.0.0
vlan50	192.168.50.254	172.16.30.1	192.168.50.0	255.255.255.0	200	0.0.0.0	0.0.0.0
vlan40	192.168.40.254	172.16.30.1	192.168.40.0	255.255.255.0	200	0.0.0.0	0.0.0.0
vlan30	192.168.30.254	172.16.30.1	192.168.30.0	255.255.255.0	200	0.0.0.0	0.0.0.0
vlan20	192.168.20.254	172.16.30.1	192.168.20.0	255.255.255.0	200	0.0.0.0	0.0.0.0
vlan10	192.168.10.254	172.16.30.1	192.168.10.0	255.255.255.0	200	0.0.0.0	0.0.0.0

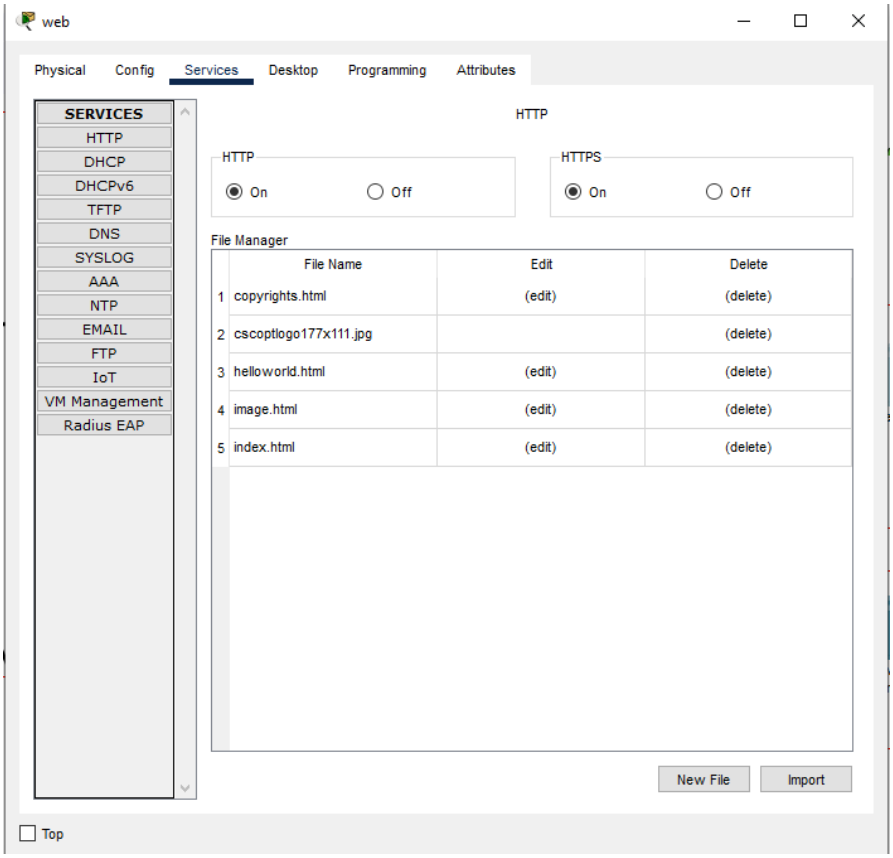
N’oubliez pas d’activer le service une fois la configuration effectué.

2.1.2/Serveur WEB

Attribué une adresse ip à votre serveur WEB

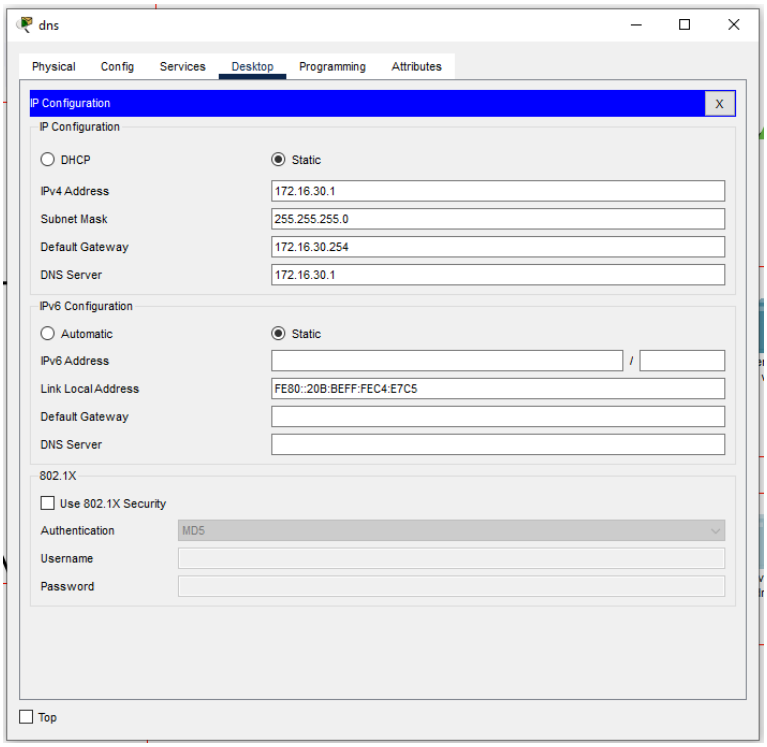


Aller dans «Services» puis dans «HTTP» puis activer le service HTTP et HTTPS

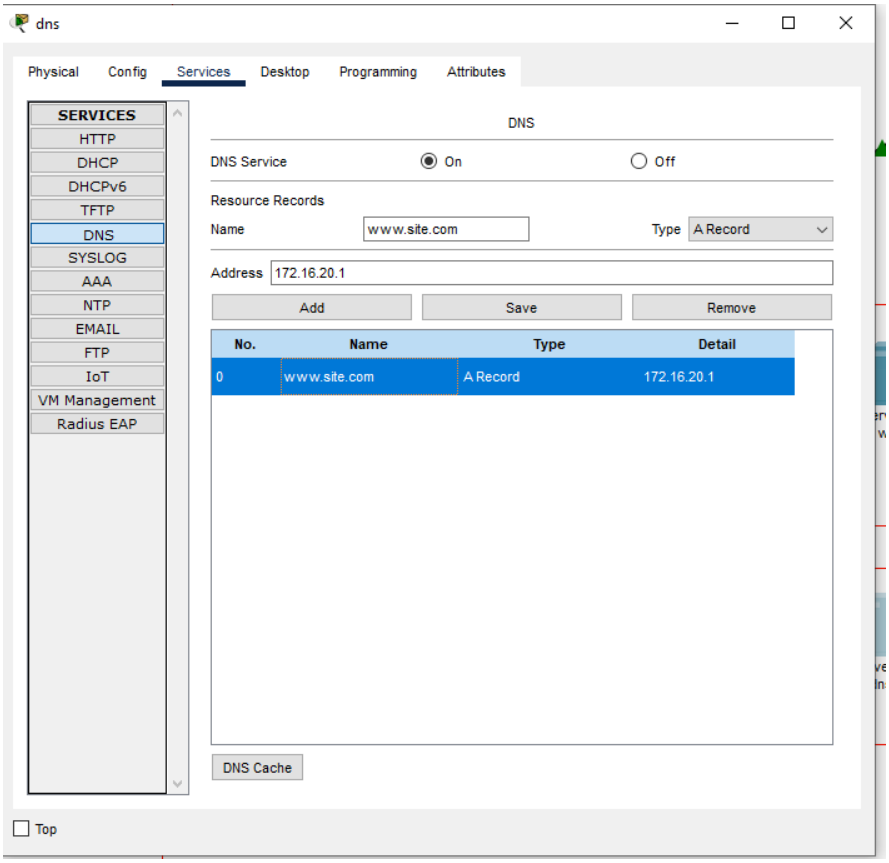


2.1.3/Serveur DNS

Attribuer une adresse ip à votre serveur DNS

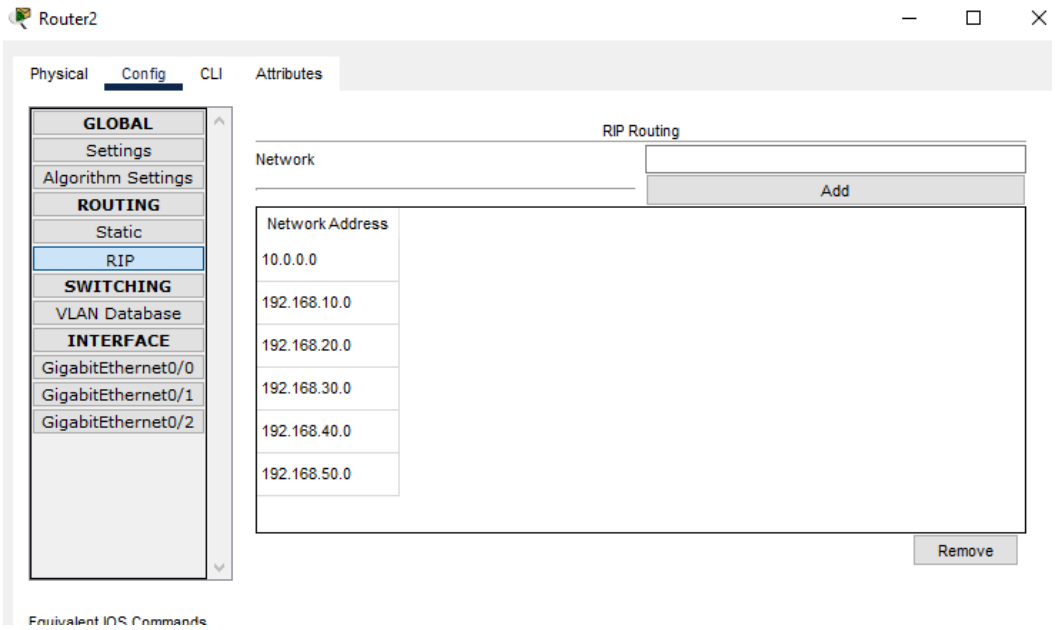


Mettez l'adresse IP de votre serveur web puis donnez-lui un nom

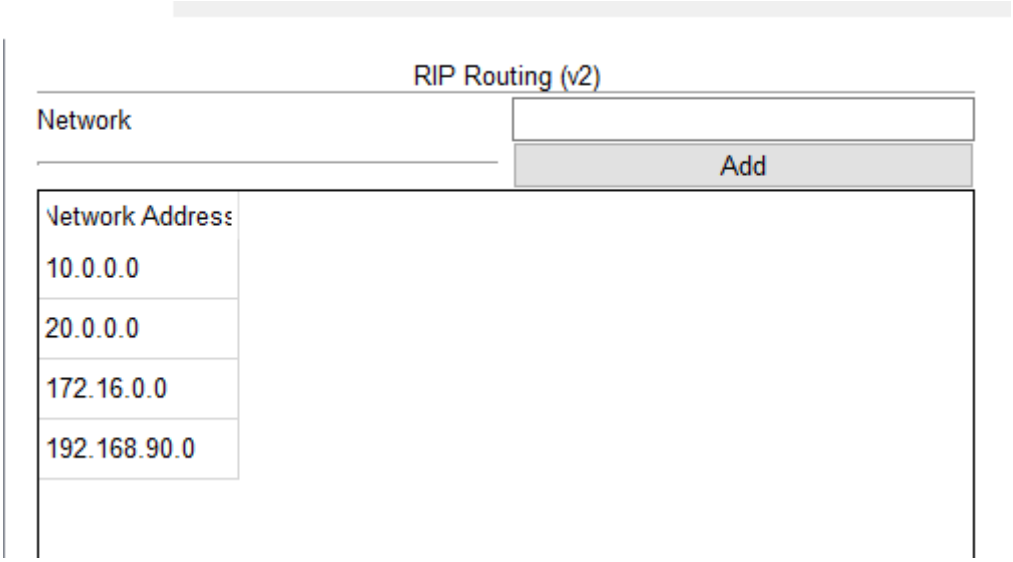


2.2/Configurer vos routeur

Aller dans «Config» puis dans «RIP» puis marqué les réseaux adjacent que vous souhaitez joindre

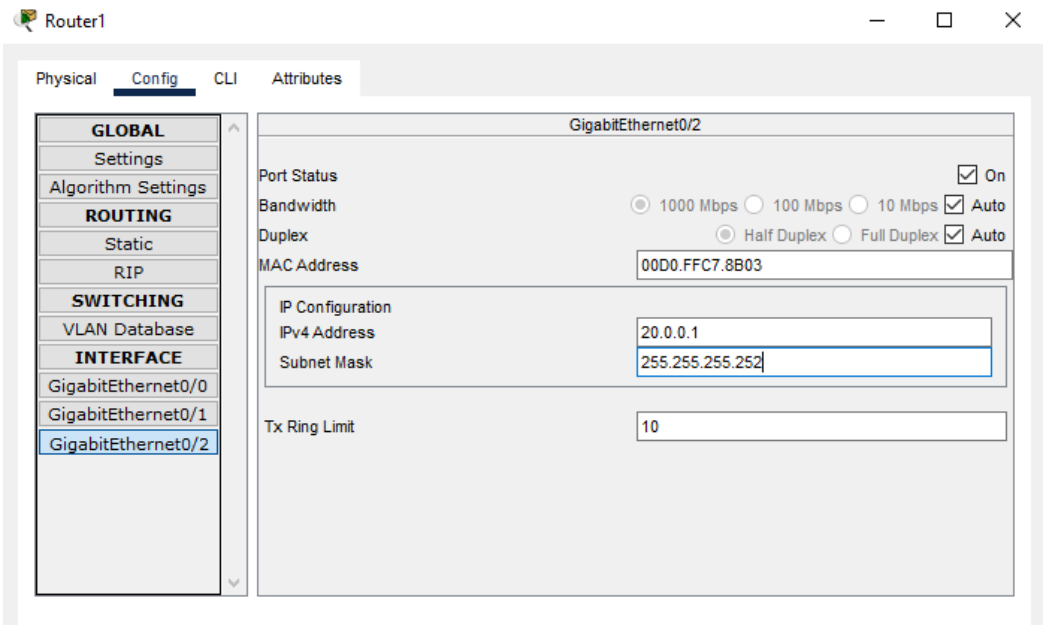


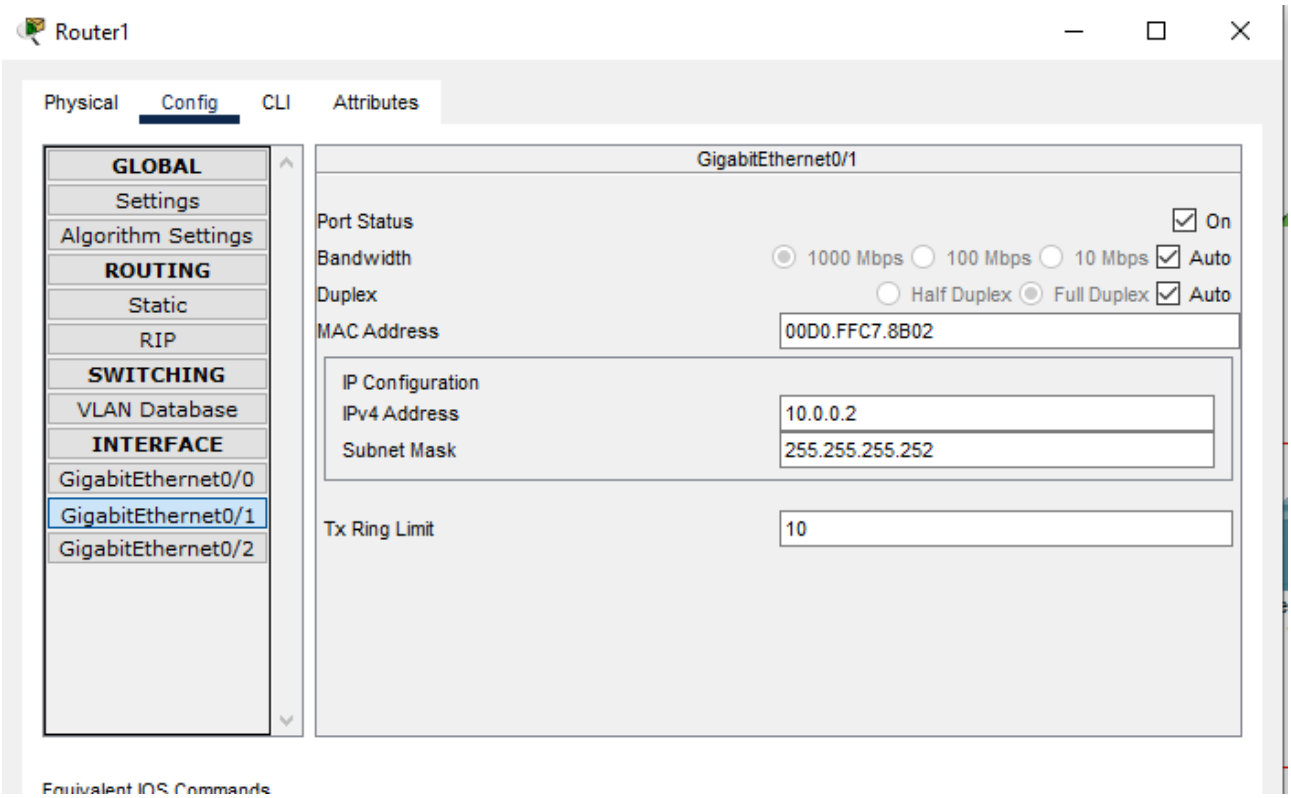
Faite de même pour le Routeur 1



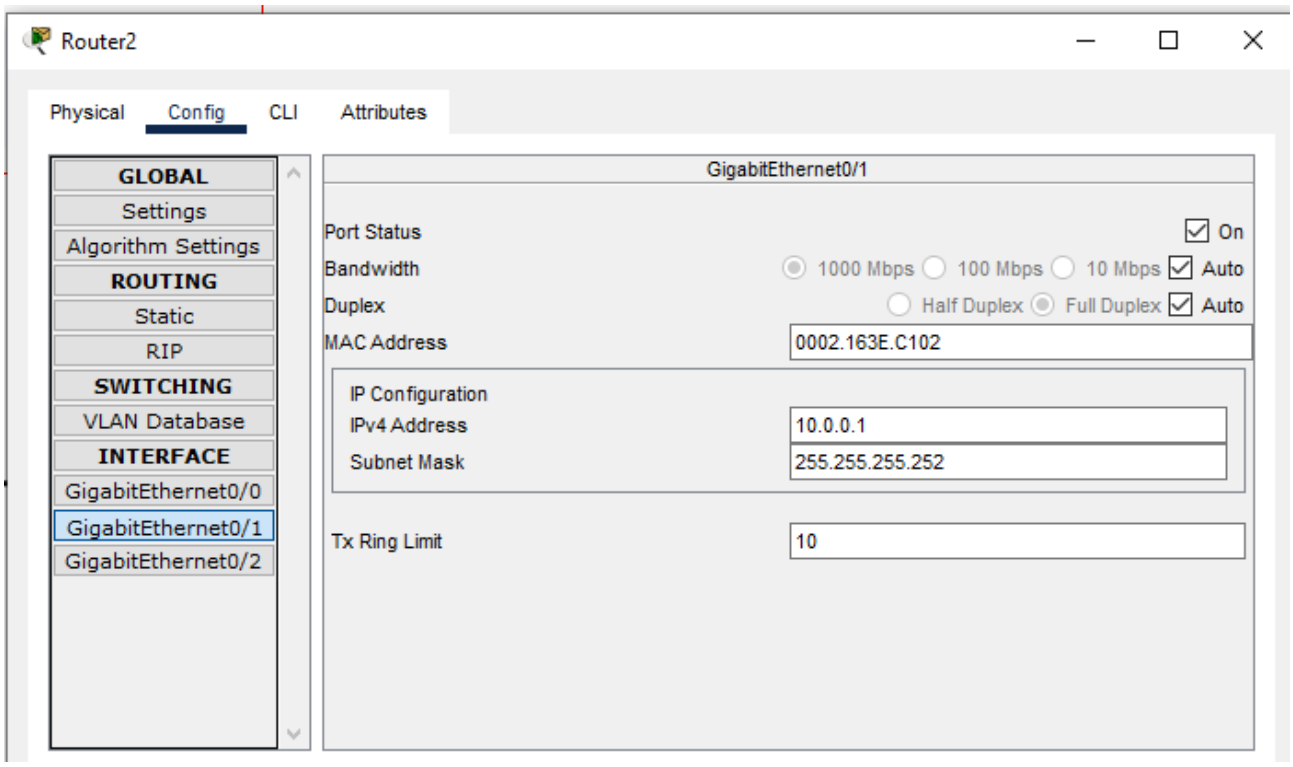
Ensuite configurer les interfaces

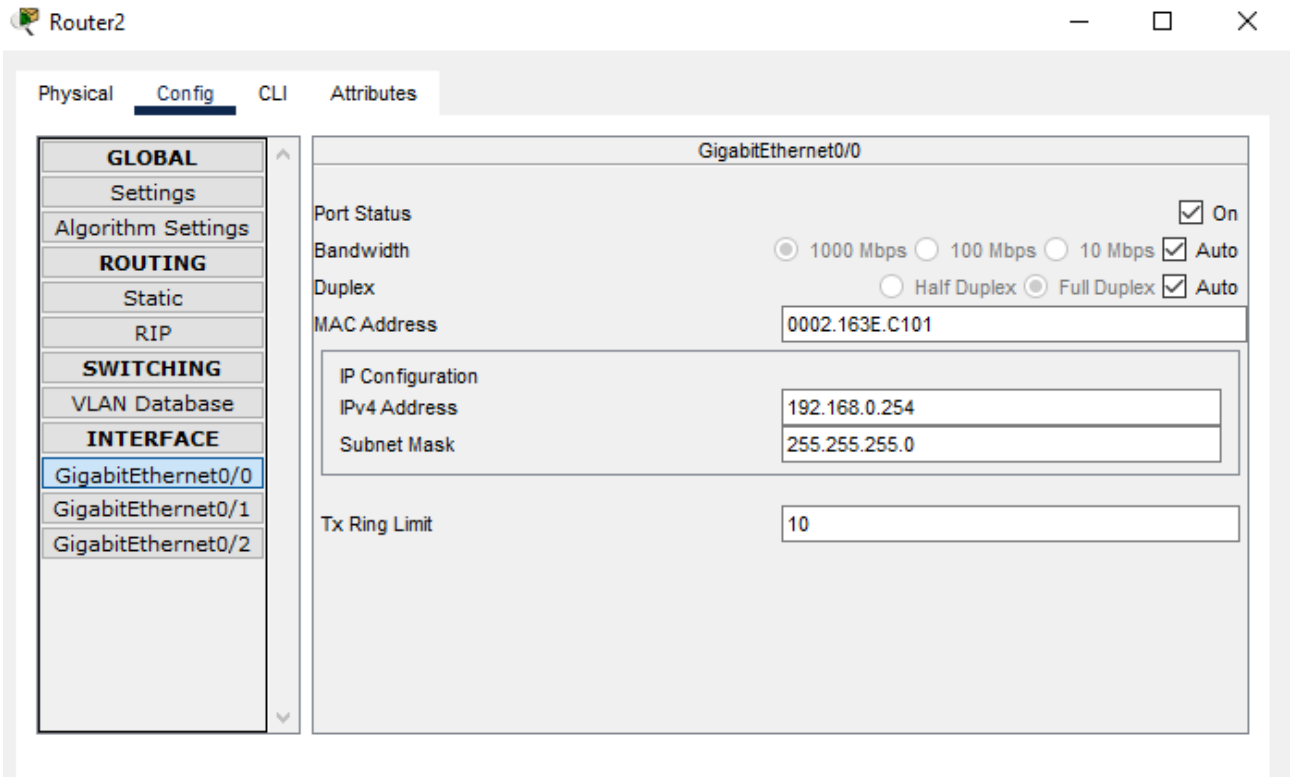
Routeur 1:


Router1
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
GigabitEthernet0/0
GigabitEthernet0/1
GigabitEthernet0/2
GigabitEthernet0/2
Port Status
On
Bandwidth
1000 Mbps
100 Mbps
10 Mbps
Auto
Duplex
Half Duplex
Full Duplex
Auto
MAC Address
00D0.FFC7.8B03
IP Configuration
IPv4 Address
20.0.0.1
Subnet Mask
255.255.255.252
Tx Ring Limit
10

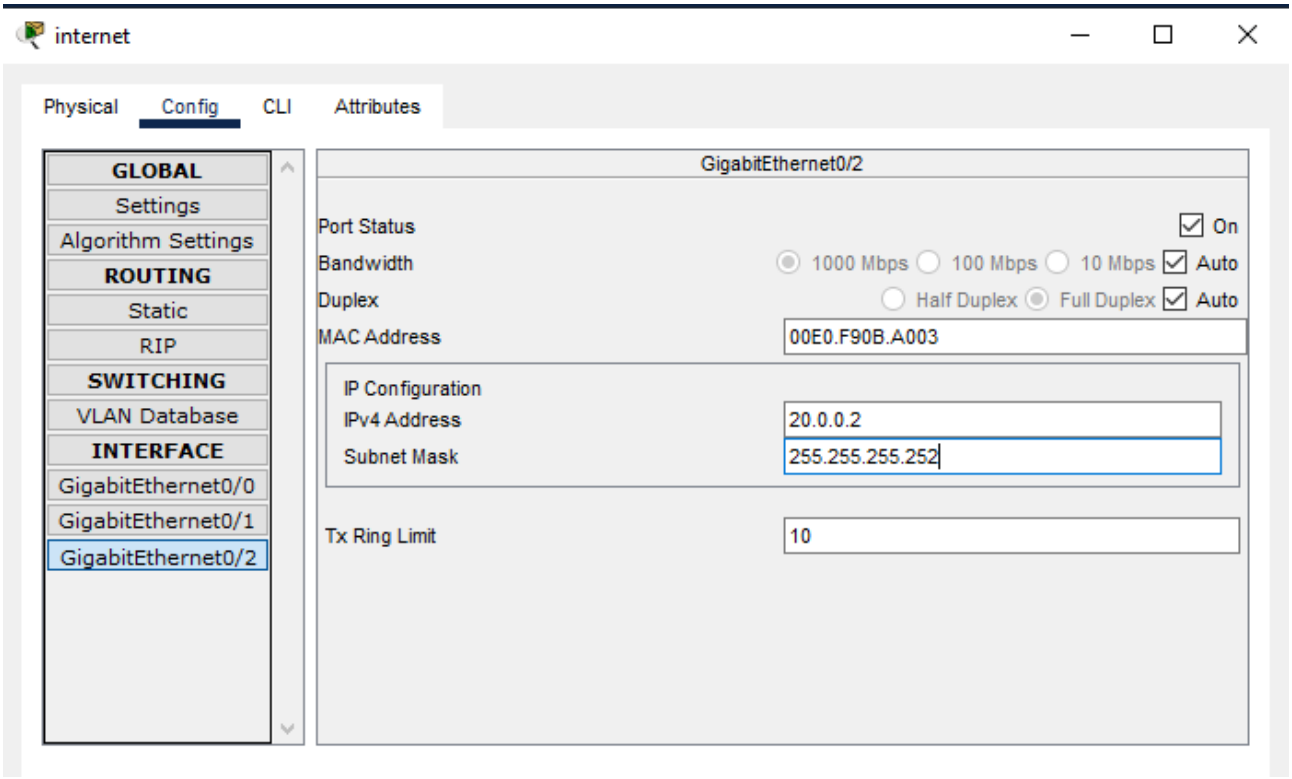

Router1
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
GigabitEthernet0/0
GigabitEthernet0/1
GigabitEthernet0/2
GigabitEthernet0/1
Port Status
On
Bandwidth
1000 Mbps
100 Mbps
10 Mbps
Auto
Duplex
Half Duplex
Full Duplex
Auto
MAC Address
00D0.FFC7.8B02
IP Configuration
IPv4 Address
10.0.0.2
Subnet Mask
255.255.255.252
Tx Ring Limit
10
Equivalent IOS Commands

Routeur2:


Router2
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
GigabitEthernet0/0
GigabitEthernet0/1
GigabitEthernet0/2
GigabitEthernet0/1
Port Status
On
Bandwidth
1000 Mbps
100 Mbps
10 Mbps
Auto
Duplex
Half Duplex
Full Duplex
Auto
MAC Address
0002.163E.C102
IP Configuration
IPv4 Address
10.0.0.1
Subnet Mask
255.255.255.252
Tx Ring Limit
10

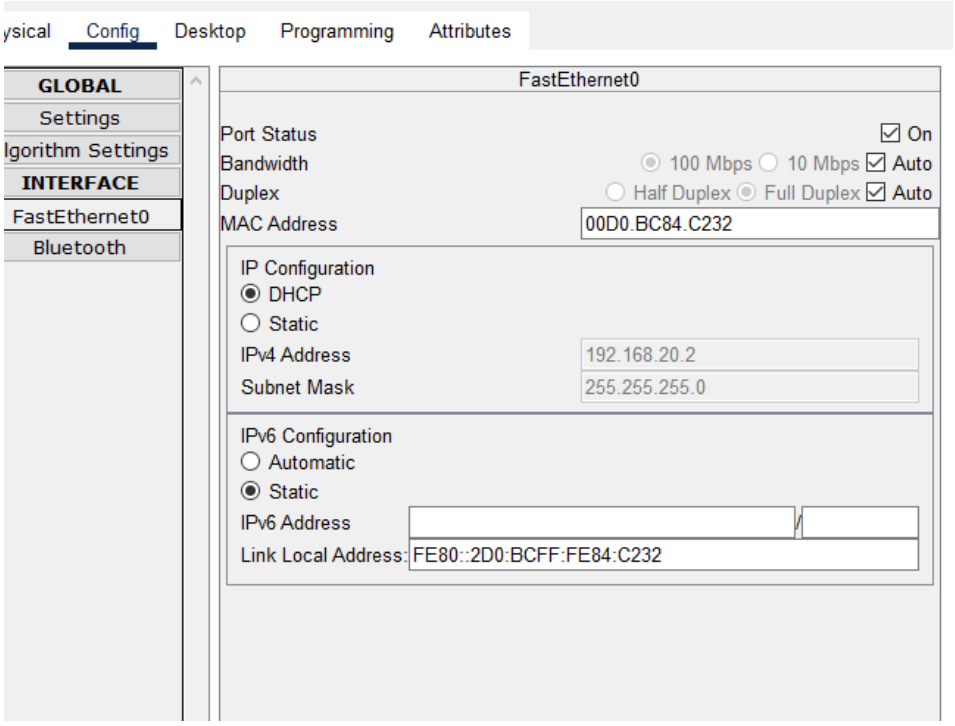

Router2
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
GigabitEthernet0/0
GigabitEthernet0/1
GigabitEthernet0/2
GigabitEthernet0/0
Port Status
On
Bandwidth
1000 Mbps
100 Mbps
10 Mbps
Auto
Duplex
Half Duplex
Full Duplex
Auto
MAC Address
0002.163E.C101
IP Configuration
IPv4 Address
192.168.0.254
Subnet Mask
255.255.255.0
Tx Ring Limit
10

Routeur Internet



2.3/Configurer vos PC

Pour les PC il suffit juste de les mettre en DHCP et les PC prendront la bonne IP automatiquement si le serveur DHCP est bien configurer



2.3/Configurer vos switch

Créer vos vlans sur le Switch

3/Créer des vlans sur les routeurs

```
Switch(config)#vlan 10
```

```
Switch(config-vlan)#name vlan10
```

Création d'un vlan sur le routeur 2

```
Router(config)#in gi0/0.10
Router(config-subif)#enca
Router(config-subif)#encapsulation d
Router(config-subif)#encapsulation dot1Q 10
Router(config-subif)#ip add
Router(config-subif)#ip address 192.168.10.254 255.255.255.0
Router(config-subif)#ip help
Router(config-subif)#ip helper-address 172.16.10.1
Router(config-subif)#
```

Faire ceci pour les 8 vlans

Voici le résultat à la fin pour le routeur 2

Pour le routeur 1

```
GigabitEthernet0/0.10 is up, line protocol is up (connected)
  Hardware is PQUICC_FEC, address is 0002.163e.c101 (bia 0002.163e.c101)
  Internet address is 192.168.10.254/24
  MTU 1500 bytes, BW 100000 Kbit, DLY 100 usec,
     reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation 802.1Q Virtual LAN, Vlan ID 10
  ARP type: ARPA, ARP Timeout 04:00:00,
  Last clearing of "show interface" counters never
GigabitEthernet0/0.20 is up, line protocol is up (connected)
  Hardware is PQUICC_FEC, address is 0002.163e.c101 (bia 0002.163e.c101)
  Internet address is 192.168.20.254/24
  MTU 1500 bytes, BW 100000 Kbit, DLY 100 usec,
     reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation 802.1Q Virtual LAN, Vlan ID 20
  ARP type: ARPA, ARP Timeout 04:00:00,
  Last clearing of "show interface" counters never
GigabitEthernet0/0.30 is up, line protocol is up (connected)
  Hardware is PQUICC_FEC, address is 0002.163e.c101 (bia 0002.163e.c101)
  Internet address is 192.168.30.254/24
  MTU 1500 bytes, BW 100000 Kbit, DLY 100 usec,
     reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation 802.1Q Virtual LAN, Vlan ID 30
  ARP type: ARPA, ARP Timeout 04:00:00,
  Last clearing of "show interface" counters never
GigabitEthernet0/0.40 is up, line protocol is up (connected)
  Hardware is PQUICC_FEC, address is 0002.163e.c101 (bia 0002.163e.c101)
  Internet address is 192.168.40.254/24
  MTU 1500 bytes, BW 100000 Kbit, DLY 100 usec,
     reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation 802.1Q Virtual LAN, Vlan ID 40
  ARP type: ARPA, ARP Timeout 04:00:00,
  Last clearing of "show interface" counters never
GigabitEthernet0/0.50 is up, line protocol is up (connected)
  Hardware is PQUICC_FEC, address is 0002.163e.c101 (bia 0002.163e.c101)
  Internet address is 192.168.50.254/24
  MTU 1500 bytes, BW 100000 Kbit, DLY 100 usec,
     reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation 802.1Q Virtual LAN, Vlan ID 50
  ARP type: ARPA, ARP Timeout 04:00:00,
  Last clearing of "show interface" counters never
```

```
     0 output buffer failures, 0 output buffers swapped out
GigabitEthernet0/0.60 is up, line protocol is up (connected)
  Hardware is PQUICC_FEC, address is 00d0.ffc7.8b01 (bia 00d0.ffc7.8b01)
  Internet address is 172.16.10.254/24
  MTU 1500 bytes, BW 100000 Kbit, DLY 100 usec,
     reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation 802.1Q Virtual LAN, Vlan ID 60
  ARP type: ARPA, ARP Timeout 04:00:00,
  Last clearing of "show interface" counters never
GigabitEthernet0/0.70 is up, line protocol is up (connected)
  Hardware is PQUICC_FEC, address is 00d0.ffc7.8b01 (bia 00d0.ffc7.8b01)
  Internet address is 172.16.20.254/24
  MTU 1500 bytes, BW 100000 Kbit, DLY 100 usec,
     reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation 802.1Q Virtual LAN, Vlan ID 70
  ARP type: ARPA, ARP Timeout 04:00:00,
  Last clearing of "show interface" counters never
GigabitEthernet0/0.80 is up, line protocol is up (connected)
  Hardware is PQUICC_FEC, address is 00d0.ffc7.8b01 (bia 00d0.ffc7.8b01)
  Internet address is 172.16.30.254/24
  MTU 1500 bytes, BW 100000 Kbit, DLY 100 usec,
     reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation 802.1Q Virtual LAN, Vlan ID 80
  ARP type: ARPA, ARP Timeout 04:00:00,
  Last clearing of "show interface" counters never
GigabitEthernet0/0.90 is up, line protocol is up (connected)
  Hardware is PQUICC_FEC, address is 00d0.ffc7.8b01 (bia 00d0.ffc7.8b01)
  Internet address is 192.168.90.254/24
  MTU 1500 bytes, BW 100000 Kbit, DLY 100 usec,
```

Guide Admin

Pour supprimer une vlan il suffit juste de faire **no vlan [numéro vlan]**

```
Switch#conf t
Enter configuration commands, one per lin
Switch(config)#no vlan 50
```

Pour supprimer une interface il suffit juste de faire no interface [numéro de l'interface]

```
Router(config)#no in
Router(config)#no interface 0/0.10
```

Conclusion

Ce tp nous a permis de comprendre comment monter une architecture réseau virtuelle sur le logiciel packet tracer pour pouvoir le réaliser dans la réalité.

Nous avons essayé de mettre en place des ACL sur les Vlans, mais nous avons rencontré des problèmes sur les vlans pour autoriser seulement l'accès au requête DHCP et DNS.