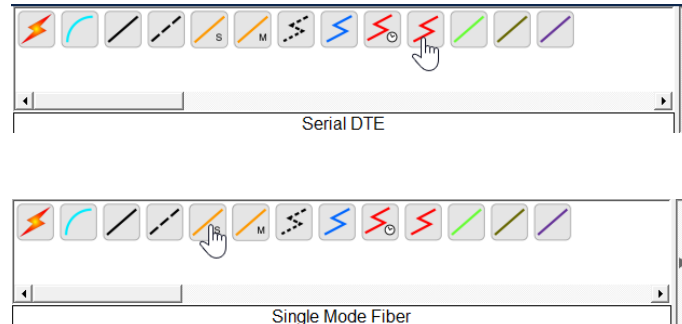


TP N° 5

1. C'est Quoi un cable **Serie** et un cable **Fibre**:

Cable

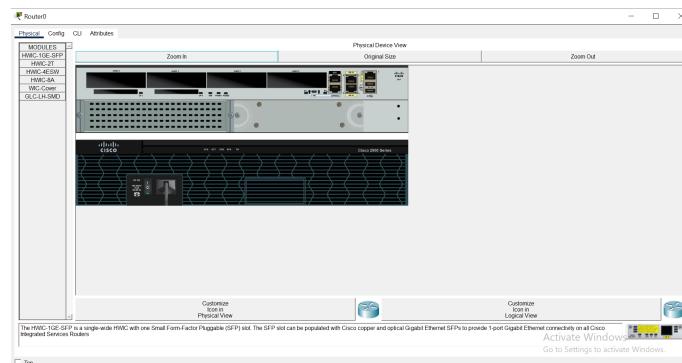
- **Serie** : un cable qui simule les connections **WAN** entre routeurs.
- **Fibre** : un cable qui utilise des fils de verre pour transmettre des données sous forme de lumiere.

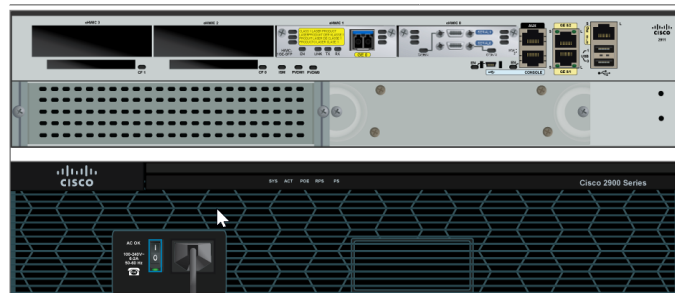
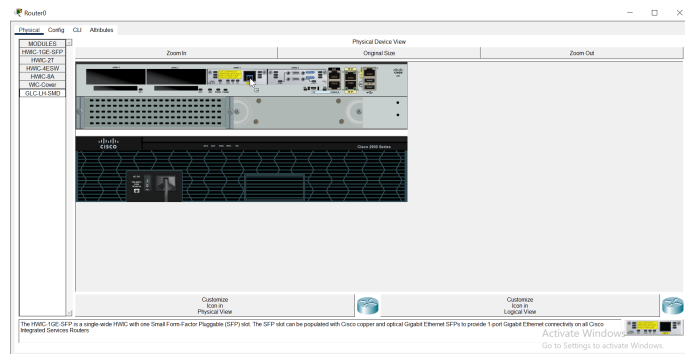
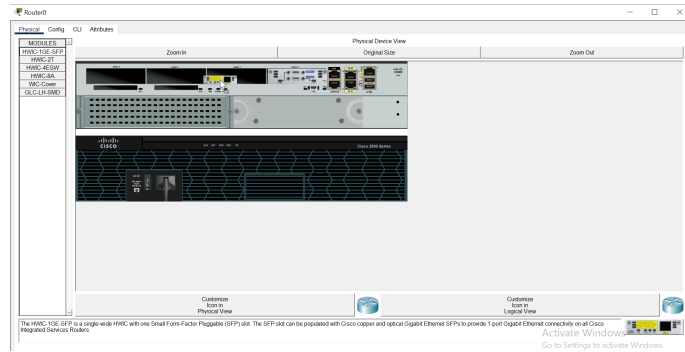
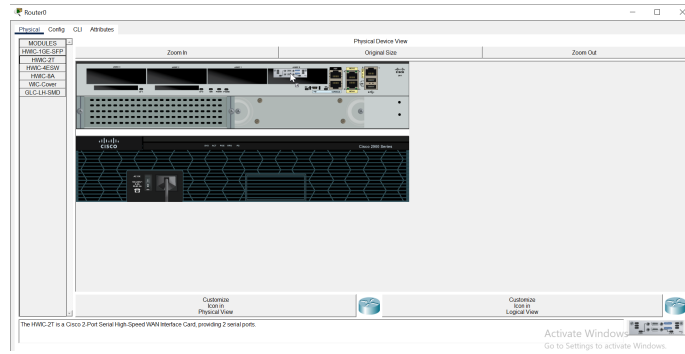


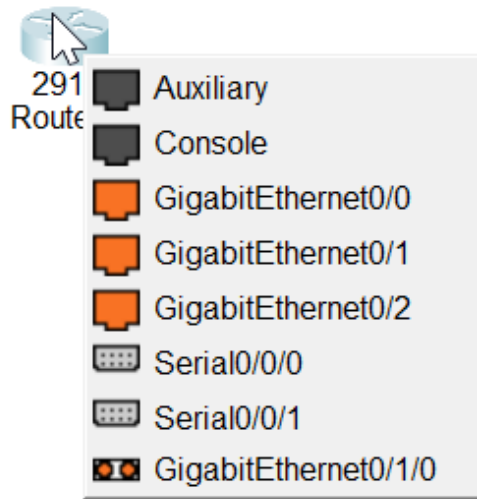
2. Comment ajouter les ports Serie et fibre dans un routeur?:

Ajouter Ports

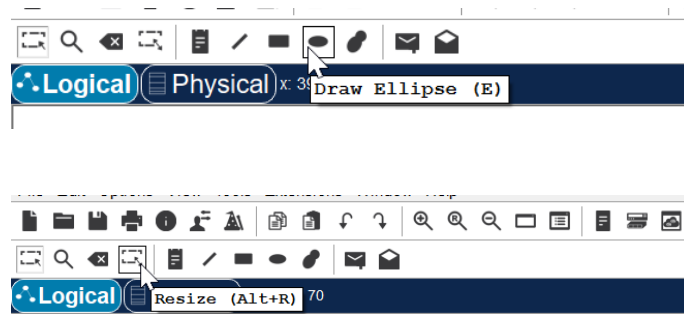
- Click sur le routeur
- Eteint le routeur
- Ajouter le module **HWIC-2T** pour ajouter le port **Serie**
- Ajouter le module **HWIC-1G-SFP**
- Ajouter le module **GLC-LH-SMD** sur **HWIC-1G-SFP** pour ajouter le port **Fibre**
- Allumer le routeur.



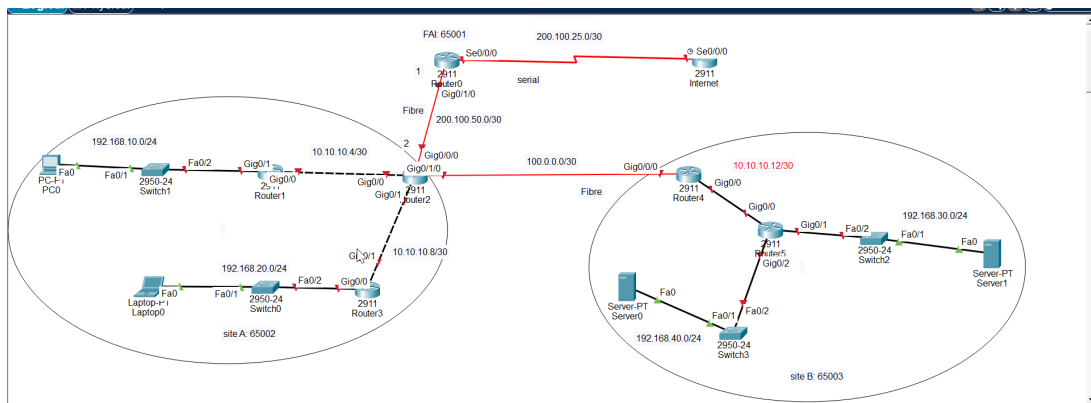




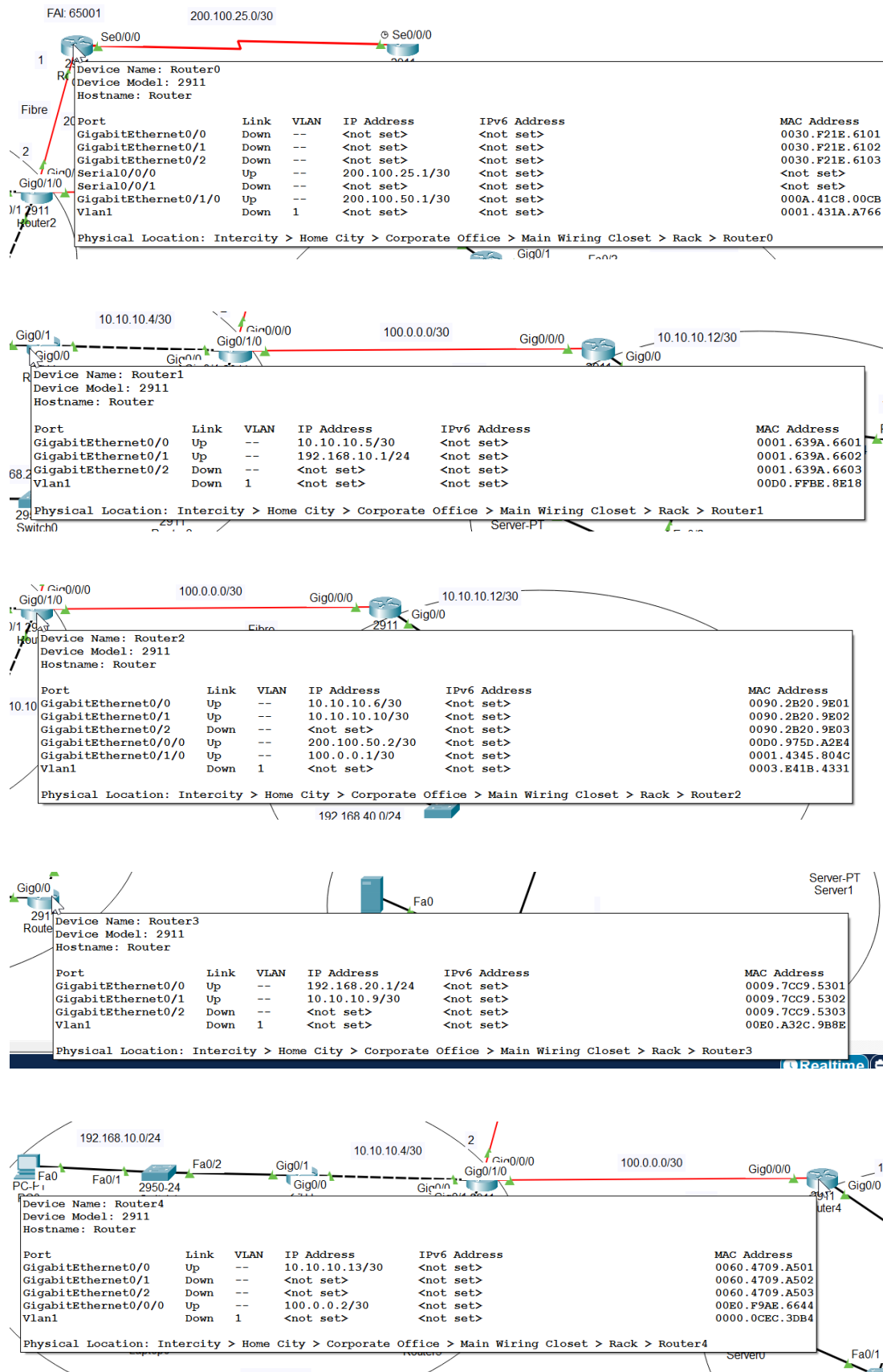
3. Comment ajouter Des ellipse et ajuster sa taille ?

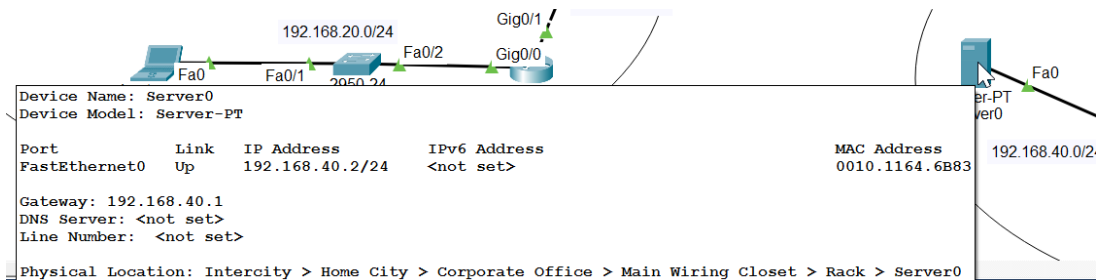
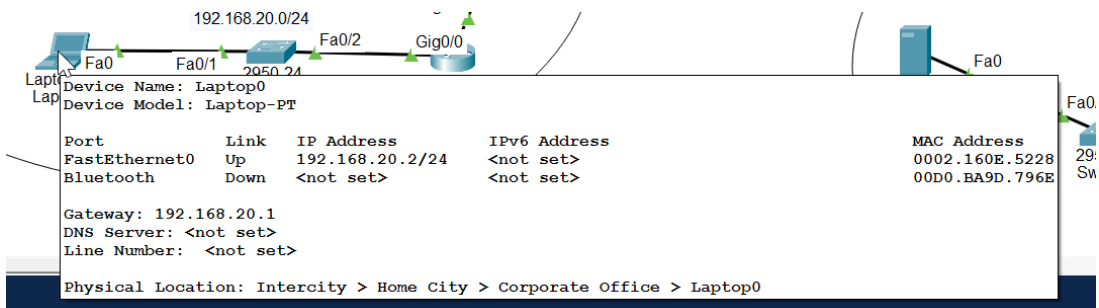
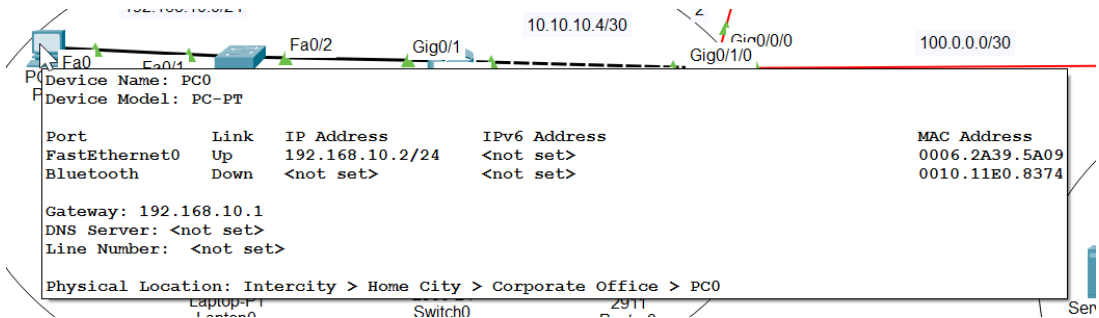
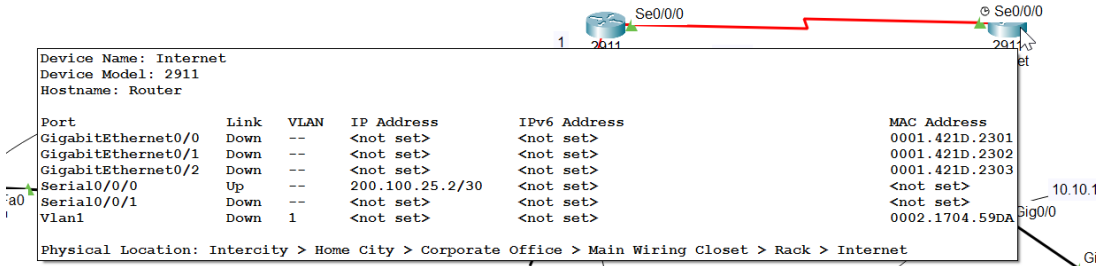
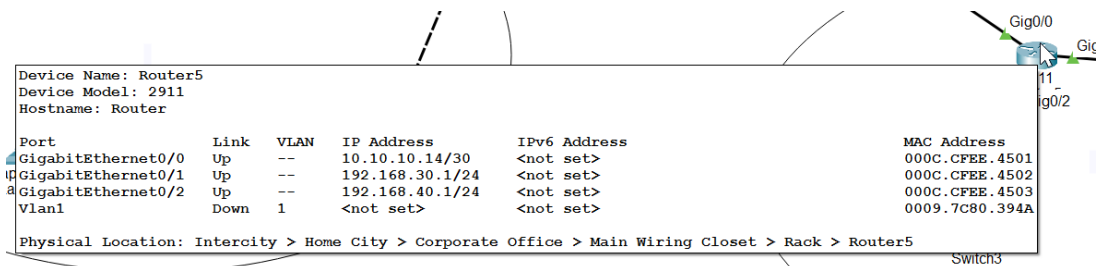


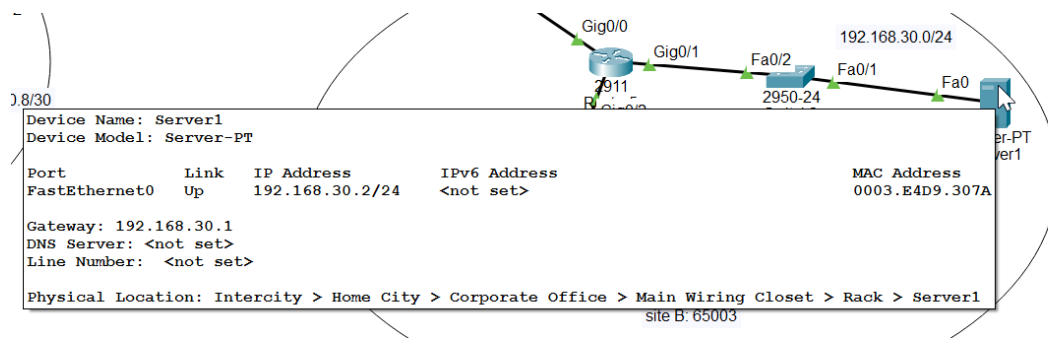
4. Faite la topologie suivants:



5. Faite l'adressage:







6. Configurez l'OSPF (en mode interface) au niveau des sites A et B:

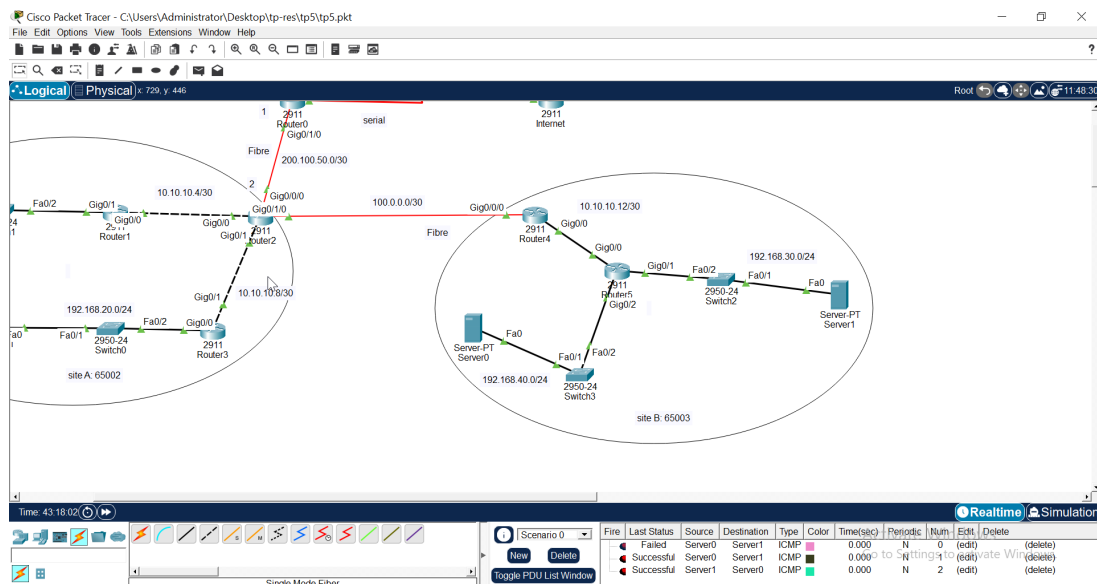
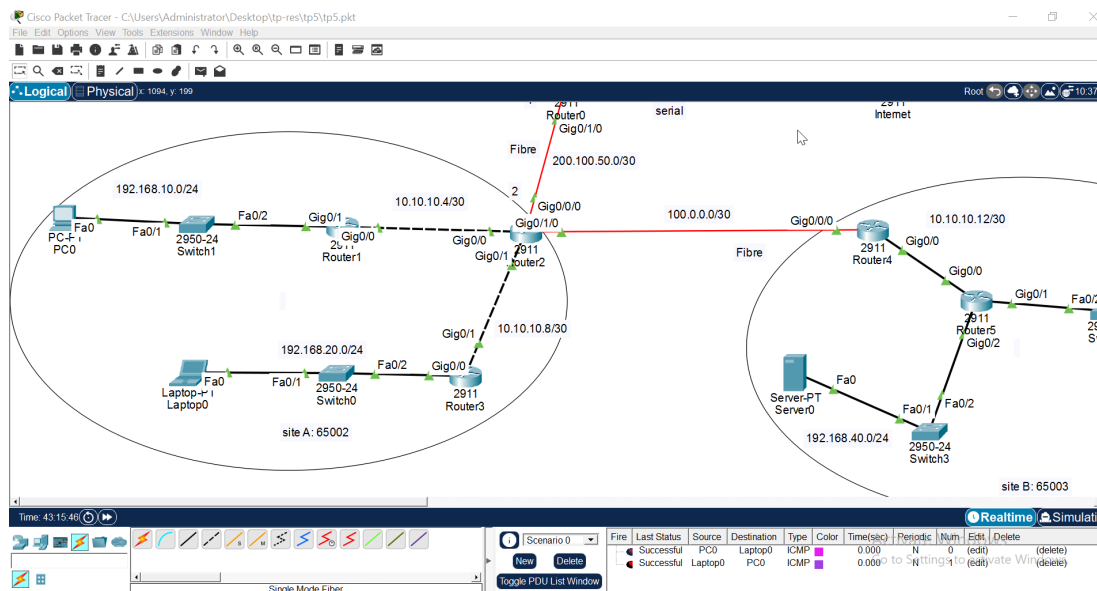
```
Router1
Physical Config CLI Attributes
IOS Command Line Interface
Router(config)#int g0/0
Router(config-if)#ip ospf 1 area 0
Router(config-if)#int g0/1
Router(config-if)#ip ospf 1 area 0

Router2
Physical Config CLI Attributes
IOS Command Line Interface
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#int g0/0
Router(config-if)#ip ospf 1 area 0
Router(config-if)#exit
Router(config)#int g0
00:50:37: %OSPF-5-ADJCHG: Process 1, Nbr 192.168.10.1 on GigabitEthernet0/0 from LOADING to FULL, Loading Done
^
% Invalid input detected at '^' marker.
Router(config)#int g0/1
Router(config-if)#ip ospf 1 area 0

Router3
Physical Config CLI Attributes
IOS Command Line Interface
Router(config)#int g0/1
Router(config-if)#ip ospf 1 area 0
Router(config-if)#int g0/0
Router(config-if)#ip ospf 1 area 0

Router4
Physical Config CLI Attributes
IOS Command Line Interface
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#int g0/0
Router(config-if)#ip ospf 1 area 0
Router(config-if)#int g0/1
Router(config-if)#ip ospf 1 area 0
Router(config-if)#int g0/2
Router(config-if)#ip ospf 1 area 0
```

7. Faire un ping entre machines du meme Site (Entre Machine Site A puis Entre Machine Site B) :



8. Configurez la route par défaut sur le routeur Router0 vers internet:

```
Router0
Physical Config CLI Attributes
IOS Command Line Interface
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#ip route 0.0.0.0 0.0.0.0 200.100.25.2
Router(config)#do show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
I - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
* - candidate default, U - per-user static route, o - ODR
P - periodic downloaded static route

Gateway of last resort is 200.100.25.2 to network 0.0.0.0

200.100.25.0/24 is variably subnetted, 2 subnets, 2 masks
C
200.100.25.0/30 is directly connected, Serial0/0/0
L
200.100.50.0/24 is variably subnetted, 2 subnets, 2 masks
C
200.100.50.0/30 is directly connected, GigabitEthernet0/1/0
L
200.100.50.1/32 is directly connected, GigabitEthernet0/1/0
S* 0.0.0.0/0 [1/0] via 200.100.25.2
```

9. C'est Quoi un systeme autonome?:

Systeme Autonome

Un système autonome est un système réseau qui dispose de **edge routers** qui configurent **BGP** pour permettre la communication avec des systèmes autonomes externes.

10. C'est Quoi le protocole **BGP**?

BGP

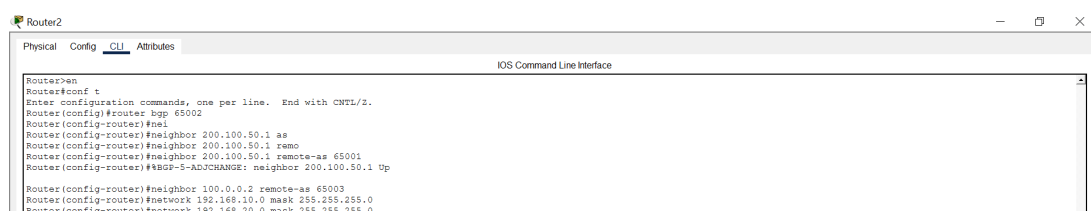
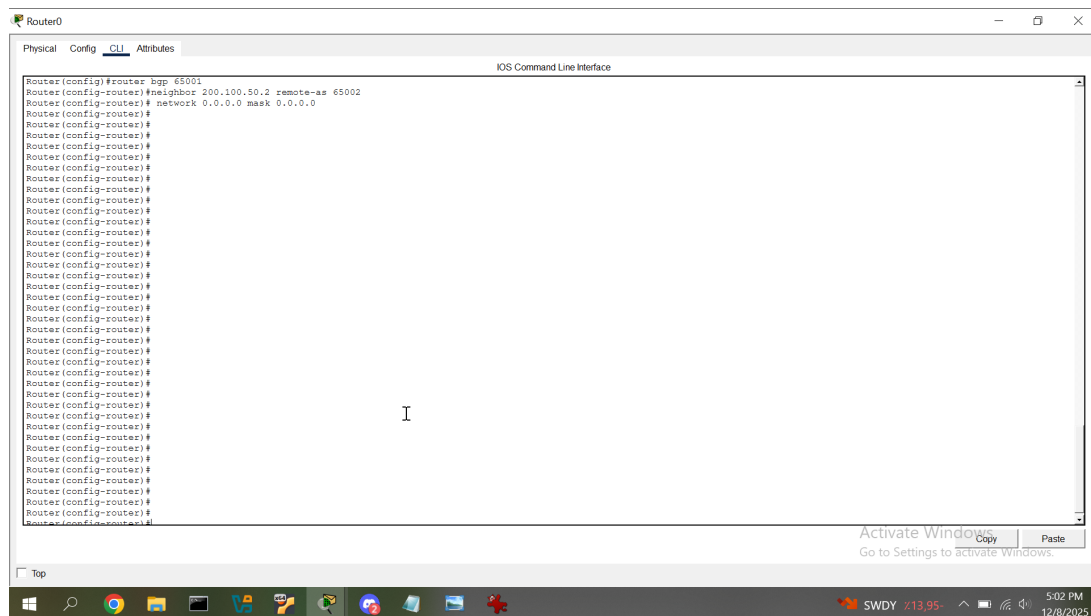
BGP est un protocole de routage dynamique qui permet la communication entre les systemes autonomes, ce dernier est configuré sur les edges routers qui vont partager leur réseaux **LAN** a ces voisins (edges routers d'autres systemes autonomes).

11. Comment Configurer BGP?

Configurer BGP

- On doit etre au niveau 3 pour activer le **BGP** avec l'ID du system autonome du routeur avec la commande : `router bgp <Current_SA_ID>`
- Apres la commande precedente on passe au niveau 4 (**config-router**)
- Pour creer une session avec un voisin on utilise la commande suivant :
`neighbor <@Neighbor> remote as <Neighbor_SA_ID>`
- Pour propager les reseaux **LAN** au voisin on utilise la commande suivant :
`network <@LAN> mask <mask>`

12. Configurez le **BGP** sur les edge routers (router0 , router2, router4)




```
Router4
Physical Config CLI Attributes
IOS Command Line Interface

Router>en
Router(config)#
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#router bgp 65003
Router(config-router)#nei
Router(config-router)#neighbor 100.0.0.1 rem
Router(config-router)#neighbor 100.0.0.1 remote-as 65002
Router(config-router)##BGP-5-ADJCHANGE: neighbor 100.0.0.1 Up
Router(config-router)#network 192.168.30.0 mask 255.255.255.0
Router(config-router)#network 192.168.40.0 mask 255.255.255.0
```

13. Configurez la route par défaut sur le routeur Router2, Router4 et la propagation OSPF:

```
Router2
Physical Config CLI Attributes
IOS Command Line Interface

Router(config-router)#exit
Router(config)#ip route 0.0.0.0 0.0.0.0 200.100.50.1
Router(config)#router ospf 1
Router(config-router)#def
Router(config-router)#default-information or
Router(config-router)#default-information originate
```

```
Router4
Physical Config CLI Attributes
IOS Command Line Interface

Router(config-router)#exit
Router(config)#ip route 0.0.0.0 0.0.0.0 100.0.0.1
Router(config)#router ospf 1
Router(config-router)#def
Router(config-router)#default-information c
Router(config-router)#default-information originate
```

14. Affichez les tables de routage des différents routeurs :

```
Router0
Physical Config CLI Attributes
IOS Command Line Interface

Router>en
Router#show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
* - candidate default, U - per-user static route, o - ODR
P - periodic downloaded static route

Gateway of last resort is 200.100.25.2 to network 0.0.0.0

B 192.168.10.0/24 [20/0] via 200.100.50.2, 00:00:00
B 192.168.20.0/24 [20/0] via 200.100.50.2, 00:00:00
B 192.168.30.0/24 [20/0] via 200.100.50.2, 00:00:00
B 192.168.40.0/24 [20/0] via 200.100.50.2, 00:00:00
C 200.100.25.0/24 is variably subnetted, 2 subnets, 2 masks
C 200.100.25.0/30 is directly connected, Serial0/0/0
L 200.100.25.1/32 is directly connected, Serial0/0/0
C 200.100.50.0/24 is variably subnetted, 2 subnets, 2 masks
C 200.100.50.0/30 is directly connected, GigabitEthernet0/1/0
L 200.100.50.1/32 is directly connected, GigabitEthernet0/1/0
S* 0.0.0.0/0 [1/0] via 200.100.25.2
```

```
Router1
Physical Config CLI Attributes
IOS Command Line Interface

Router>en
Router#show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
* - candidate default, U - per-user static route, o - ODR
P - periodic downloaded static route

Gateway of last resort is 10.10.10.6 to network 0.0.0.0

C 10.0.0.0/8 is variably subnetted, 3 subnets, 2 masks
C 10.10.10.4/30 is directly connected, GigabitEthernet0/0
L 10.10.10.5/32 is directly connected, GigabitEthernet0/0
O 10.10.10.5/30 [110/2] via 10.10.10.6, 00:12:11, GigabitEthernet0/0
C 192.168.10.0/24 is variably subnetted, 2 subnets, 2 masks
C 192.168.10.0/24 is directly connected, GigabitEthernet0/1
L 192.168.10.1/32 is directly connected, GigabitEthernet0/1
O 192.168.20.0/24 [110/3] via 10.10.10.6, 00:12:11, GigabitEthernet0/0
O#2 0.0.0.0/0 [110/1] via 10.10.10.6, 00:12:11, GigabitEthernet0/0
```

```
Router2
Physical Config CLI Attributes
IOS Command Line Interface

Router>en
Router#show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
* - candidate default, U - per-user static route, o - ODR
P - periodic downloaded static route

Gateway of last resort is 200.100.50.1 to network 0.0.0.0

C 10.0.0.0/8 is variably subnetted, 4 subnets, 2 masks
C 10.10.10.4/30 is directly connected, GigabitEthernet0/0
L 10.10.10.6/32 is directly connected, GigabitEthernet0/0
C 10.10.10.5/30 is directly connected, GigabitEthernet0/1
L 10.10.10.10/32 is directly connected, GigabitEthernet0/1
C 100.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C 100.0.0.0/30 is directly connected, GigabitEthernet0/1/0
L 100.0.0.1/32 is directly connected, GigabitEthernet0/1/0
O 192.168.10.0/24 [110/2] via 10.10.10.5, 00:12:41, GigabitEthernet0/0
O 192.168.20.0/24 [110/2] via 10.10.10.5, 00:12:41, GigabitEthernet0/1
B 192.168.30.0/24 [20/0] via 100.0.0.2, 00:00:00
B 192.168.40.0/24 [20/0] via 100.0.0.2, 00:00:00
C 200.100.50.0/24 is variably subnetted, 2 subnets, 2 masks
C 200.100.50.0/30 is directly connected, GigabitEthernet0/0/0
L 200.100.50.2/32 is directly connected, GigabitEthernet0/0/0
S* 0.0.0.0/0 [1/0] via 200.100.50.1
```

