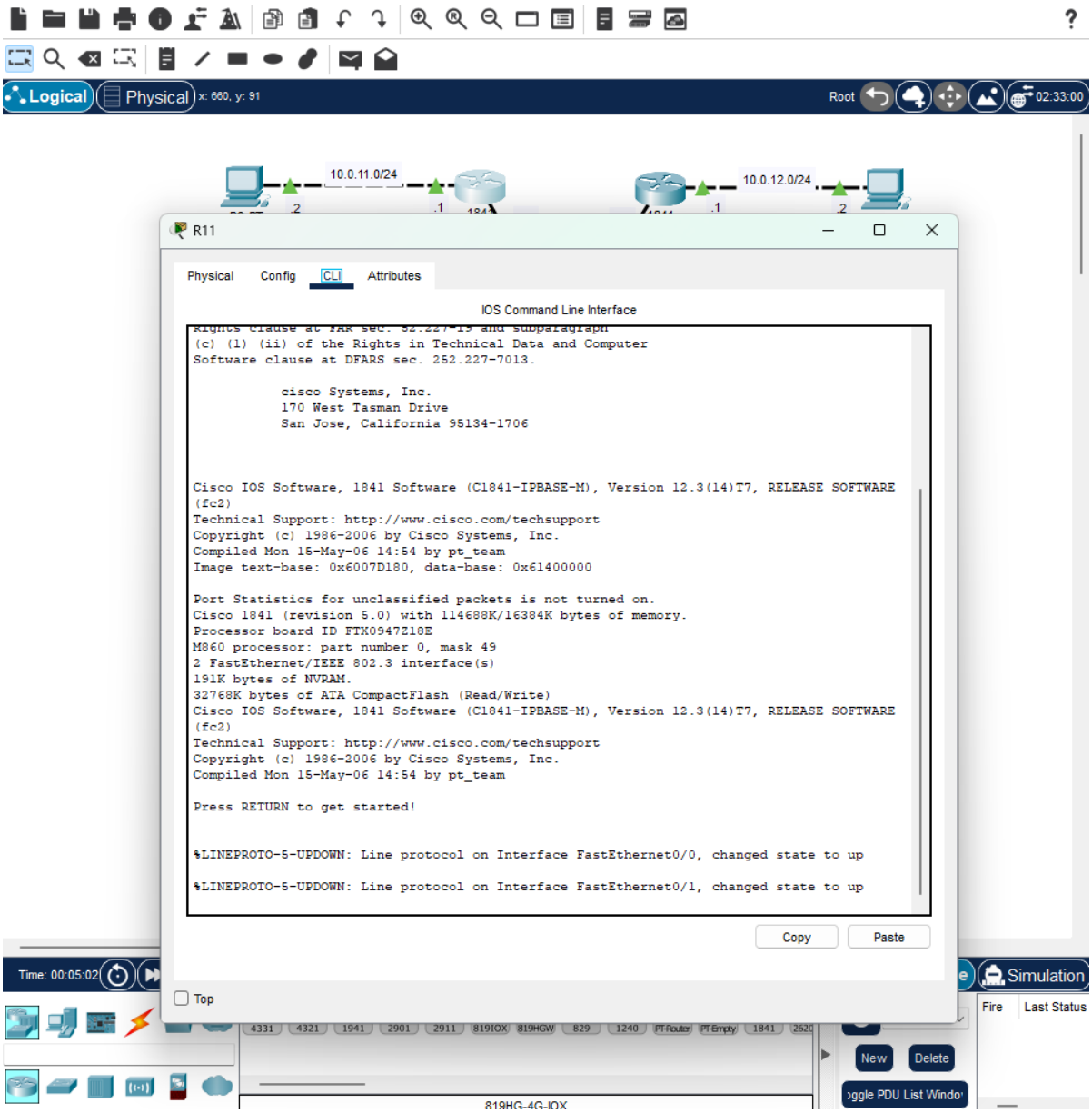
Fleury Timéo

TP6 : Routage statique

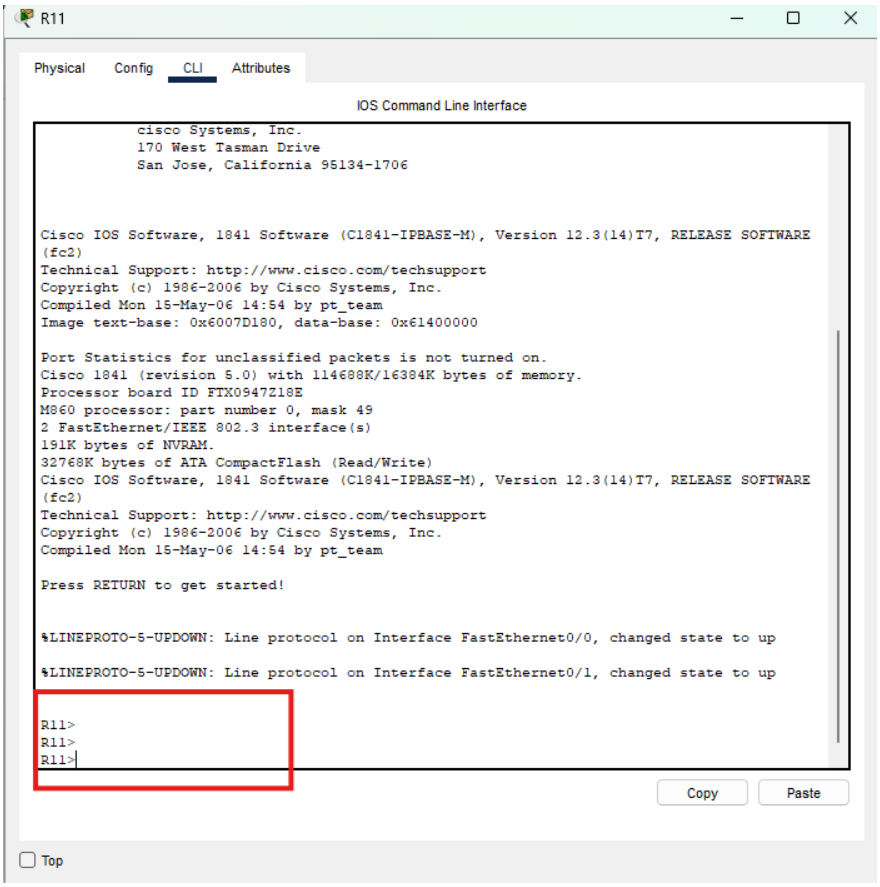
Table des matières

1 Visualisation de la table de routage.

→ on **c**lique une fois sur le routeur **R11**, puis on sélectionne l'onglet **CLI**



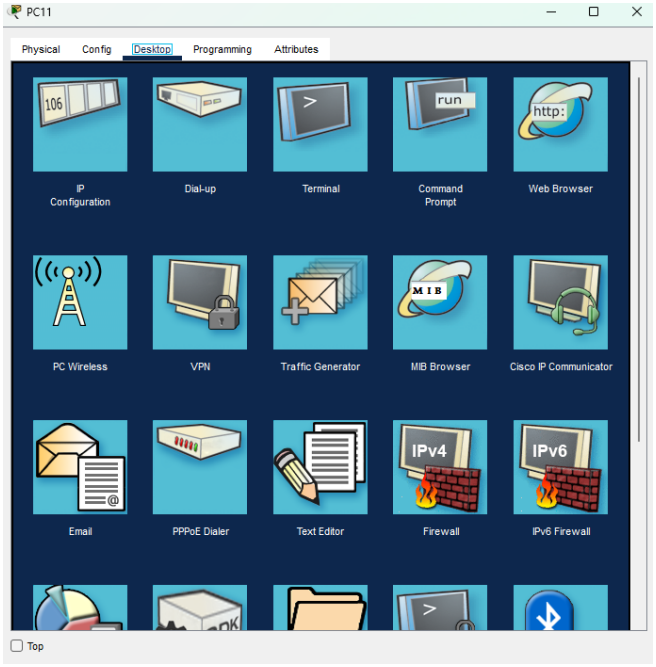
→



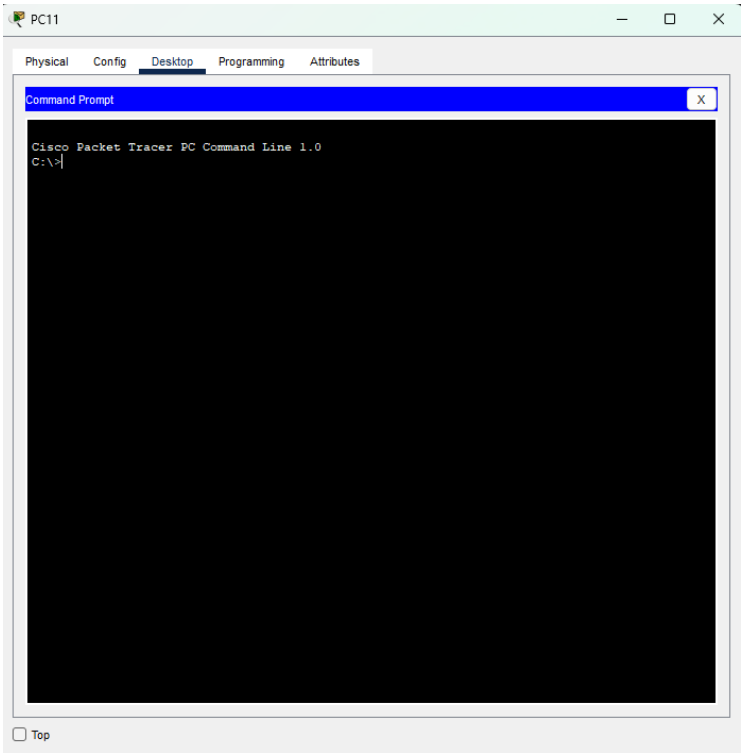
→ On tape la commande **`sh ip route`** , on obtient :

```
R11>
R11>
R11>sh ip route
Codes: C - connected, S - static, I - IGRP, 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 not set

     10.0.0.0/24 is subnetted, 2 subnets
C       10.0.8.0 is directly connected, FastEthernet0/0
C       10.0.11.0 is directly connected, FastEthernet0/1

R11>
```

→ On clique sur **PC11**, puis on activez l'onglet **Desktop** (Bureau)



→ On sélectionne **commande Prompt** (Invite de commande)



→ Maintenant on tape plusieurs commandes **`ping`** de manière à tester toutes les interfaces qui séparent **PC11** de **PC12**

```
C:\>ping 10.0.11.1

Pinging 10.0.11.1 with 32 bytes of data:

Reply from 10.0.11.1: bytes=32 time<1ms TTL=255
Reply from 10.0.11.1: bytes=32 time<1ms TTL=255
Reply from 10.0.11.1: bytes=32 time<1ms TTL=255

Ping statistics for 10.0.11.1:
    Packets: Sent = 3, Received = 3, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

Control-C
^C
C:\>ping 10.0.8.11

Pinging 10.0.8.11 with 32 bytes of data:

Reply from 10.0.8.11: bytes=32 time<1ms TTL=255
Reply from 10.0.8.11: bytes=32 time<1ms TTL=255
Reply from 10.0.8.11: bytes=32 time<1ms TTL=255

Ping statistics for 10.0.8.11:
    Packets: Sent = 3, Received = 3, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

Control-C
^C
C:\>
```

R11 côté réseau 11

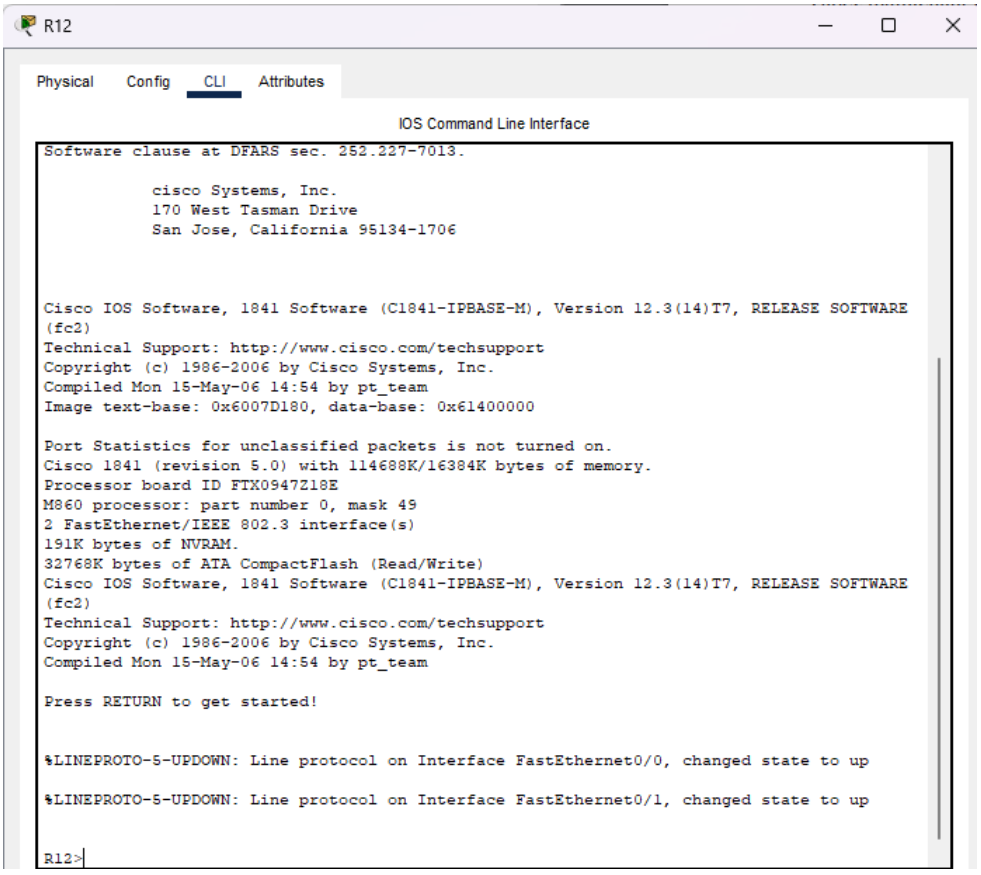
R11 côté réseau 8

→ on tape maintenant la commande **`ping 10.0.8.12`**

```
C:\>ping 10.0.8.12

Pinging 10.0.8.12 with 32 bytes of data:

Request timed out.

Ping statistics for 10.0.8.12:
    Packets: Sent = 2, Received = 0, Lost = 2 (100% loss),

Control-C
^C
C:\>
```

2 Ajout d'une route statique sur R12

→ On ouvre le prompt de **R12**



→ On passe en mode privilège avec la commande **`enable`** ou ici **`en`**

```
R12>en
R12#
```

→Pour pouvoir passer en mode configuration on entre la commande **`conf t`** soit **`configure terminal`**

```
R12>en
R12#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R12(config)#
```

→ A présent on configure une nouvelle route sur le routeur en respectant l'ordre suivant : **réseau de destination, masque, adresse du prochain saut**

```
R12#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R12(config)#ip route 10.0.11.0 255.255.255.0 10.0.8.1
R12(config)#
```

→ On affiche les configuration en cours du routeur avec **`sh run`** et on vérifie que la route est bien configuré

```
ip classless
ip route 10.0.11.0 255.255.255.0 10.0.8.11
!
ip flow-export version 9
!
```

Ici elle est bien configuré

→On le vérifie aussi grâce **sh ip route**

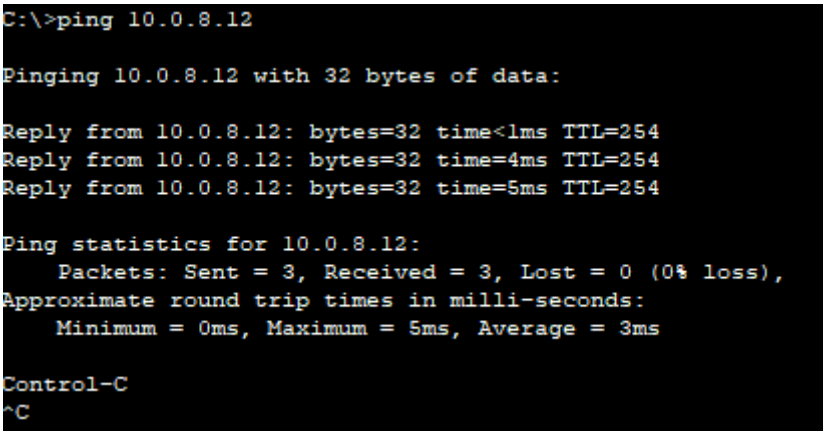
```
R12#sh ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       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 not set

     10.0.0.0/24 is subnetted, 3 subnets
C       10.0.8.0 is directly connected, FastEthernet0/0
S       10.0.11.0 [1/0] via 10.0.8.11
C       10.0.12.0 is directly connected, FastEthernet0/1
```

→ Par la suit on veut enregistrer la configuration en effectuant la commande

```
R12#copy run start
Destination filename [startup-config]?
Building configuration...
[OK]
```

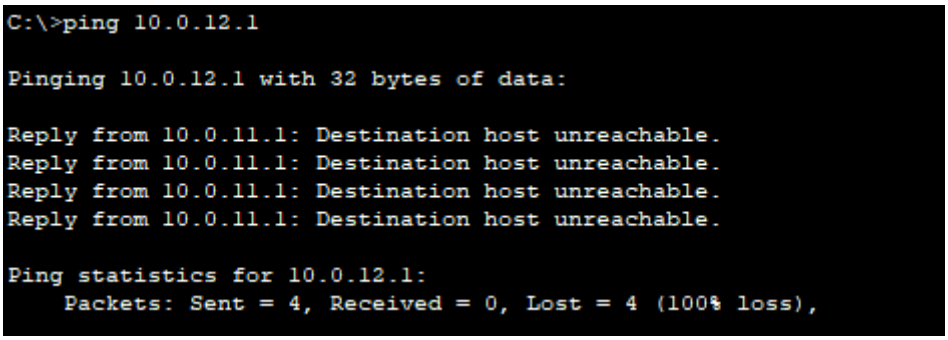
3 Ajout d'une route statique sur R11.

→ On va maintenant reprendre notre série de **`ping`** là où elle s'est arrêté. On retourne donc sur le **PC11** dans l'onglet **Desktop** et on clique sur **Command Prompt** afin de taper la commande **`ping 10.0.8.12`**



On a donc règle le problème

→ On fait maintenant un **`ping 10.0.12.1`**



Les packets ne passent pas

→ On vérifie si **R11**(la passerelle de **PC11**) connaît le réseau 10.0.12.0/24 avec **`sh ip route`** sur **R11**

```
R11>sh ip route
Codes: C - connected, S - static, I - IGRP, 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 not set

     10.0.0.0/24 is subnetted, 2 subnets
C       10.0.8.0 is directly connected, FastEthernet0/0
C       10.0.11.0 is directly connected, FastEthernet0/1
```

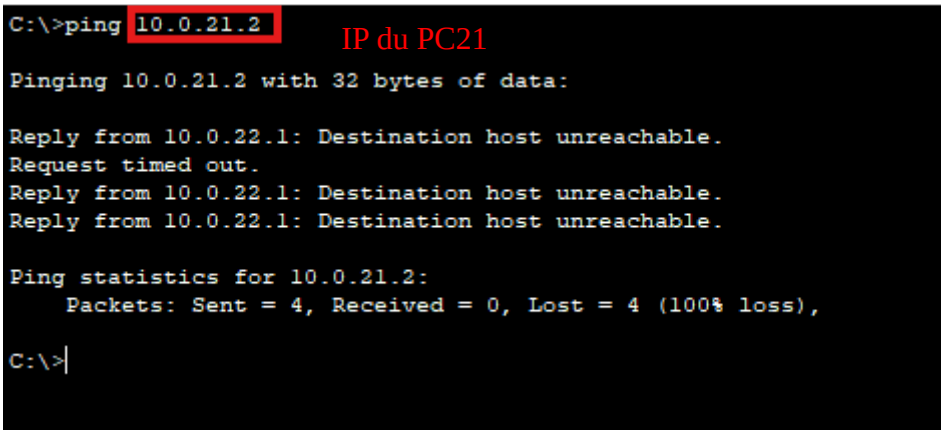
On voit que **R11** ne connaît pas le réseau 10.0.12.0/24

→ Maintenant on ajoute donc la route dans le routeur R11 avec la commande **`conf t`** puis on affiche la table de routage afin de vérifier la présence de notre nouvelle route avec **`sh ip route`**

```
R11>
R11>en
R11#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R11(config)#ip route 10.0.12.0 255.255.255.0 10.0.8.12
R11(config)#exit
R11#
%SYS-5-CONFIG_I: Configured from console by console
sh ip route
Codes: C - connected, S - static, I - IGRP, 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 not set

     10.0.0.0/24 is subnetted, 3 subnets
C       10.0.8.0 is directly connected, FastEthernet0/0
C       10.0.11.0 is directly connected, FastEthernet0/1
S       10.0.12.0 [1/0] via 10.0.8.12

R11#
```

4 A vous de jouer.

→ Dans un premier temps on vérifie que PC22 puisse joindre PC21



On observe qu'on obtient 4 packets perdue donc aucune connectivité

→ Il faut maintenant ajouter les routes convenables afin que les deux machines puisse communiquer entre elles

→ On commence par vérifié les routes déjà entré dans le routeur R21 avec **`un sh ip route`** :

```
R21#sh route
          ^
% Invalid input detected at '^' marker.

R21#sh ip route
Codes: C - connected, S - static, I - IGRP, 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 not set

     10.0.0.0/24 is subnetted, 2 subnets
C       10.0.16.0 is directly connected, FastEthernet0/0
C       10.0.21.0 is directly connected, FastEthernet0/1
```

les seul routes entré sont les réseaux directement connecté au routeur

→ On doit donc entrer la bonne route grâce au mode de configuration dans lequel on bascule avec **`conf t`** puis on configure les routes

```
R21# sh ip route
Codes: C - connected, S - static, I - IGRP, 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 not set

     10.0.0.0/24 is subnetted, 3 subnets
C       10.0.16.0 is directly connected, FastEthernet0/0
C       10.0.21.0 is directly connected, FastEthernet0/1
S       10.0.22.0 [1/0] via 10.0.16.22
```

on a maintenant configuré pour le R21

→ On fait un ping pour vérifié

```
C:\>ping 10.0.22.2

Pinging 10.0.22.2 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 10.0.22.2:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

Le ping ne marche pas c'est normal car le R22 ne peut pas renvoyer le ping en réponse sans connaître la route

→ On fait donc pareil avec le R22

```
R22# sh ip route
Codes: C - connected, S - static, I - IGRP, 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 not set

     10.0.0.0/24 is subnetted, 3 subnets
C       10.0.16.0 is directly connected, FastEthernet0/0
S       10.0.21.0 [1/0] via 10.0.16.21
C       10.0.22.0 is directly connected, FastEthernet0/1
```

→ On refait un ping qui devrai marcher

```
C:\>ping 10.0.22.2

Pinging 10.0.22.2 with 32 bytes of data:

Reply from 10.0.22.2: bytes=32 time<1ms TTL=126
Reply from 10.0.22.2: bytes=32 time<1ms TTL=126
Reply from 10.0.22.2: bytes=32 time<1ms TTL=126
Reply from 10.0.22.2: bytes=32 time<1ms TTL=126

Ping statistics for 10.0.22.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

→ On vas vérifié quels PC peuvent communiquer avec PC11 en effectuant des ping

→ PC11 vers PC12

```
C:\>ping 10.0.12.2

Pinging 10.0.12.2 with 32 bytes of data:

Reply from 10.0.12.2: bytes=32 time<1ms TTL=126
Reply from 10.0.12.2: bytes=32 time<1ms TTL=126
Reply from 10.0.12.2: bytes=32 time<1ms TTL=126
Reply from 10.0.12.2: bytes=32 time<1ms TTL=126

Ping statistics for 10.0.12.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

Le ping marche donc c’est bon pour eux

→ PC11 vers PC21

```
C:\>ping 10.0.21.2

Pinging 10.0.21.2 with 32 bytes of data:

Reply from 10.0.11.1: Destination host unreachable.
Reply from 10.0.11.1: Destination host unreachable.
Reply from 10.0.11.1: Destination host unreachable.
Reply from 10.0.11.1: Destination host unreachable.

Ping statistics for 10.0.21.2:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

Le ping ne fonctionne pas il faudra donc configurer la route

→ PC11 vers PC22

```
C:\>ping 10.0.22.2

Pinging 10.0.22.2 with 32 bytes of data:

Reply from 10.0.11.1: Destination host unreachable.
Reply from 10.0.11.1: Destination host unreachable.
Reply from 10.0.11.1: Destination host unreachable.
Reply from 10.0.11.1: Destination host unreachable.

Ping statistics for 10.0.22.2:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

Le ping ne fonctionne pas aussi

→ En résumé les routes de PC11 vers PC21 et PC11 vers PC22 ne fonctionne pas on va donc devoir les configurer

→ Pour PC11 vers PC21

→ On passe en **`conf t`** et on entre la route

```
R11#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R11(config)#ip route 10.0.21.0 255.255.255.0 10.0.8.8
R11(config)#
```

on fait de même avec les routeur sur le chemin

```
R8>en
R8#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R8(config)#ip route 10.0.21.0 255.255.255.0 10.0.1.16
R8(config)#exit
R8#
%SYS-5-CONFIG_I: Configured from console by console
```

```
R16>en
R16#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R16(config)#ip route 10.0.21.0 255.255.255.0 10.0.16.21
R16(config)#exit
R16#
%SYS-5-CONFIG_I: Configured from console by console
```

→ Il faut aussi le faire dans le sens inverse puis on effectuera un ping

```
C:\>ping 10.0.21.2

Pinging 10.0.21.2 with 32 bytes of data:

Reply from 10.0.21.2: bytes=32 time=1ms TTL=124
Reply from 10.0.21.2: bytes=32 time=15ms TTL=124
Reply from 10.0.21.2: bytes=32 time=1ms TTL=124
Reply from 10.0.21.2: bytes=32 time=1ms TTL=124

Ping statistics for 10.0.21.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 15ms, Average = 4ms
```

Il sont maintenant connecté

→ PC 11 vers PC22

→ On fait pareil mais pour l'adresse de PC22

Voilà ce qu'on obtient par la suite

```
C:\>ping 10.0.22.2

Pinging 10.0.22.2 with 32 bytes of data:

Reply from 10.0.22.2: bytes=32 time=1ms TTL=124
Reply from 10.0.22.2: bytes=32 time=1ms TTL=124
Reply from 10.0.22.2: bytes=32 time=2ms TTL=124
Reply from 10.0.22.2: bytes=32 time=3ms TTL=124

Ping statistics for 10.0.22.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 3ms, Average = 1ms
```

→ On vérifie maintenant quels PC peuvent communiquer avec PC12 en effectuant des ping

→ PC12 vers PC11 marche déjà comme on a vu plus tôt

→ PC12 vers PC21

```
C:\>ping 10.0.21.2

Pinging 10.0.21.2 with 32 bytes of data:

Reply from 10.0.12.1: Destination host unreachable.
Reply from 10.0.12.1: Destination host unreachable.
Reply from 10.0.12.1: Destination host unreachable.
Reply from 10.0.12.1: Destination host unreachable.

Ping statistics for 10.0.21.2:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

→ PC12 vers PC22

```
C:\>ping 10.0.22.2

Pinging 10.0.22.2 with 32 bytes of data:

Reply from 10.0.12.1: Destination host unreachable.
Reply from 10.0.12.1: Destination host unreachable.
Reply from 10.0.12.1: Destination host unreachable.
Reply from 10.0.12.1: Destination host unreachable.

Ping statistics for 10.0.22.2:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

→ En résumé on doit faire les route de PC12 vers PC21 et PC12 vers PC22

→ On procède exactement comme les routes faites plus tôt

→ PC12 vers PC21 après configuration

```
C:\>ping 10.0.21.2

Pinging 10.0.21.2 with 32 bytes of data:

Reply from 10.0.21.2: bytes=32 time=1ms TTL=124
Reply from 10.0.21.2: bytes=32 time=2ms TTL=124
Reply from 10.0.21.2: bytes=32 time=1ms TTL=124
Reply from 10.0.21.2: bytes=32 time=1ms TTL=124

Ping statistics for 10.0.21.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 2ms, Average = 1ms
```

→ PC12 vers PC22 après configuration

```
C:\>ping 10.0.22.2

Pinging 10.0.22.2 with 32 bytes of data:

Reply from 10.0.22.2: bytes=32 time=1ms TTL=124
Reply from 10.0.22.2: bytes=32 time=3ms TTL=124
Reply from 10.0.22.2: bytes=32 time=1ms TTL=124
Reply from 10.0.22.2: bytes=32 time=1ms TTL=124

Ping statistics for 10.0.22.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 3ms, Average = 1ms
```

→ Désormais tout les PC peuvent communiquer entre eux