

TP6 : Routage statique

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1. Visualisation de la table de routage.

Utilisation de la commande sh ip route :

```
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
```

ping 10.0.11.1 et ping 10.0.8.11 :

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

Ping statistics for 10.0.11.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

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

Ping statistics for 10.0.8.11:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

Tout ce passe bien les ping marche

ping 10.0.8.12 :

```
C:\>ping 10.0.8.12

Pinging 10.0.8.12 with 32 bytes of data:

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

Ping statistics for 10.0.8.12:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

2. Ajout d'une route statique sur R12.

Utilisation de la commande en (enable) pour passer en mode privilégié :

```
R12>en
R12#|
```

Utilisation de la commande conf t pour passer en mode configuration :

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

Utilisation de la commande ip route 10.0.11.0 255.255.255.0 10.0.8.11 :

```
R12 (config)#ip route 10.0.11.0 255.255.255.0 10.0.8.11
```

Utilisation de la commande exit et sh run :

Enregistrement de la configuration a l'aide de la commande copy run start :

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

3. Ajout d'une route statique sur R11.

Utilisation de la commande ping 10.0.8.12 :

```
C:\>ping 10.0.8.12

Pinging 10.0.8.12 with 32 bytes of data:

Reply from 10.0.8.12: bytes=32 time<1ms TTL=254
Reply from 10.0.8.12: bytes=32 time<1ms TTL=254
Reply from 10.0.8.12: bytes=32 time<1ms TTL=254
Reply from 10.0.8.12: bytes=32 time<1ms TTL=254

Ping statistics for 10.0.8.12:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

Cette fois ci le ping fonctionne suite a l'intervention sur R12

Utilisation de la commande ping 10.0.12.1 :

```
C:\>ping 10.0.12.1

Pinging 10.0.12.1 with 32 bytes of data:

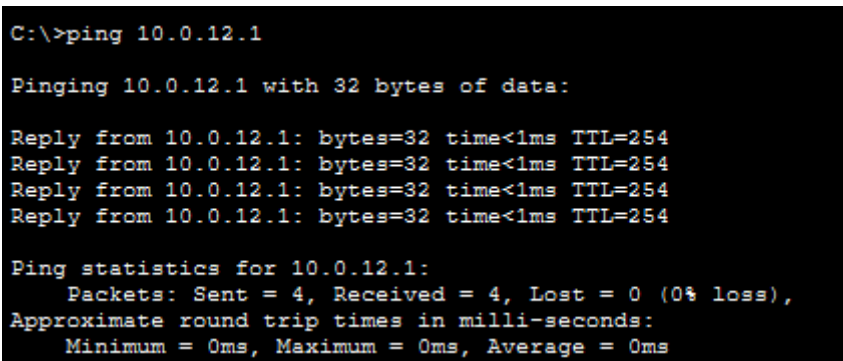
Reply from 10.0.11.1: Destination host unreachable.
Reply from 10.0.11.1: Destination host unreachable.
Reply from 10.0.11.1: Destination host unreachable.
Reply from 10.0.11.1: Destination host unreachable.

Ping statistics for 10.0.12.1:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

Le ping ne marche pas

Utilisation de la commande en, conf t et ip route 10.0.12.0 255.255.255.0 10.0.8.12 :

```
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
```



```
C:\>ping 10.0.12.1

Pinging 10.0.12.1 with 32 bytes of data:

Reply from 10.0.12.1: bytes=32 time<1ms TTL=254
Reply from 10.0.12.1: bytes=32 time<1ms TTL=254
Reply from 10.0.12.1: bytes=32 time<1ms TTL=254
Reply from 10.0.12.1: bytes=32 time<1ms TTL=254

Ping statistics for 10.0.12.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

Le ping fonctionne désormais

Utilisation des commandes exit et sh ip route :

```
R11(config)#exit
R11#
%SYS-5-CONFIG_I: Configured from console by console

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, 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
```

Utilisation de la commande copy run start :

```
R11#copy run start
Destination filename [startup-config]?
Building configuration...
[OK]
```

4. A vous de jouer.

Utilisation des commandes `en` (enable) et `conf t` pour passer en mode privilégié et mode configuration :

```
R22>en
R22#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R22 (config)#
```

Utilisation de la commande `ip route 10.0.21.0 255.255.255.0 10.0.16.21` :

```
R22 (config)#ip route 10.0.21.0 255.255.255.0 10.0.16.21
```

Utilisation des commande `exit` et `sh run` :

```
:
!
!
!
!
!
ip ssh version 1
!
!
spanning-tree mode pvst
!
!
!
!
!
interface FastEthernet0/0
ip address 10.0.16.22 255.255.255.0
duplex auto
speed auto
!
interface FastEthernet0/1
ip address 10.0.22.1 255.255.255.0
duplex auto
speed auto
!
interface Vlan1
no ip address
shutdown
!
router rip
!
ip classless
ip route 10.0.21.0 255.255.255.0 10.0.16.21
```

Utilisation de la commande sh ip route :

```
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
```

Utilisation de la commande copy run start :

```
R22#copy run start
Destination filename [startup-config]?
Building configuration...
[OK]
```

Ping 10.0.16.22 depuis le PC21 :

```
C:\>ping 10.0.16.22

Pinging 10.0.16.22 with 32 bytes of data:

Request timed out.
Reply from 10.0.16.22: bytes=32 time<1ms TTL=254
Reply from 10.0.16.22: bytes=32 time<1ms TTL=254
Reply from 10.0.16.22: bytes=32 time<1ms TTL=254

Ping statistics for 10.0.16.22:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

Il fonctionne parfaitement

Ping 10.0.22.1 depuis le PC21

```
C:\>ping 10.0.22.1

Pinging 10.0.22.1 with 32 bytes of data:

Reply from 10.0.21.1: Destination host unreachable.
Reply from 10.0.21.1: Destination host unreachable.
Reply from 10.0.21.1: Destination host unreachable.
Reply from 10.0.21.1: Destination host unreachable.

Ping statistics for 10.0.22.1:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>
```

Cela ne fonctionne pas encore et c'est normal

Utilisation des commandes suivantes : en, conf t, ip route 10.0.22.0 255.255.255.0 10.0.16.22, exit, sh ip route et copy run start, le ping devrait donc fonctionner a présent :

```
R21>en
R21#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R21(config)#ip route 10.0.22.0 255.255.255.0 10.0.16.22
R21(config)#exit
R21#
%SYS-5-CONFIG_I: Configured from console by console

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

R21#copy run start
Destination filename [startup-config]?
Building configuration...
[OK]
R21#
```

```

C:\>ping 10.0.22.1

Pinging 10.0.22.1 with 32 bytes of data:

Reply from 10.0.22.1: bytes=32 time=6ms TTL=254
Reply from 10.0.22.1: bytes=32 time<1ms TTL=254
Reply from 10.0.22.1: bytes=32 time<1ms TTL=254
Reply from 10.0.22.1: bytes=32 time<1ms TTL=254

Ping statistics for 10.0.22.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 6ms, Average = 1ms

```

Il fonctionne parfaitement

Connexion des 4PC entre eux :

```

R11>en
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

spanning-tree mode pvst
!
!
!
!
!
!
interface FastEthernet0/0
 ip address 10.0.8.11 255.255.255.0
 duplex auto
 speed auto
!
interface FastEthernet0/1
 ip address 10.0.11.1 255.255.255.0
 duplex auto
 speed auto
!
interface Vlan1
 no ip address
 shutdown
!
router rip
!
ip classless
ip route 10.0.12.0 255.255.255.0 10.0.8.12
ip route 10.0.21.0 255.255.255.0 10.0.8.8
!

```

```

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, 4 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
S       10.0.21.0 [1/0] via 10.0.8.8

R11#copy run start
Destination filename [startup-config]?
Building configuration...

```

R8

```

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 10.0.2.16
R8(config)#exit

```

```

!
spanning-tree mode pvst
!
!
!
!
!
!
interface FastEthernet0/0
ip address 10.0.1.8 255.255.255.0
duplex auto
speed auto
!
interface FastEthernet0/1
ip address 10.0.8.8 255.255.255.0
duplex auto
speed auto
!
interface Serial0/0/0
ip address 10.0.2.8 255.255.255.0
clock rate 19200
!
interface Serial0/0/1
no ip address
clock rate 2000000
shutdown
!
interface Vlan1
no ip address
shutdown
!
router rip
!
ip classless
ip route 10.0.21.0 255.255.255.0 10.0.2.16
!

```

```

R8#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, 4 subnets
C       10.0.1.0 is directly connected, FastEthernet0/0
C       10.0.2.0 is directly connected, Serial0/0/0
C       10.0.8.0 is directly connected, FastEthernet0/1
S       10.0.21.0 [1/0] via 10.0.2.16

```

```

R8#copy run start
Destination filename [startup-config]?
Building configuration...
^C

```

R16

```

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#

!
!
spanning-tree mode pvst
!
!
!
!
!
!
interface FastEthernet0/0
 ip address 10.0.1.16 255.255.255.0
 duplex auto
 speed auto
!
interface FastEthernet0/1
 ip address 10.0.16.16 255.255.255.0
 duplex auto
 speed auto
!
interface Serial0/0/0
 ip address 10.0.2.16 255.255.255.0
!
interface Serial0/0/1
 no ip address
 clock rate 2000000
 shutdown
!
interface Vlan1
 no ip address
 shutdown
!
router rip
!
 ip classless
 ip route 10.0.21.0 255.255.255.0 10.0.16.21
!

```

```

R16#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, 4 subnets
C       10.0.1.0 is directly connected, FastEthernet0/0
C       10.0.2.0 is directly connected, Serial10/0/0
C       10.0.16.0 is directly connected, FastEthernet0/1
S       10.0.21.0 [1/0] via 10.0.16.21

```

```

R16#copy run start
Destination filename [startup-config]?
Building configuration...
[OK]

```

retour

R21

```

R21>en
R21#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R21(config)#ip route 10.0.11.0 255.255.255.0 10.0.16.16
R21(config)#exit
R21#
%SYS-5-CONFIG_I: Configured from console by console

:
!
!
!
!
!
ip ssh version 1
!
!
spanning-tree mode pvst
!
!
!
!
!
interface FastEthernet0/0
 ip address 10.0.16.21 255.255.255.0
 duplex auto
 speed auto
!
interface FastEthernet0/1
 ip address 10.0.21.1 255.255.255.0
 duplex auto
 speed auto
!
interface Vlan1
 no ip address
 shutdown
!
router rip
!
ip classless
ip route 10.0.22.0 255.255.255.0 10.0.16.22
ip route 10.0.11.0 255.255.255.0 10.0.16.16
!

```

```

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, 4 subnets
S       10.0.11.0 [1/0] via 10.0.16.16
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

```

```

R21#copy run start
Destination filename [startup-config]?
Building configuration...
[OK]

```

R16

```

R16#en
R16#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R16(config)#ip route 10.0.11.0 255.255.255.0 10.0.2.8
R16(config)#exit
R16#
%SYS-5-CONFIG_I: Configured from console by console

```

```

!
spanning-tree mode pvst
!
!
!
!
!
interface FastEthernet0/0
 ip address 10.0.1.16 255.255.255.0
 duplex auto
 speed auto
!
interface FastEthernet0/1
 ip address 10.0.16.16 255.255.255.0
 duplex auto
 speed auto
!
interface Serial0/0/0
 ip address 10.0.2.16 255.255.255.0
!
interface Serial0/0/1
 no ip address
 clock rate 2000000
 shutdown
!
interface Vlan1
 no ip address
 shutdown
!
router rip
!
 ip classless
 ip route 10.0.21.0 255.255.255.0 10.0.16.21
 ip route 10.0.11.0 255.255.255.0 10.0.2.8
!

```

```
R16#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, 5 subnets
C    10.0.1.0 is directly connected, FastEthernet0/0
C    10.0.2.0 is directly connected, Serial0/0/0
S    10.0.11.0 [1/0] via 10.0.2.8
C    10.0.16.0 is directly connected, FastEthernet0/1
S    10.0.21.0 [1/0] via 10.0.16.21
```

```
R16#copy run start
Destination filename [startup-config]?
Building configuration
```

R8

```
R8>en
R8#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R8(config)#ip route 10.0.11.0 255.255.255.0 10.0.8.11
R8(config)#exit
R8#
%SYS-5-CONFIG_I: Configured from console by console
```

```

spanning-tree mode pvst
!
!
!
!
!
!
interface FastEthernet0/0
 ip address 10.0.1.8 255.255.255.0
 duplex auto
 speed auto
!
interface FastEthernet0/1
 ip address 10.0.8.8 255.255.255.0
 duplex auto
 speed auto
!
interface Serial0/0/0
 ip address 10.0.2.8 255.255.255.0
 clock rate 19200
!
interface Serial0/0/1
 no ip address
 clock rate 2000000
 shutdown
!
interface Vlan1
 no ip address
 shutdown
!
router rip
!
 ip classless
 ip route 10.0.21.0 255.255.255.0 10.0.2.16
 ip route 10.0.11.0 255.255.255.0 10.0.8.11
!
 ip flow-export version 9
!
```

```

R8#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, 5 subnets
C       10.0.1.0 is directly connected, FastEthernet0/0
C       10.0.2.0 is directly connected, Serial0/0/0
C       10.0.8.0 is directly connected, FastEthernet0/1
S       10.0.11.0 [1/0] via 10.0.8.11
S       10.0.21.0 [1/0] via 10.0.2.16

R8#copy run start
Destination filename [startup-config]?
Building configuration...
[OK]

```

maintenant si on essaye de ping le PC21 depuis le PC11 cela marche parfaitement :

```

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=9ms TTL=124
Reply from 10.0.21.2: bytes=32 time=6ms 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 = 9ms, Average = 4ms

```

On va donc refaire la même chose pour tous les PC :

R12

```

R12>en
R12#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R12(config)#ip route 10.0.21.0 255.255.255.0 10 10.0.8.8
                                     ^
% Invalid input detected at '^' marker.

R12(config)#ip route 10.0.21.0 255.255.255.0 10.0.8.8
R12(config)#ip route 10.0.22.0 255.255.255.0 10.0.8.8
R12(config)#exit
R12#
%SYS-5-CONFIG_I: Configured from console by console

```

```

!
!
!
!
!
ip ssh version 1
!
!
spanning-tree mode pvst
!
!
!
!
!
interface FastEthernet0/0
 ip address 10.0.8.12 255.255.255.0
 duplex auto
 speed auto
!
interface FastEthernet0/1
 ip address 10.0.12.1 255.255.255.0
 duplex auto
 speed auto
!
interface Vlan1
 no ip address
 shutdown
!
router rip
!
ip classless
ip route 10.0.11.0 255.255.255.0 10.0.8.11
ip route 10.0.21.0 255.255.255.0 10.0.8.8
ip route 10.0.22.0 255.255.255.0 10.0.8.8
!

```

```
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, 5 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
S       10.0.21.0 [1/0] via 10.0.8.8
S       10.0.22.0 [1/0] via 10.0.8.8

```

```
R12#copy run start
```

```
Destination filename [startup-config]?
```

```
Building configuration...
```

```
[OK]
```

R8

```
R8>en
R8#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R8(config)#ip route 10.0.22.0 255.255.255.0 10.0.2.16
R8(config)#exit
R8#
%SYS-5-CONFIG_I: Configured from console by console
```

```
!
!
!
!
!
!
interface FastEthernet0/0
 ip address 10.0.1.8 255.255.255.0
 duplex auto
 speed auto
!
interface FastEthernet0/1
 ip address 10.0.8.8 255.255.255.0
 duplex auto
 speed auto
!
interface Serial10/0/0
 ip address 10.0.2.8 255.255.255.0
 clock rate 19200
!
interface Serial10/0/1
 no ip address
 clock rate 2000000
 shutdown
!
interface Vlan1
 no ip address
 shutdown
!
router rip
!
 ip classless
 ip route 10.0.21.0 255.255.255.0 10.0.2.16
 ip route 10.0.11.0 255.255.255.0 10.0.8.11
 ip route 10.0.22.0 255.255.255.0 10.0.2.16
!
```

```
R8#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, 6 subnets
C      10.0.1.0 is directly connected, FastEthernet0/0
C      10.0.2.0 is directly connected, Serial0/0/0
C      10.0.8.0 is directly connected, FastEthernet0/1
S      10.0.11.0 [1/0] via 10.0.8.11
S      10.0.21.0 [1/0] via 10.0.2.16
S      10.0.22.0 [1/0] via 10.0.2.16
```

```
R8#copy run start
```

```
Destination filename [startup-config]?
Building configuration...
[OK]
```

R16

```
R16>en
R16#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R16(config)#ip route 10.0.22.0 255.255.255.0 10.0.16.22
R16(config)#ip route 10.0.22.0 255.255.255.0 10.0.16.21
R16(config)#exit
R16#
%SYS-5-CONFIG_I: Configured from console by console

!
!
!
!
!
!
interface FastEthernet0/0
 ip address 10.0.1.16 255.255.255.0
 duplex auto
 speed auto
!
interface FastEthernet0/1
 ip address 10.0.16.16 255.255.255.0
 duplex auto
 speed auto
!
interface Serial0/0/0
 ip address 10.0.2.16 255.255.255.0
!
interface Serial0/0/1
 no ip address
 clock rate 2000000
 shutdown
!
interface Vlan1
 no ip address
 shutdown
!
router rip
!
 ip classless
 ip route 10.0.21.0 255.255.255.0 10.0.16.21
 ip route 10.0.11.0 255.255.255.0 10.0.2.8
 ip route 10.0.22.0 255.255.255.0 10.0.16.22
 ip route 10.0.22.0 255.255.255.0 10.0.16.21
!
```



```

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, 5 subnets
S       10.0.11.0 [1/0] via 10.0.16.16
S       10.0.12.0 [1/0] via 10.0.16.16
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

R22#copy run start
Destination filename [startup-config]?
Building configuration...
[OK]

```

R16

```

R16>en
R16#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R16(config)#ip route 10.0.11.0 255.255.255.0 10.0.2.8
R16(config)#ip route 10.0.12.0 255.255.255.0 10.0.2.8
R16(config)#exit
R16#
%SYS-5-CONFIG_I: Configured from console by console

:
:
:
interface FastEthernet0/0
 ip address 10.0.1.16 255.255.255.0
 duplex auto
 speed auto
!
interface FastEthernet0/1
 ip address 10.0.16.16 255.255.255.0
 duplex auto
 speed auto
!
interface Serial10/0/0
 ip address 10.0.2.16 255.255.255.0
!
interface Serial10/0/1
 no ip address
 clock rate 2000000
 shutdown
!
interface Vlan1
 no ip address
 shutdown
!
router rip
!
 ip classless
 ip route 10.0.21.0 255.255.255.0 10.0.16.21
 ip route 10.0.11.0 255.255.255.0 10.0.2.8
 ip route 10.0.22.0 255.255.255.0 10.0.16.22
 ip route 10.0.22.0 255.255.255.0 10.0.16.21
 ip route 10.0.12.0 255.255.255.0 10.0.2.8
!
 ip flow-export version 9
!
:

```

```

R16#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, 7 subnets
C       10.0.1.0 is directly connected, FastEthernet0/0
C       10.0.2.0 is directly connected, Serial0/0/0
S       10.0.11.0 [1/0] via 10.0.2.8
S       10.0.12.0 [1/0] via 10.0.2.8
C       10.0.16.0 is directly connected, FastEthernet0/1
S       10.0.21.0 [1/0] via 10.0.16.21
S       10.0.22.0 [1/0] via 10.0.16.22
                [1/0] via 10.0.16.21

```

```

R16#copy run start
Destination filename [startup-config]?
Building configuration...
[OK]

```

R8

```

R8>en
R8#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R8(config)#ip route 10.0.11.0 255.255.255.0 10.0.8.11
R8(config)#ip route 10.0.12.0 255.255.255.0 10.0.8.12
R8(config)#exit
R8#
%SYS-5-CONFIG_I: Configured from console by console

```

```

!
!
!
!
interface FastEthernet0/0
ip address 10.0.1.8 255.255.255.0
duplex auto
speed auto
!
interface FastEthernet0/1
ip address 10.0.8.8 255.255.255.0
duplex auto
speed auto
!
interface Serial0/0/0
ip address 10.0.2.8 255.255.255.0
clock rate 19200
!
interface Serial0/0/1
no ip address
clock rate 2000000
shutdown
!
interface Vlan1
no ip address
shutdown
!
router rip
!
ip classless
ip route 10.0.21.0 255.255.255.0 10.0.2.16
ip route 10.0.11.0 255.255.255.0 10.0.8.11
ip route 10.0.22.0 255.255.255.0 10.0.2.16
ip route 10.0.12.0 255.255.255.0 10.0.8.12
!
ip flow-export version 9

```

```

R8#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, 7 subnets
C       10.0.1.0 is directly connected, FastEthernet0/0
C       10.0.2.0 is directly connected, Serial0/0/0
C       10.0.8.0 is directly connected, FastEthernet0/1
S       10.0.11.0 [1/0] via 10.0.8.11
S       10.0.12.0 [1/0] via 10.0.8.12
S       10.0.21.0 [1/0] via 10.0.2.16
S       10.0.22.0 [1/0] via 10.0.2.16

R8#copy run start
Destination filename [startup-config]?
Building configuration...
[OK]

```

Oublie qui faisait que la connexion ne marcher pas

```

R11>en
R11#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R11(config)#ip route 10.0.22.0 255.255.255.0 10.0.8.8

R21#en
R21#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R21(config)#ip route 10.0.11.0 255.255.255.0 10.0.16.16
R21(config)#ip route 10.0.12.0 255.255.255.0 10.0.16.16
R21(config)#exit
R21#
%SYS-5-CONFIG_I: Configured from console by console

R21#copy run start
Destination filename [startup-config]?
Building configuration...
[OK]

```

Grâce a cette correction ils peuvent désormais tous communiquer sans aucun problème