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1. Visualisation de la table de routage

- Affichage de la table de routage de R11 à l'aide de `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
```

- On ping depuis la machine PC11 plusieurs cartes réseaux. Seulement celles connectées directement répondent.

```
Cisco Packet Tracer PC Command Line 1.0
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

C:\>ping 10.0.21.1

Pinging 10.0.21.1 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.
```

2. Ajout d'une route statique sur R12

- On se connecte à R12. On rentre en mode privilégié. On passe en mode de configuration (R12(config)#), on saisit la commande ip route afin de rajouter dans la table de routage de R12 le réseau 10.0.11.0 avec pour passerelle le route ayant pour adresse 10.0.8.11 (R11)

```
R12>en
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 10.0.8.11
```

- On tape exit afin de sortir du mode configuration, ainsi que sh run afin d'afficher la configuration actuelle du routeur. --More-- nous indique qu'il y a plusieurs page.

```
R12(config)#exit
R12#
%SYS-5-CONFIG_I: Configured from console by console
sh run
Building configuration...

Current configuration : 646 bytes
!
version 12.3
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname R12
!
!
!
!
!
!
!
!
ip cef
no ipv6 cef
!
!
--More-- |
```

On recherche donc le nouveaux chemin que l'on vient d'entrer

```

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 flow-export version 9
!
!
!
!
!
!
--More--

```

- On tape la commande `sh ip route` afin d'afficher la table de routage de R12. On constate l'apparition d'une route statique (Celle que l'on a rentré précédemment)

```

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

```

- On enregistre la configuration à l'aide de la commande `ip run start`.

```

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

```

3. Ajout d'une route statique sur R11

- On ping 10.0.8.12, cela marche, cependant le ping sur 10.0.12.1 lui ne fonctionne pas, car R11 ne connaît pas le réseau 10.0.12.0

```
C:\>ping 10.0.8.12

Pinging 10.0.8.12 with 32 bytes of data:

Request timed out.
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 = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

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.
Request timed out.

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

C:\>
```

- On se connecte à R11 afin de rajouter le réseau 10.0.12.0 dans sa table de routage, et on réeffectue un ping vers 10.0.12.1

```
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)#
```

```
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
```

- On affiche la table de routage de R11 après modification

```

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#

- On sauvegarde les modifications effectuées dans R11

```

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

```

Deuxième partie :

- Ajout de toutes les routes depuis R21

```

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)#ip route 10.0.1.0 255.255.255.0 10.0.16.16
R21(config)#ip route 10.0.8.0 255.255.255.0 10.0.16.16
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

```

```

Pinging 10.0.11.2 with 32 bytes of data:

Reply from 10.0.11.2: bytes=32 time<1ms TTL=124
Reply from 10.0.11.2: bytes=32 time<1ms TTL=124
Reply from 10.0.11.2: bytes=32 time<1ms TTL=124
Reply from 10.0.11.2: bytes=32 time<1ms TTL=124

Ping statistics for 10.0.11.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 10.0.12.2

Pinging 10.0.12.2 with 32 bytes of data:

Reply from 10.0.12.2: bytes=32 time<1ms TTL=124
Reply from 10.0.12.2: bytes=32 time<1ms TTL=124
Reply from 10.0.12.2: bytes=32 time<1ms TTL=124
Reply from 10.0.12.2: bytes=32 time<1ms TTL=124

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

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:

```

■ Ajout de toutes les routes depuis R22

```

R22>en
R22#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R22(config)#ip route 10.0.21.0 255.255.255.0 10.0.16.21
R22(config)#ip route 10.0.1.0 255.255.255.0 10.0.16.16
R22(config)#ip route 10.0.8.0 255.255.255.0 10.0.16.16
R22(config)#ip route 10.0.11.0 255.255.255.0 10.0.16.16
R22(config)#ip route 10.0.12.0 255.255.255.0 10.0.16.16

```

```

Reply from 10.0.21.2: bytes=32 time=7ms TTL=126
Reply from 10.0.21.2: bytes=32 time<1ms TTL=126
Reply from 10.0.21.2: bytes=32 time<1ms TTL=126
Reply from 10.0.21.2: bytes=32 time<1ms TTL=126

Ping statistics for 10.0.21.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 7ms, Average = 1ms

C:\>ping 10.0.11.2

Pinging 10.0.11.2 with 32 bytes of data:

Reply from 10.0.11.2: bytes=32 time<1ms TTL=124
Reply from 10.0.11.2: bytes=32 time=1ms TTL=124
Reply from 10.0.11.2: bytes=32 time<1ms TTL=124
Reply from 10.0.11.2: bytes=32 time<1ms TTL=124

Ping statistics for 10.0.11.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms

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=124
Reply from 10.0.12.2: bytes=32 time<1ms TTL=124
Reply from 10.0.12.2: bytes=32 time<1ms TTL=124
Reply from 10.0.12.2: bytes=32 time=1ms TTL=124

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 = 1ms, Average = 0ms

```

■ Ajout de toutes les routes depuis R11

```

R11(config)#ip route 10.0.1.0 255.255.255.0 10.0.8.8
R11(config)#ip route 10.0.16.0 255.255.255.0 10.0.8.8
R11(config)#ip route 10.0.21.0 255.255.255.0 10.0.8.8
R11(config)#ip route 10.0.22.0 255.255.255.0 10.0.8.8

```

```

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

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<1ms TTL=124
Reply from 10.0.21.2: bytes=32 time=5ms 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 = 0ms, Maximum = 5ms, Average = 1ms

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<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),

```

■ Ajout de toutes les routes depuis R12

```

R12(config)#ip route 10.0.1.0 255.255.255.0 10.0.8.8
R12(config)#ip route 10.0.16.0 255.255.255.0 10.0.8.8
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

```

```

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=1ms 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 = 0ms, Maximum = 1ms, Average = 0ms

C:\>ping 10.0.22.2

Pinging 10.0.22.2 with 32 bytes of data:

Request timed out.
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<1ms TTL=124

Ping statistics for 10.0.22.2:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 10.0.11.2

Pinging 10.0.11.2 with 32 bytes of data:

Request timed out.
Reply from 10.0.11.2: bytes=32 time<1ms TTL=126
Reply from 10.0.11.2: bytes=32 time<1ms TTL=126
Reply from 10.0.11.2: bytes=32 time=5ms TTL=126

Ping statistics for 10.0.11.2:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),

```

■ Ajout de toutes les routes depuis R8

```

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)#ip route 10.0.16.0 255.255.255.0 10.0.1.16
R8(config)#ip route 10.0.21.0 255.255.255.0 10.0.1.16
R8(config)#ip route 10.0.22.0 255.255.255.0 10.0.1.16

```

■ Ajout de toutes les routes depuis R16

```

R16(config)#ip route 10.0.8.0 255.255.255.0 10.0.1.8
R16(config)#ip route 10.0.11.0 255.255.255.0 10.0.1.8
R16(config)#ip route 10.0.12.0 255.255.255.0 10.0.1.8
R16(config)#ip route 10.0.22.0 255.255.255.0 10.0.16.22
R16(config)#ip route 10.0.21.0 255.255.255.0 10.0.16.21

```