TP 6 – Routage statique

Sommaire

1 - Visualisation de la table de routage

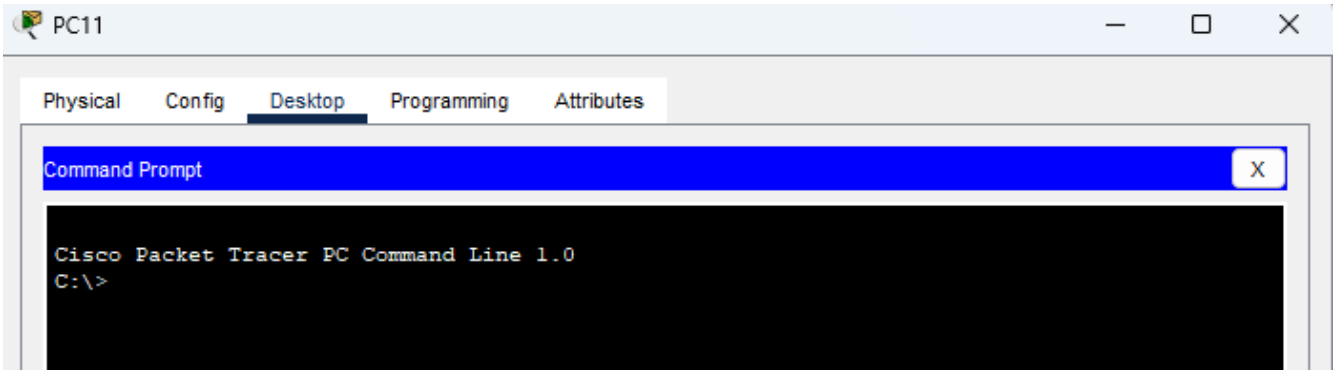
→ On clique sur le routeur **R11** puis entre la commande **sh ip route** dans l'onglet **CLI** :

```
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 rentre dans l'onglet **Desktop** de **PC11** puis on séléctionne **Command prompt** :



3

→ On **ping 10.0.11.1** et **10.0.8.11** :

```
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

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
```

***** On obtient une connectivité

→ On essaye maintenant de **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),
```

***** Il n'y a pas de connectivité

2 - Ajout d'une route statique sur R12

→ On entre dans l'onglet **CLI** du routeur **R12** puis on saisit la commande **en** pour passer en **mode privilégié** :

```
R12>en
R12#
```

→ On saisit la commande **conf t** pour passer en **mode configuration** :

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

→ On entre la commande **ip route 10.0.11.0 255.255.255.0 10.0.8.11** pour spécifier le **réseau de destination**, **le masque** et **l'adresse du prochain saut** du routeur **R12** :

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

→ On tape les commandes **exit** et **sh run** pour **quitter** le mode configuration puis **afficher** la configuration :

```
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 fait défiler la **page de configuration** jusqu'à trouver la **route** qu'on vient d'entrer :

```
ip classless
ip route 10.0.11.0 255.255.255.0 10.0.8.11
```

→ On saisit la commande **sh ip route** pour voir la route qu'on vient d'ajouter à la **table de routage** :

```
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 entre la commande **copy run start** pour **copier la configuration** :

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

3 - Ajout d'une route statique sur R11

→ On rentre dans l'onglet **Desktop** puis **Command Prompt** du **PC11** et on **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

Ping statistics for 10.0.8.12:
    Packets: Sent = 3, Received = 3, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

***** On obtient maintenant une connectivité grâce à notre intervention

→ On **ping** aussi **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.

Ping statistics for 10.0.12.1:
    Packets: Sent = 3, Received = 0, Lost = 3 (100% loss),
```

***** La requête échoue car le routeur **R11** ne connaît pas le réseau **10.0.12.0/24**

→ On entre dans l'onglet **CLI** du routeur **R11** puis on entre les commandes **en** et **conft** pour passer en mode **privilégié** et **configuration** :

```
R11>en
R11#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R11(config)#
```

→ On spécifie le **réseau de destination**, **le masque** et **l'adresse du prochain saut** du routeur **R11** avec la commande **ip route 10.0.12.0 255.255.255.0 10.0.8.12** :

```
R11(config)#ip route 10.0.12.0 255.255.255.0 10.0.8.12
```

→ On réessaye de **ping 10.0.12.1** :

```
C:\>ping 10.0.12.1

Pinging 10.0.12.1 with 32 bytes of data:

Reply from 10.0.12.1: 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 = 3, Received = 3, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

*** Les tests ping aboutissent maintenant.**

→ On quitte le mode de configuration puis on affiche à nouveau la **table de routage** :

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

→ On **enregistre** la configuration :

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

4 – A vous de jouer

→ On ajoute les routes qui permettent à **PC22** de communiquer avec **PC21** :

```
R21(config)#ip route 10.0.22.0 255.255.255.0 10.0.16.22
```

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

```
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=7ms 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 = 7ms, Average = 1ms
```

→ On ajoute toutes les autres routes sur tous les routeurs pour faire communiquer les 4 PC entre eux :

```
R8(config)#ip route 10.0.21.0 255.255.255.0 10.0.2.16
R8(config)#ip route 10.0.22.0 255.255.255.0 10.0.2.16
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
```

```
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
```

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

```
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)#ip route 10.0.21.0 255.255.255.0 10.0.16.21
R16(config)#ip route 10.0.22.0 255.255.255.0 10.0.16.22
```

```
R21(config)#ip route 10.0.12.0 255.255.255.0 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
```

→ On teste maintenant que les 4 PC communiquent bien entre eux à partir de **PC11** :

```
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=12ms 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

Ping statistics for 10.0.22.2:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 12ms, Average = 5ms

C:\>ping 10.0.21.2

Pinging 10.0.21.2 with 32 bytes of data:

Request timed out.
Reply from 10.0.21.2: bytes=32 time=1ms 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

Ping statistics for 10.0.21.2:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 6ms, Average = 2ms
```

```
C:\>ping 10.0.12.2

Pinging 10.0.12.2 with 32 bytes of data:

Request timed out.
Request timed out.
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 = 2, Lost = 2 (50% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```