

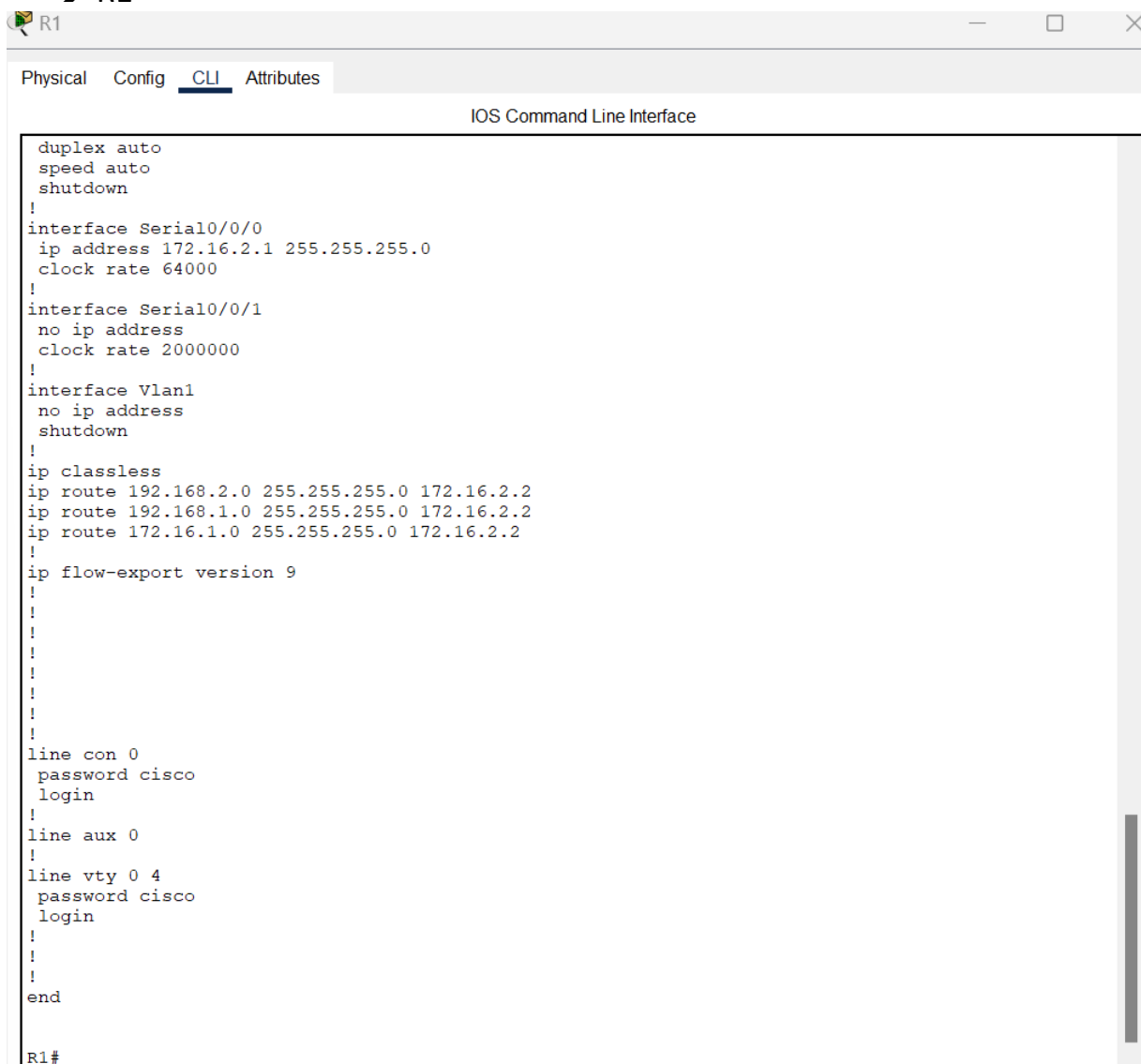
TP7 : Route statique résumée et route par défaut

I. Examen des routes statiques.

➤ Étape 1 : Consultation de la configuration

- Pour chacun des trois routeurs, on consulte la configuration actuelle du routage statique :
- Et on affiche la table de routage :

➔ R1



```
Physical Config CLI Attributes
IOS Command Line Interface

duplex auto
speed auto
shutdown
!
interface Serial0/0/0
ip address 172.16.2.1 255.255.255.0
clock rate 64000
!
interface Serial0/0/1
no ip address
clock rate 2000000
!
interface Vlan1
no ip address
shutdown
!
ip classless
ip route 192.168.2.0 255.255.255.0 172.16.2.2
ip route 192.168.1.0 255.255.255.0 172.16.2.2
ip route 172.16.1.0 255.255.255.0 172.16.2.2
!
ip flow-export version 9
!
!
!
!
!
!
!
line con 0
password cisco
login
!
line aux 0
!
line vty 0 4
password cisco
login
!
!
!
end

R1#
```

```

R1#show 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

    172.16.0.0/24 is subnetted, 3 subnets
S       172.16.1.0 [1/0] via 172.16.2.2
C       172.16.2.0 is directly connected, Serial0/0/0
C       172.16.3.0 is directly connected, FastEthernet0/0
S     192.168.1.0/24 [1/0] via 172.16.2.2
S     192.168.2.0/24 [1/0] via 172.16.2.2

```

➔ R2

```

shutdowndown
!
interface Serial0/0/0
 ip address 172.16.2.2 255.255.255.0
!
interface Serial0/0/1
 ip address 192.168.1.2 255.255.255.0
 clock rate 64000
!
interface Vlan1
 no ip address
 shutdown
!
ip classless
ip route 172.16.3.0 255.255.255.0 Serial0/0/0
ip route 192.168.2.0 255.255.255.0 Serial0/0/1
!
ip flow-export version 9
!
!
!
!
!
!
!
line con 0
 password cisco
 login
!
line aux 0
!
line vty 0 4
 password cisco
 login
!
!
!
end

R2#

```

```

R2#show 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

    172.16.0.0/24 is subnetted, 3 subnets
C       172.16.1.0 is directly connected, FastEthernet0/0
C       172.16.2.0 is directly connected, Serial0/0/0
S       172.16.3.0 is directly connected, Serial0/0/0
C       192.168.1.0/24 is directly connected, Serial0/0/1
S       192.168.2.0/24 is directly connected, Serial0/0/1
R2#

```

➔ R3

```

shutdown
!
interface Serial0/0/0
 no ip address
 clock rate 2000000
!
interface Serial0/0/1
 ip address 192.168.1.1 255.255.255.0
!
interface Vlan1
 no ip address
 shutdown
!
ip classless
ip route 172.16.3.0 255.255.255.0 192.168.1.2
ip route 172.16.2.0 255.255.255.0 192.168.1.2
ip route 172.16.1.0 255.255.255.0 192.168.1.2
!
ip flow-export version 9
!
!
!
!
!
!
!
!
line con 0
 password cisco
 login
!
line aux 0
!
line vty 0 4
 password cisco
 login
!
!
!
end
R3#

```

➤ Étape 2 : Vérification de la connectivité

➔ Effectuer un test ping des deux autres ordinateurs à partir de l'invite de commande sur les trois ordinateurs.

- PC1:

```
C:\>ping 172.16.1.10

Pinging 172.16.1.10 with 32 bytes of data:

Reply from 172.16.1.10: bytes=32 time=1ms TTL=126
Reply from 172.16.1.10: bytes=32 time=11ms TTL=126
Reply from 172.16.1.10: bytes=32 time=1ms TTL=126
Reply from 172.16.1.10: bytes=32 time=1ms TTL=126

Ping statistics for 172.16.1.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 11ms, Average = 3ms

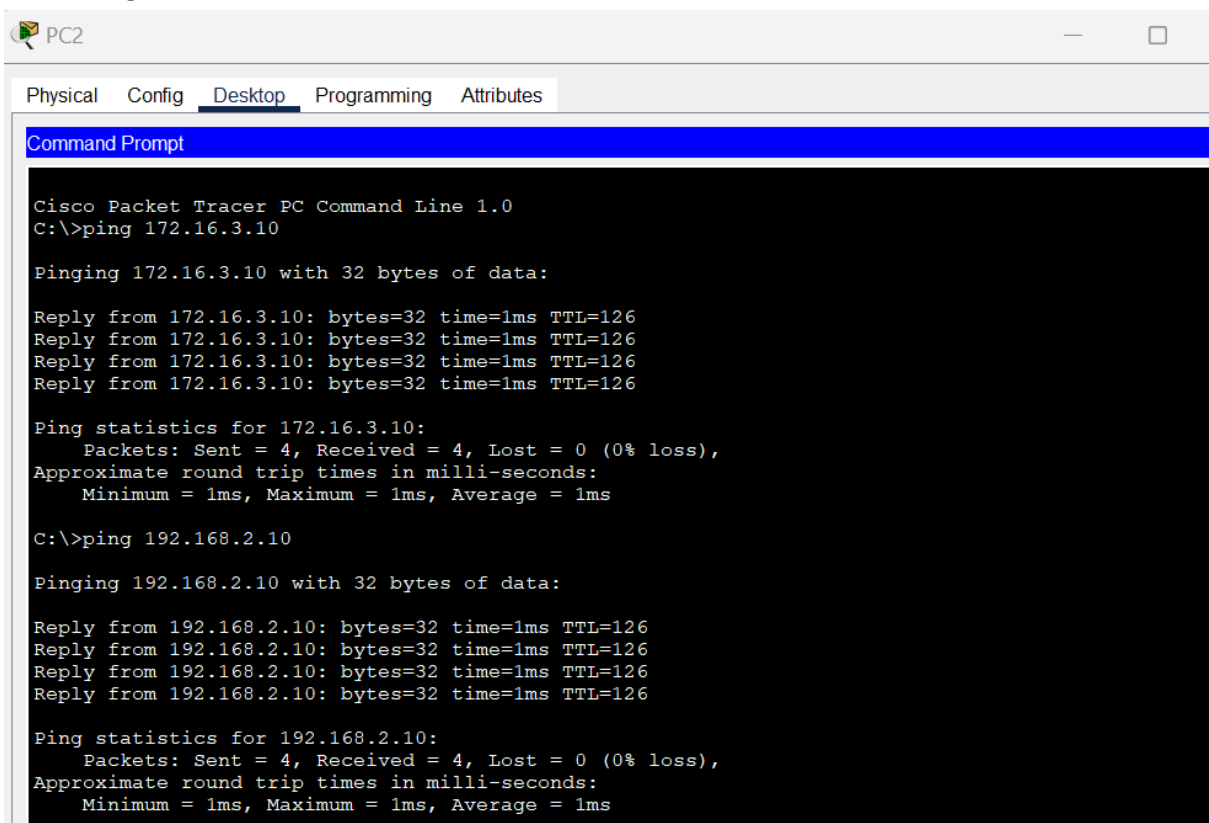
C:\>ping 192.168.2.10

Pinging 192.168.2.10 with 32 bytes of data:

Reply from 192.168.2.10: bytes=32 time=2ms TTL=125
Reply from 192.168.2.10: bytes=32 time=8ms TTL=125
Reply from 192.168.2.10: bytes=32 time=2ms TTL=125
Reply from 192.168.2.10: bytes=32 time=2ms TTL=125

Ping statistics for 192.168.2.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 2ms, Maximum = 8ms, Average = 3ms
```

- PC 2:



The screenshot shows a window titled "PC2" with a standard Windows-style title bar (minimize, maximize, close buttons). Below the title bar is a tabbed interface with four tabs: "Physical", "Config", "Desktop", and "Attributes". The "Desktop" tab is currently selected and highlighted. Inside the "Desktop" tab, there is a "Command Prompt" window. The Command Prompt displays the following text:

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 172.16.3.10

Pinging 172.16.3.10 with 32 bytes of data:

Reply from 172.16.3.10: bytes=32 time=1ms TTL=126
Reply from 172.16.3.10: bytes=32 time=1ms TTL=126
Reply from 172.16.3.10: bytes=32 time=1ms TTL=126
Reply from 172.16.3.10: bytes=32 time=1ms TTL=126

Ping statistics for 172.16.3.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 1ms, Average = 1ms

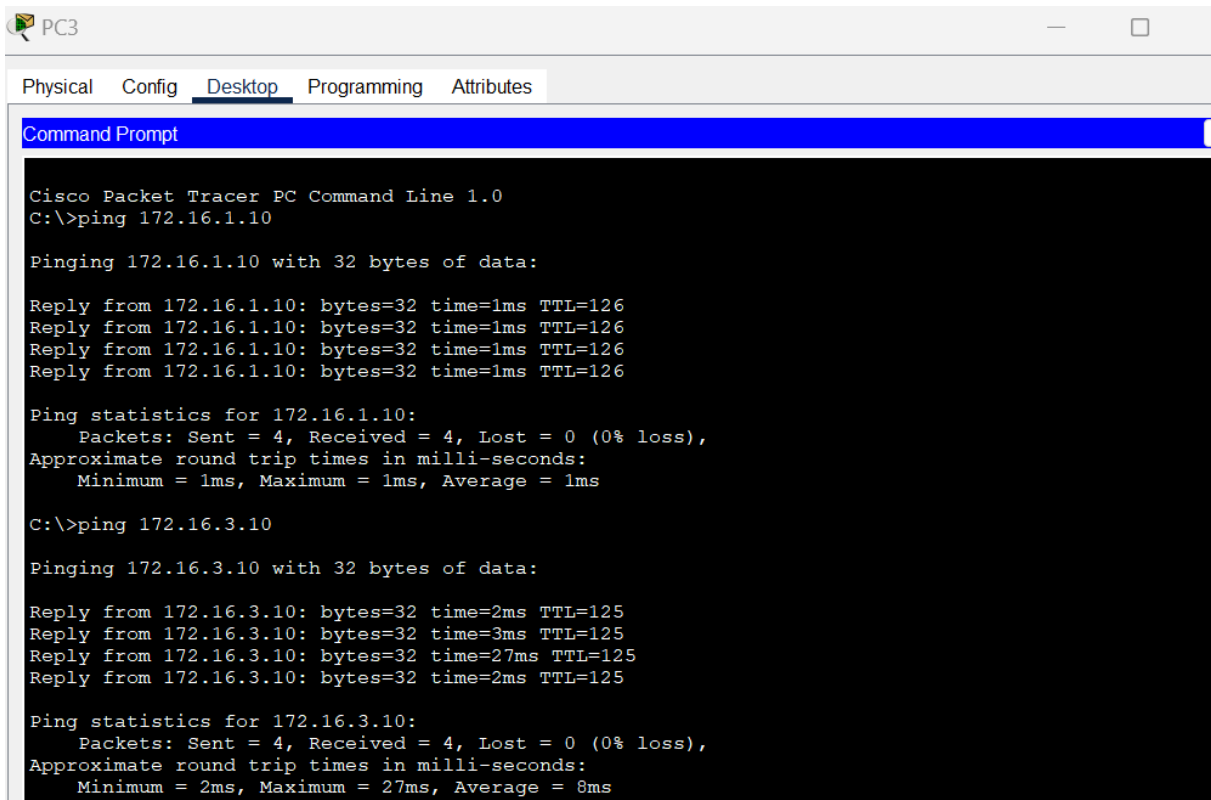
C:\>ping 192.168.2.10

Pinging 192.168.2.10 with 32 bytes of data:

Reply from 192.168.2.10: bytes=32 time=1ms TTL=126
Reply from 192.168.2.10: bytes=32 time=1ms TTL=126
Reply from 192.168.2.10: bytes=32 time=1ms TTL=126
Reply from 192.168.2.10: bytes=32 time=1ms TTL=126

Ping statistics for 192.168.2.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 1ms, Average = 1ms
```

- PC3



```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 172.16.1.10

Pinging 172.16.1.10 with 32 bytes of data:

Reply from 172.16.1.10: bytes=32 time=1ms TTL=126
Reply from 172.16.1.10: bytes=32 time=1ms TTL=126
Reply from 172.16.1.10: bytes=32 time=1ms TTL=126
Reply from 172.16.1.10: bytes=32 time=1ms TTL=126

Ping statistics for 172.16.1.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 1ms, Average = 1ms

C:\>ping 172.16.3.10

Pinging 172.16.3.10 with 32 bytes of data:

Reply from 172.16.3.10: bytes=32 time=2ms TTL=125
Reply from 172.16.3.10: bytes=32 time=3ms TTL=125
Reply from 172.16.3.10: bytes=32 time=27ms TTL=125
Reply from 172.16.3.10: bytes=32 time=2ms TTL=125

Ping statistics for 172.16.3.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 2ms, Maximum = 27ms, Average = 8ms
```

➔ Tous les tests ping ont abouti.

2. Résumé des routes statiques (routeur R3).\$

➤ **Étape 1** : remplacement des routes statiques existantes par une route résumée (agrégée)

➔ Configuration globale du routeur R3 :

```
R3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R3(config)#no ip route 172.16.1.0 255.255.255.0 192.168.1.2
R3(config)#no ip route 172.16.2.0 255.255.255.0 192.168.1.2
R3(config)#no ip route 172.16.3.0 255.255.255.0 192.168.1.2
R3(config)#ip route 172.16.0.0 255.255.252.0 192.168.1.2
```

➔ On sauvegarde la configuration avec la commande **copy run start** :

```

R3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R3(config)#no ip route 172.16.1.0 255.255.255.0 192.168.1.2
R3(config)#no ip route 172.16.2.0 255.255.255.0 192.168.1.2
R3(config)#no ip route 172.16.3.0 255.255.255.0 192.168.1.2
R3(config)#ip route 172.16.0.0 255.255.252.0 192.168.1.2
R3(config)#^Z
R3#
%SYS-5-CONFIG_I: Configured from console by console
copy run start
Destination filename [startup-config]?
Building configuration...
[OK]
R3#

```

➤ **Étape 3 : Consultation de la configuration**

- Sur le routeur R3 :
- ➔ Vérification de la nouvelle configuration du routage statique.

```

,
interface FastEthernet0/0
 mac-address 0003.e472.7a36
 ip address 192.168.2.1 255.255.255.0
 duplex auto
 speed auto
!
interface FastEthernet0/1
 mac-address 0006.2a91.d285
 no ip address
 duplex auto
 speed auto
 shutdown
!
interface Serial0/0/0
 no ip address
 clock rate 2000000
!
interface Serial0/0/1
 ip address 192.168.1.1 255.255.255.0
!
interface Vlan1
 no ip address
 shutdown
!
ip classless
ip route 172.16.0.0 255.255.252.0 192.168.1.2
!
ip flow-export version 9
!
!
!
!
!
!
!
!
line con 0
 password cisco
 login
!
line aux 0
!
line vty 0 4
 password cisco
 login
,

```

- ➔ Afficher la table de routage modifiée. Il y a une seule route statique qui accède à chaque réseau distant :

```

R3#show 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

    172.16.0.0/22 is subnetted, 1 subnets
    S    172.16.0.0 [1/0] via 192.168.1.2
    C    192.168.1.0/24 is directly connected, Serial0/0/1
    C    192.168.2.0/24 is directly connected, FastEthernet0/0

```

```

.
interface FastEthernet0/0
 ip address 172.16.3.1 255.255.255.0
 duplex auto
 speed auto
!
interface FastEthernet0/1
 no ip address
 duplex auto
 speed auto
 shutdown
!
interface Serial0/0/0
 ip address 172.16.2.1 255.255.255.0
 clock rate 64000
!
interface Serial0/0/1
 no ip address
 clock rate 2000000
!
interface Vlan1
 no ip address
 shutdown
!
ip classless
ip route 192.168.2.0 255.255.255.0 172.16.2.2
ip route 0.0.0.0 0.0.0.0 172.16.2.2
!
ip flow-export version 9
!

```

➤ **Étape 4 : Vérification de la connectivité**

➔ On effectue un test ping des deux autres ordinateurs à partir de l'invite de commandes sur le PC3 :

```
C:\>ping 172.16.1.10

Pinging 172.16.1.10 with 32 bytes of data:

Reply from 172.16.1.10: bytes=32 time=1ms TTL=126
Reply from 172.16.1.10: bytes=32 time=1ms TTL=126
Reply from 172.16.1.10: bytes=32 time=1ms TTL=126
Reply from 172.16.1.10: bytes=32 time=1ms TTL=126

Ping statistics for 172.16.1.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 1ms, Average = 1ms

C:\>ping 172.16.3.10

Pinging 172.16.3.10 with 32 bytes of data:

Reply from 172.16.3.10: bytes=32 time=2ms TTL=125
Reply from 172.16.3.10: bytes=32 time=2ms TTL=125
Reply from 172.16.3.10: bytes=32 time=3ms TTL=125
Reply from 172.16.3.10: bytes=32 time=3ms TTL=125

Ping statistics for 172.16.3.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 2ms, Maximum = 3ms, Average = 2ms
```

3. Configuration d'un réseau d'extrémité (routeur R1).

- **Étape 1** : remplacement des routes statiques existantes par une route par défaut

➔ On passe en mode de configuration globale sur le routeur R1 :

```
R1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R1(config)#no ip route 172.16.1.0 255.255.255.0 172.16.2.2
R1(config)#no ip route 192.168.1.0 255.255.255.0 172.16.2.2
R1(config)#no ip route 192.168.2.0 255.255.255.0 172.16.2.2
R1(config)#ip route 0.0.0.0 0.0.0.0 172.16.2.2
```

- **Étape 2** : enregistrement des configurations mises à jour

➔ On quitte le mode de configuration et on enregistre la configuration :

```
no matching route to delete
R1(config)#ip route 0.0.0.0 0.0.0.0 172.16.2.2
R1(config)#^Z
R1#
%SYS-5-CONFIG_I: Configured from console by console
copy run start
Destination filename [startup-config]?
Building configuration...
[OK]
R1#
```

- **Étape 3** : consultation de la configuration

- Toujours sur le routeur R1.

➔ Vérification de la nouvelle configuration du routage statique :

```

!
interface FastEthernet0/0
 ip address 172.16.3.1 255.255.255.0
 duplex auto
 speed auto
!
interface FastEthernet0/1
 no ip address
 duplex auto
 speed auto
 shutdown
!
interface Serial0/0/0
 ip address 172.16.2.1 255.255.255.0
 clock rate 64000
!
interface Serial0/0/1
 no ip address
 clock rate 2000000
!
interface Vlan1
 no ip address
 shutdown
!
ip classless
ip route 192.168.2.0 255.255.255.0 172.16.2.2
ip route 0.0.0.0 0.0.0.0 172.16.2.2
!
ip flow-export version 9
!

```

➔ Affichage de la table de routage modifiée :
(Une seule statique par défaut accède à chaque réseau distant)

```

R1#show 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 172.16.2.2 to network 0.0.0.0

    172.16.0.0/24 is subnetted, 2 subnets
C      172.16.2.0 is directly connected, Serial0/0/0
C      172.16.3.0 is directly connected, FastEthernet0/0
S      192.168.2.0/24 [1/0] via 172.16.2.2
S*     0.0.0.0/0 [1/0] via 172.16.2.2

R1#

```

➤ **Étape 4** : vérification de la connectivité

- Toujours sur le routeur R1.

➔ On effectue un ping des deux autres ordinateurs à partir de l'invite de commandes sur PC1 :

```
C:\>ping 172.16.1.10

Pinging 172.16.1.10 with 32 bytes of data:

Reply from 172.16.1.10: bytes=32 time=1ms TTL=126
Reply from 172.16.1.10: bytes=32 time=1ms TTL=126
Reply from 172.16.1.10: bytes=32 time=1ms TTL=126
Reply from 172.16.1.10: bytes=32 time=1ms TTL=126

Ping statistics for 172.16.1.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 1ms, Average = 1ms

C:\>ping 192.168.2.10

Pinging 192.168.2.10 with 32 bytes of data:

Reply from 192.168.2.10: bytes=32 time=2ms TTL=125
Reply from 192.168.2.10: bytes=32 time=10ms TTL=125
Reply from 192.168.2.10: bytes=32 time=2ms TTL=125
Reply from 192.168.2.10: bytes=32 time=2ms TTL=125

Ping statistics for 192.168.2.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 2ms, Maximum = 10ms, Average = 4ms
```