Université Sultan Moulay Slimane Faculté Polydisciplinaire Béni Mellal
Département INFORMATIQUE (MIP)

Filière : Science de données et sécurité des systèmes d'information
A.U : 2023-2024
Module : Réseaux Informatiques

Sujet

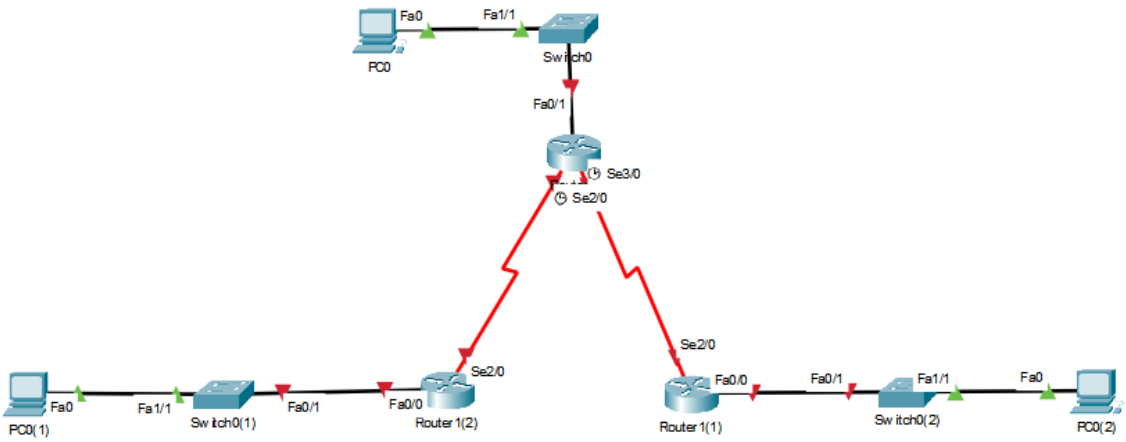
Rapport TP03

Présenté Par :
MAFTOUH Omar
KHADIM Mohamed Hamza

Encadré Par :
Pr : FARISS Meriam

Tache 01 : Effacement et rechargement des routeurs

1. Schéma de topologue :



2. Suppression de la configuration sur chaque routeur :

```
R1#erase startup-config
Erasing the nvram filesystem will remove all configuration files! Continue? [confirm]
[OK]
Erase of nvram: complete
%SYS-7-NV_BLOCK_INIT: Initialized the geometry of nvram
```

Tache 2 : Configuration de base d'un routeur

1. Configuration globale :

```
R1(config)#hostname R1
R1(config)#no ip domain-lookup
R1(config)#enable secret R1
```

2. Configuration des mots de passe :

```
R1(config)#line console 0
R1(config-line)#password R1
R1(config-line)#login
R1(config-line)#line VTY 0 4
R1(config-line)#password R1
R1(config-line)#login
```

3. Configuration des interfaces des routeurs :

```
R1(config)#int fa0/0
R1(config-if)#ip address 172.16.3.1 255.255.255.0
R1(config-if)#no shutdown

R1(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

R1(config-if)#
```

```
R2(config-line)#logging synchronous
R2(config-line)#exit
R2(config)#int fa0/0
R2(config-if)#ip address 172.16.1.1 255.255.255.0
R2(config-if)#no shutdown

R2(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

R2(config-if)#
```

```
R3(config)#line console 0
R3(config-line)#logging synchronous
R3(config-line)#exit
R3(config)#int fa0/0
R3(config-if)#ip address 172.168.2.1 255.255.255.0
R3(config-if)#no shutdown

R3(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

R3(config-if)#
```

4. Commande exec-timeout

```
R1(config)#line console 0
R1(config-line)#
R1(config-line)#
R1(config-line)#
R1(config-line)#exec-timeout 0 0
R1(config-line)#line vty 0 4
R1(config-line)#exec-timeout 0 0
```

Tache 3 : Interprétation des sorties du routeur

1. Commande **debug ip routing** :

```
R1#debug ip routing
IP routing debugging is on
```

2. Activation du mode de configuration d'interface :

```
R1#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
R1(config)#int fa 0/0
R1(config-if)#ip address 172.16.3.1 255.255.255.0
```

3. Vérification du nouvelle table de routage :

```
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, 1 subnets
C       172.16.3.0 is directly connected, FastEthernet0/0
```

4. Configuration d'interface Se 2/0 :

```
R1(config)#int Se 2/0
R1(config-if)#ip address 172.16.2.1 255.255.255.0
```

5. Vérification de la configuration d'interface :

```
R1#show ip interface brief
Interface              IP-Address      OK? Method Status                Protocol
FastEthernet0/0        172.16.3.1      YES manual up                    up
FastEthernet1/0        unassigned      YES unset  administratively down down
Serial2/0              172.16.2.1      YES manual up                    up
Serial3/0              unassigned      YES unset  administratively down down
FastEthernet4/0        unassigned      YES unset  administratively down down
FastEthernet5/0        unassigned      YES unset  administratively down down
```

```
R2#show ip interface brief
Interface              IP-Address      OK? Method Status                Protocol
FastEthernet0/0        172.16.1.1      YES manual up                    up
FastEthernet1/0        unassigned      YES unset  administratively down down
Serial2/0              172.16.2.2      YES manual up                    up
Serial3/0              192.168.1.2     YES manual up                    up
FastEthernet4/0        unassigned      YES unset  administratively down down
FastEthernet5/0        unassigned      YES unset  administratively down down
```

```
R3#show ip interface brief
Interface              IP-Address      OK? Method Status                Protocol
FastEthernet0/0        192.168.2.1     YES manual up                    up
FastEthernet1/0        unassigned      YES unset  administratively down down
Serial2/0              192.168.1.1     YES manual up                    up
Serial3/0              unassigned      YES unset  administratively down down
FastEthernet4/0        unassigned      YES unset  administratively down down
FastEthernet5/0        unassigned      YES unset  administratively down down
```

6. Vérification de la table du routage pour R1 & R2 :

```
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, 2 subnets
C       172.16.2.0 is directly connected, Serial2/0
C       172.16.3.0 is directly connected, FastEthernet0/0
```

```
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, 2 subnets
C       172.16.1.0 is directly connected, FastEthernet0/0
C       172.16.2.0 is directly connected, Serial2/0
C    192.168.1.0/24 is directly connected, Serial3/0
```

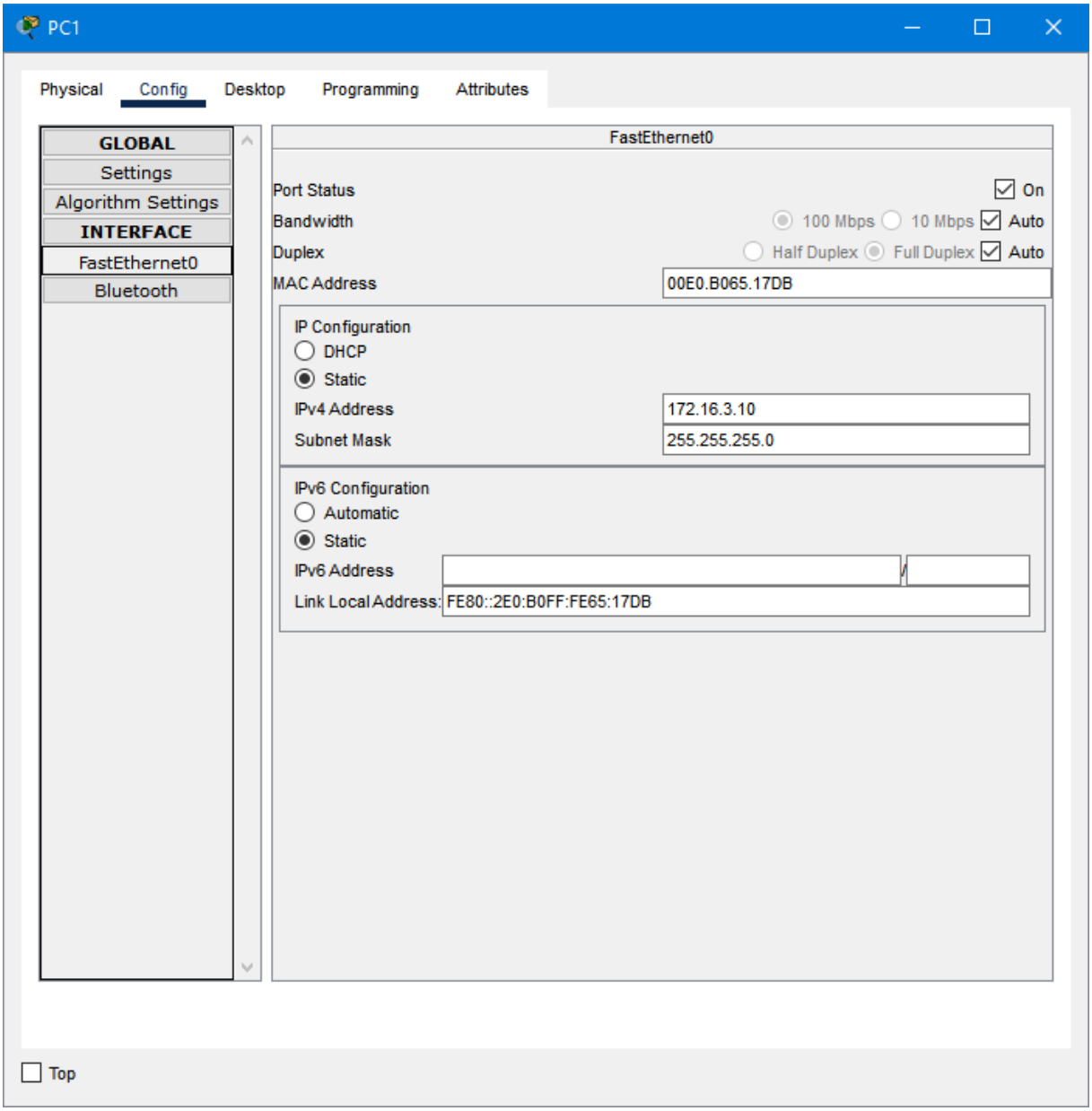
7. Désactivation du débogage sur les deux routeurs :

```
R1#undebug all
All possible debugging has been turned off
```

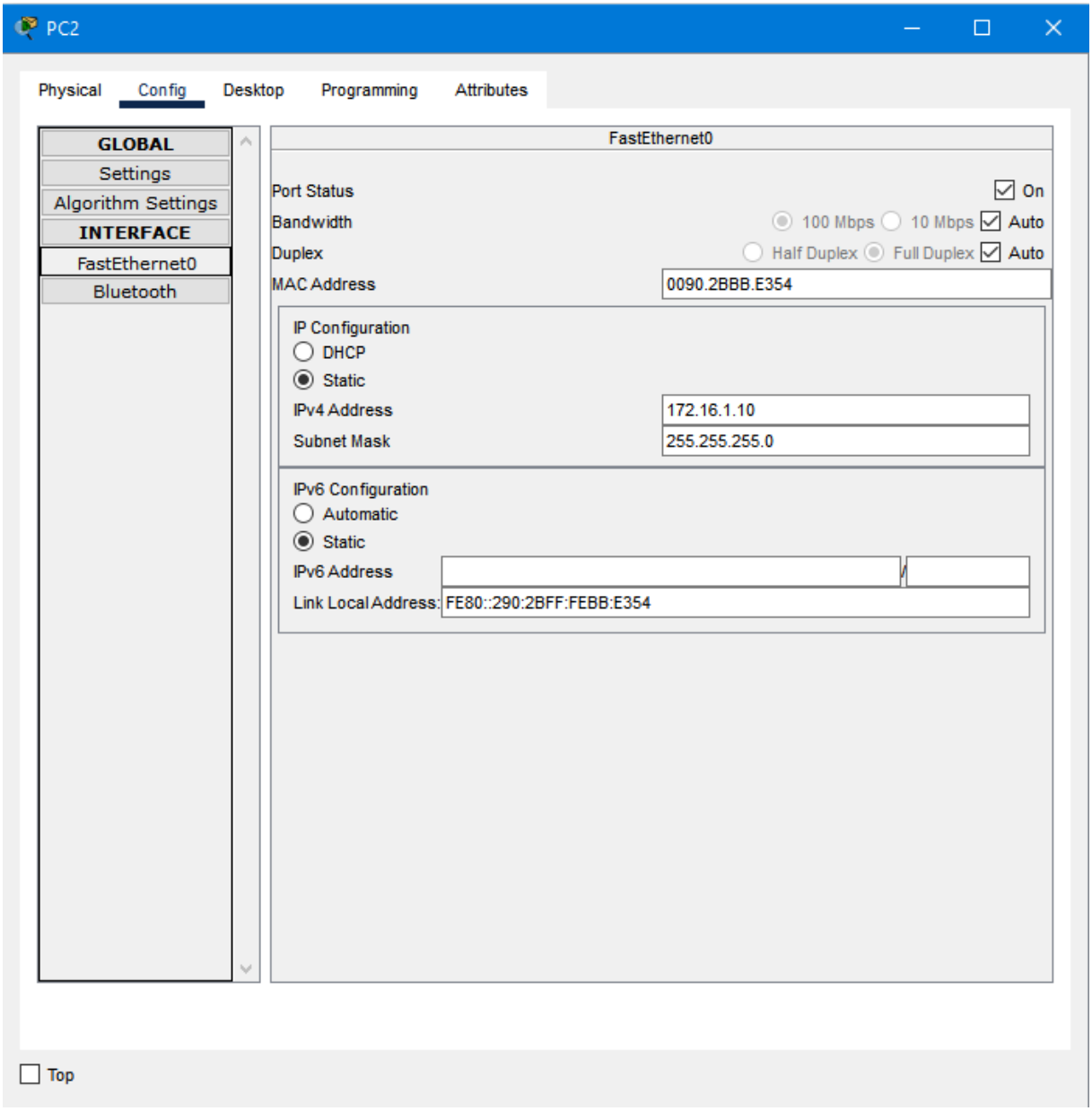
```
R2#undebug all
All possible debugging has been turned off
```

Tache 5 : Configuration des adresses IP sur les ordinateur hôtes

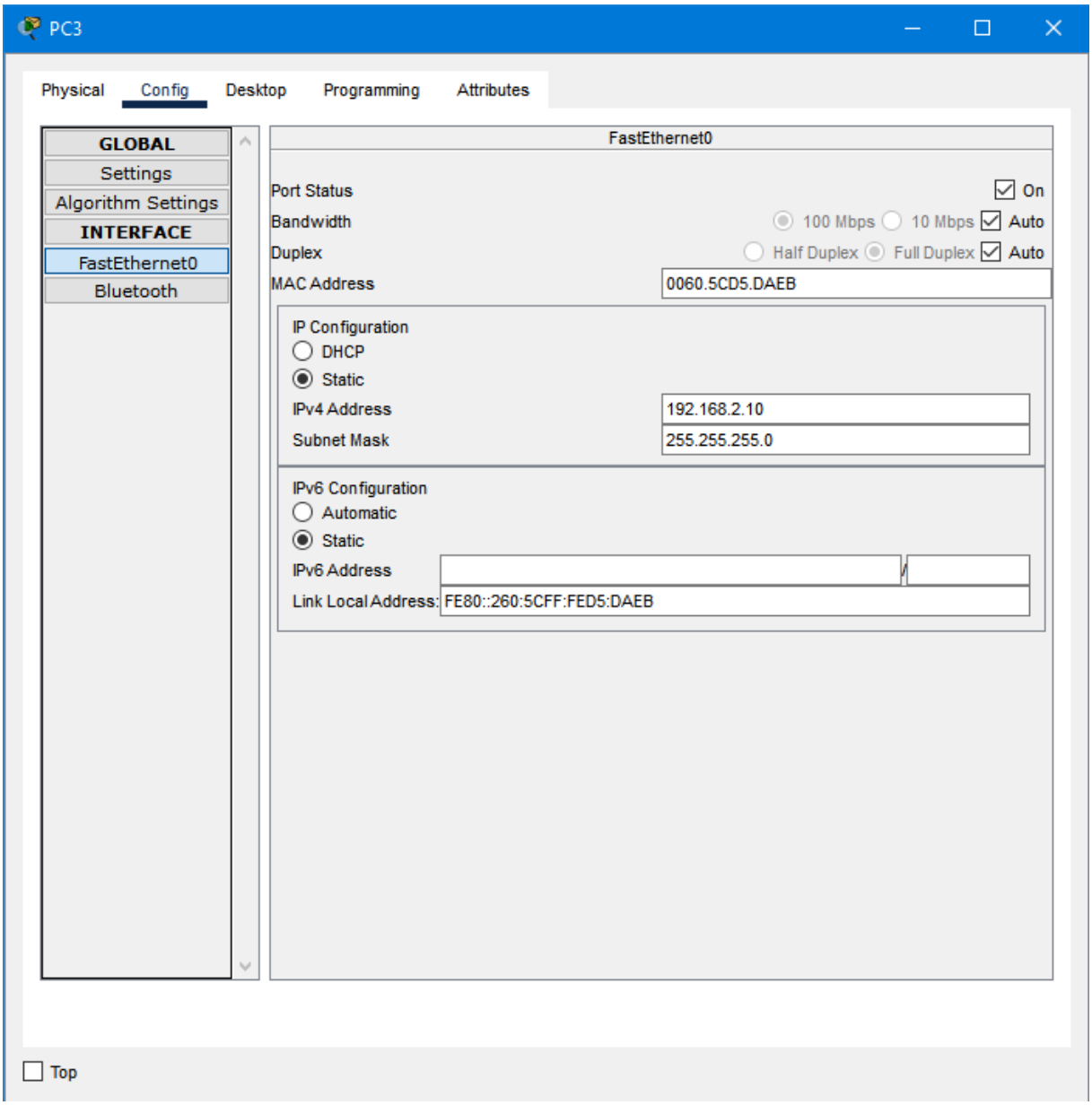
1. Configuration de l'hôte PC1 :



2. Configuration de l'hôte PC2 :



3. Configuration de l'hôte PC3 :



Tache 6 : Test et vérification des configurations

1. Test de la connectivité :

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit
	Successful	PC1	R1	ICMP		0.000	N	0	(edit)
	Successful	PC2	R2	ICMP		0.000	N	1	(edit)
	Successful	PC3	R3	ICMP		0.000	N	2	(edit)

2. Tester la connectivité entre des routeurs directement connecter :

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit
	Successful	R2	R1	ICMP		0.000	N	0	(edit)
	Successful	R3	R2	ICMP		0.000	N	1	(edit)

3. Tester la connectivité entre des périphérique non directement connectés :

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit
	Failed	PC1	PC3	ICMP		0.000	N	0	(ec
	Failed	PC2	PC3	ICMP		0.000	N	1	(ec
	Failed	PC2	PC1	ICMP		0.000	N	2	(ec

Toutes les requetés ping et échouer car en a pas en core saisir les routes statiques

Tache 7 : Collecte des informations

1. Vérification de l'état des interfaces :

```
R2#show ip interface brief
Interface              IP-Address      OK? Method Status                Protocol
FastEthernet0/0        172.16.1.1      YES manual up                    up
FastEthernet1/0        unassigned      YES unset  administratively down down
Serial2/0              172.16.2.2      YES manual up                    up
Serial3/0              192.168.1.2     YES manual up                    up
FastEthernet4/0        unassigned      YES unset  administratively down down
FastEthernet5/0        unassigned      YES unset  administratively down down
```

```
R1#show ip interface brief
Interface              IP-Address      OK? Method Status                Protocol
FastEthernet0/0        172.16.3.1      YES manual up                    up
FastEthernet1/0        unassigned      YES unset  administratively down down
Serial2/0              172.16.2.1      YES manual up                    up
Serial3/0              unassigned      YES unset  administratively down down
FastEthernet4/0        unassigned      YES unset  administratively down down
FastEthernet5/0        unassigned      YES unset  administratively down down
```

```
R3#show ip interface brief
Interface              IP-Address      OK? Method Status                Protocol
FastEthernet0/0        192.168.2.1     YES manual up                    up
FastEthernet1/0        unassigned      YES unset  administratively down down
Serial2/0              192.168.1.1     YES manual up                    up
Serial3/0              unassigned      YES unset  administratively down down
FastEthernet4/0        unassigned      YES unset  administratively down down
FastEthernet5/0        unassigned      YES unset  administratively down down
```

- **R2 a 3 interface active , par ce que il est lié directement a trois réseaux**

Tâche 8 : configuration d'une route statique en utilisant une adresse du tronçon suivant

1. configurer des routes statiques en spécifiant un tronçon :

```
R3(config)#ip route 172.16.1.0 255.255.255.0 192.168.1.2
R3(config)#RT: SET_LAST_RDB for 172.16.1.0/24

     NEW rdb: via 192.168.1.2


RT: add 172.16.1.0/24 via 192.168.1.2, static metric [1/0]

RT: NET-RED 172.16.1.0/24
```

2. affichage de la table de routage pour vérifier la nouvelle entrée de la route statique :

```
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

     172.16.0.0/24 is subnetted, 1 subnets
S       172.16.1.0 [1/0] via 192.168.1.2
C    192.168.1.0/24 is directly connected, Serial2/0
C    192.168.2.0/24 is directly connected, FastEthernet0/0
```

3. ester la connectivité entre l'hôte PC3 et l'hôte PC2 :

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit
	Failed	PC3	PC2	ICMP		0.000	N	0	(edit)

4. Configuration sur le routeur R2 d'une route statique permettant d'atteindre le réseau 192.168.2.0 :

```
R2(config)#ip route 192.168.2.0 255.255.255.0 192.168.1.1
```

5. Affichage de la table de routage pour vérifier la nouvelle entrée de la route statique :

```
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, 2 subnets
C       172.16.1.0 is directly connected, FastEthernet0/0
C       172.16.2.0 is directly connected, Serial2/0
C    192.168.1.0/24 is directly connected, Serial3/0
S    192.168.2.0/24 [1/0] via 192.168.1.1
```

6. tester la connectivité entre l'hôte PC3 et l'hôte PC2 :

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit
	Successful	PC2	PC3	ICMP		0.000	N	0	(edit)
	Successful	PC3	PC2	ICMP		0.000	N	1	(edit)

Tâche 9 : configuration d'une route statique en utilisant une interface de sortie

1. Configuration d'une route statique sur le routeur R3 :

```
R3(config)#ip route 172.16.2.0 255.255.255.0 se 2/0
R3(config)#RT: SET_LAST_RDB for 172.16.2.0/24

     NEW rdb: is directly connected


RT: add 172.16.2.0/24 via 0.0.0.0, static metric [1/0]

RT: NET-RED 172.16.2.0/24
```

2. Vérifier la nouvelle entrée de la route statique :

```
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

     172.16.0.0/24 is subnetted, 2 subnets
S       172.16.1.0 [1/0] via 192.168.1.2
S       172.16.2.0 is directly connected, Serial2/0
C    192.168.1.0/24 is directly connected, Serial2/0
C    192.168.2.0/24 is directly connected, FastEthernet0/0
```

3. **show running-config**

```
R3#show running-config
Building configuration...

Current configuration : 1000 bytes
!
version 12.2
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname R3
!
!
!
enable secret 5 $1$mERr$Q7owRrks4V3/fC8jyTu5h1
!
!
!
!
!
!
ip cef
no ipv6 cef
 --More--
```

4. Configuration d'une route statique sur le routeur R2 :

```
R2(config)#ip route 172.16.3.0 255.255.255.0 se2/0
```

5. Vérifier la nouvelle entrée de la route statique :

```
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, Serial2/0
S       172.16.3.0 is directly connected, Serial2/0
C    192.168.1.0/24 is directly connected, Serial3/0
S    192.168.2.0/24 [1/0] via 192.168.1.1
```

6. Tester la connectivité entre l'hôte PC2 et PC1 :

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit
	Failed	PC2	PC1	ICMP		0.000	N	0	(edit)

Tâche 10 : configuration d'une route statique par défaut

1. Configuration d'une route par défaut sur le routeur R1

```
R1(config)#ip route 0.0.0.0 0.0.0.0 172.16.2.2
```

2. Vérifier la nouvelle entrée de la route statique :

```
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, Serial2/0
C       172.16.3.0 is directly connected, FastEthernet0/0
S*   0.0.0.0/0 [1/0] via 172.16.2.2
```

3. Tester la connectivité entre l'hôte PC2 et PC1 :

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit
	Successful	PC2	PC1	ICMP		0.000	N	0	(edit)
	Successful	PC1	PC2	ICMP		0.000	N	1	(edit)

Tâche 11 : configuration d'une route statique résumée

1. Configuration de la route statique résumée sur le routeur R3 :

```
R3(config)#ip route 172.16.0.0 255.255.252.0 192.168.1.2
R3(config)#RT: SET_LAST_RDB for 172.16.0.0/22

     NEW rdb: via 192.168.1.2


RT: add 172.16.0.0/22 via 192.168.1.2, static metric [1/0]

RT: NET-RED 172.16.0.0/22
```

2. Vérification de l'installation de la route résumée dans la table de routage :

```
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

     172.16.0.0/16 is variably subnetted, 3 subnets, 2 masks
S       172.16.0.0/22 [1/0] via 192.168.1.2
S       172.16.1.0/24 [1/0] via 192.168.1.2
S       172.16.2.0/24 is directly connected, Serial2/0
C    192.168.1.0/24 is directly connected, Serial2/0
C    192.168.2.0/24 is directly connected, FastEthernet0/0
```

3. Suppression des routes statiques sur R3 :

```
R3(config)#no ip route 172.16.1.0 255.255.255.0 192.168.1.2
R3(config)#RT: del 172.16.1.0 via 192.168.1.2, static metric [1/0]

RT: delete network route to 172.16.1.0

RT: NET-RED 172.16.1.0/24


R3(config)#no ip route 172.16.2.0 255.255.255.0 se 2/0
R3(config)#RT: del 172.16.2.0 via 0.0.0.0, static metric [1/0]

RT: delete network route to 172.16.2.0

RT: NET-RED 172.16.2.0/24
```

4. Vérification de la suppression des routes dans la table de routage :

```
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, Serial2/0
C    192.168.2.0/24 is directly connected, FastEthernet0/0
```

5. Tester la connectivité entre l'hôte PC3 et PC1 :

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit
	Successful	PC1	PC3	ICMP		0.000	N	0	(edit)
	Successful	PC3	PC1	ICMP		0.000	N	1	(edit)