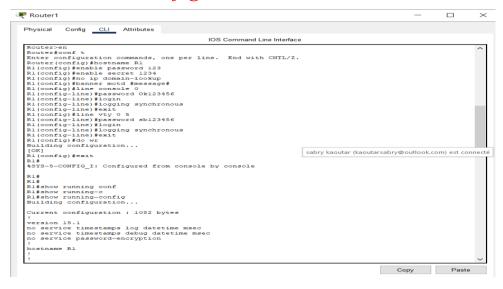


# 1. VLSM

Site	<2 <sup>n</sup>	Masque	Adresse	Adresse	Première	Dernière
			réseau	de	adresse	adresse
				diffusion		
Site A=100	<b>2</b> <sup>7</sup>	/25	10.0.0.0	10.0.0.127	10.0.0. <mark>1</mark>	10.0.0.126
hôtes		255.255.255.128				
Site B=6 hôtes	2 <sup>6</sup>	/26	10.0.0.128	10.0.0.191	10.0.0.129	10.0.0.190
		255.255.255.192				
Site C=24hotes	<b>2</b> <sup>5</sup>	/27	10.0.0.192	10.0.0.223	10.0.0.193	10.0.0.222
		255.255.255.224				
R1-R2=2hotes	2 <sup>2</sup>	/30	10.0.0.224	10.0.0.227	10.0.0.225	10.0.0.226
		255.255.255.252				
R1-R3=2hotes	2 <sup>2</sup>	/30	10.0.0.228	10.0.0.231	10.0.0.229	10.0.0.230
		255.255.255.252				
R2-R3=2hotes	2 <sup>2</sup>	/30	10.0.0.232	10.0.0.235	10.0.0.233	10.0.0.234
		255.255.255.252				

# 2. Configuration de base d'un routeur





## Crypter le mot de passe

```
Rl(config) #service password-encryption
Rl(config) #exit
Rl#
%SYS-5-CONFIG_I: Configured from console by console
Rl#
Rl#
Rl#
Rl#sho
Rl#show r
Rl#show running-config
Building configuration...

Current configuration : 1122 bytes
!
version 15.1
no service timestamps log datetime msec
no service timestamps debug datetime msec
service password-encryption
!
hostname Rl
!
!
enable secret 5 $1$mERr$4dpRATIgxQacPVKOCfNV4/
enable password 7 08701E1D
!
```

# 3. Configuration des interfaces

#### R1

R1(config)#interface g0/0 R1(config-if)#ip address 10.0.0.129 255.255.255.128 R1(config-if)#no sh

R1(config)#INTerface s0/0/0 R1(config-if)#ip address 10.0.0.225 255.255.255.252 R1(config-if)#no shutdown

R1(config)#interface s0/0/1
R1(config-if)#ip address 10.0.0.229 255.255.255.252
R1(config-if)#no sh

### R2

R2(config)#interface g0/0
R2(config-if)#ip address 10.0.0.193 255.255.255.224
R2(config-if)#no sh

R2(config)#interface s0/0/0
R2(config-if)#ip address 10.0.0.226 255.255.255.252
R2(config-if)#no sh

R2(config)#interface s0/0/1
R2(config-if)#ip address 10.0.0.233 255.255.255.252
R2(config-if)#no sh

#### **R3**

R3(config)#interface g0/0 R3(config-if)#ip address 10.0.0.1 255.255.255.128 R3(config-if)#no sh

R3(config)#interface s0/0/0
R3(config-if)#ip address 10.0.0.230 255.255.255.252
R3(config-if)#no sh

R3(config)#interface s0/0/1
R3(config-if)#ip address 10.0.0.234 255.255.255.252
R3(config-if)#no sh

# 4. Routage Statique

#### **R1**

R1(config)#ip route 10.0.0.232 255.255.255.252 10.0.0.230 R1(config)#ip route 10.0.0.192 255.255.255.224 10.0.0.226 R1(config)#ip route 10.0.0.0 255.255.255.128 10.0.0.230

```
Rl#show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       {\tt N1} - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       {\tt E1} - OSPF external type 1, {\tt E2} - OSPF external type 2, {\tt E} - {\tt 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
     10.0.0.0/8 is variably subnetted, 9 subnets, 5 masks
        10.0.0.0/25 [1/0] via 10.0.0.230
        10.0.0.128/26 is directly connected, GigabitEthernet0/0
        10.0.0.129/32 is directly connected, GigabitEthernet0/0
        10.0.0.192/27 [1/0] via 10.0.0.226
        10.0.0.224/30 is directly connected, Serial0/0/0
        10.0.0.225/32 is directly connected, Serial0/0/0
        10.0.0.228/30 is directly connected, Serial0/0/1
        10.0.0.229/32 is directly connected, Serial0/0/1
        10.0.0.232/30 [1/0] via 10.0.0.230
R1#
```

#### **R2**

R2(config)#ip route 10.0.0.128 255.255.255.192 10.0.0.225 R2(config)#ip route 10.0.0.228 255.255.255.252 10.0.0.225 R2(config)#ip route 10.0.0.0 255.255.255.128 10.0.0.234

```
R2#show ip route
Codes: L - local, C - connected, S - static, 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
     10.0.0.0/8 is variably subnetted, 9 subnets, 5 masks
        10.0.0.0/25 [1/0] via 10.0.0.234
        10.0.0.128/26 [1/0] via 10.0.0.225
        10.0.0.192/27 is directly connected, GigabitEthernet0/0
        10.0.0.193/32 is directly connected, GigabitEthernet0/0
        10.0.0.224/30 is directly connected, Serial0/0/0
        10.0.0.226/32 is directly connected, Serial0/0/0
S
        10.0.0.228/30 [1/0] via 10.0.0.225
        10.0.0.232/30 is directly connected, Serial0/0/1
        10.0.0.233/32 is directly connected, Serial0/0/1
R2#
```

## **R3**

R3(config)#ip route 10.0.0.128 255.255.255.192 10.0.0.229 R3(config)#ip route 10.0.0.224 255.255.255.252 10.0.0.229

```
R3#SHow ip route
Codes: L - local, C - connected, S - static, 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
     10.0.0.0/8 is variably subnetted, 9 subnets, 5 masks
        10.0.0.0/25 is directly connected, GigabitEthernet0/0
        10.0.0.1/32 is directly connected, GigabitEthernet0/0
        10.0.0.128/26 [1/0] via 10.0.0.229
        10.0.0.192/27 [1/0] via 10.0.0.233
        10.0.0.224/30 [1/0] via 10.0.0.229
        10.0.0.228/30 is directly connected, Serial0/0/0
        10.0.0.230/32 is directly connected, Serial0/0/0
        10.0.0.232/30 is directly connected, Serial0/0/1
        10.0.0.234/32 is directly connected, Serial0/0/1
```

# 5. Routage dynamique:

### a. RIP

### R2

R2(config)#router rip
R2(config-router)#version 2
R2(config-router)#network 10.0.0.192
R2(config-router)#network 10.0.0.224
R2(config-router)#network 10.0.0.232
R2(config-router)#passive-interface g0/0
R2(config-router)#exit

```
Router#show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
        D - EIGRP, EX - EIGRP external, O - OSFF, IA - OSFF inter area N1 - OSFF NSSA external type 1, N2 - OSFF NSSA external type 2 E1 - OSFF external type 1, E2 - OSFF 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
      10.0.0.0/8 is variably subnetted, 9 subnets, 5 masks
         10.0.0.0/25 [120/1] via 10.0.0.234, 00:00:28, Serial0/0/1
         10.0.0.128/26 [120/1] via 10.0.0.225, 00:00:08, Serial0/0/0
         10.0.0.192/27 is directly connected, GigabitEthernet0/0
         10.0.0.193/32 is directly connected, GigabitEthernet0/0
         10.0.0.224/30 is directly connected, Serial0/0/0
         10.0.0.226/32 is directly connected, Serial0/0/0
         10.0.0.228/30 [120/1] via 10.0.0.225, 00:00:08, Serial0/0/0
                        [120/1] via 10.0.0.234, 00:00:28, Serial0/0/1
         10.0.0.232/30 is directly connected, Serial0/0/1
         10.0.0.233/32 is directly connected, Serial0/0/1
```

#### **R1**

R1(config)#router rip R1(config-router)#version 2 R1(config-router)#network 10.0.0.128 R1(config-router)#network 10.0.0.224 R1(config-router)#network 10.0.0.228 R1(config-router)#passive-interface g0/0 R1(config-router)#exit

```
Rishow ip route

Codes: L - local, C - connected, S - static, 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

10.0.0.0/8 is variably subnetted, 9 subnets, 5 masks

R 10.0.0.0/25 [120/1] via 10.0.0.230, 00:00:06, Serial0/0/1

C 10.0.0.128/26 is directly connected, GigabitEthernet0/0

L 10.0.0.192/27 [120/1] via 10.0.0.226, 00:00:06, Serial0/0/0

C 10.0.0.224/30 is directly connected, Serial0/0/0

C 10.0.0.228/30 is directly connected, Serial0/0/1

L 10.0.0.229/32 is directly connected, Serial0/0/1

R 10.0.0.232/30 [120/1] via 10.0.0.226, 00:00:06, Serial0/0/0

R 10.0.0.232/30 [120/1] via 10.0.0.226, 00:00:06, Serial0/0/1

R 10.0.0.232/30 [120/1] via 10.0.0.226, 00:00:06, Serial0/0/1
```

### **R3**

R3(config)#router rip
R3(config-router)#version 2
R3(config-router)#network 10.0.0.228
R3(config-router)#network 10.0.0.232
R3(config-router)#network 10.0.0.0
R3(config-router)#passive-interface g0/0

```
Router#show ip route

Codes: L - local, C - connected, S - static, 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 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

10.00.0/8 is variably subnetted, 9 subnets, 5 masks

C 10.00.0/25 is directly connected, GigabitEthernet0/0

L 10.00.1/32 is directly connected, GigabitEthernet0/0

R 10.00.128/26 [120/1] via 10.00.229, 00:00:08, Serial0/0/0

R 10.00.192/27 [120/1] via 10.00.233, 00:00:27, Serial0/0/1

R 10.00.224/30 [120/1] via 10.00.233, 00:00:27, Serial0/0/1

[120/1] via 10.00.229, 00:00:08, Serial0/0/0

C 10.00.228/30 is directly connected, Serial0/0/0

L 10.00.230/32 is directly connected, Serial0/0/0

L 10.00.234/32 is directly connected, Serial0/0/1

L 10.00.234/32 is directly connected, Serial0/0/1
```

## b. EIGRP

**R1** 

R1(config)#router eigrp 1

R1(config-router)#network 10.0.0.224 0.0.0.3 R1(config-router)#network 10.0.0.228 0.0.0.3 R1(config-router)#network 10.0.0.128 0.0.0.63

```
Rifshow ip rout
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGF
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

10.0.0.0/8 is variably subnetted, 9 subnets, 5 masks
D 10.0.0.128/26 is directly connected, GigabitEthernet0/0
L 10.0.0.128/26 is directly connected, GigabitEthernet0/0
L 10.0.0.129/32 is directly connected, GigabitEthernet0/0
C 10.0.0.224/30 is directly connected, Serial0/0/0
C 10.0.0.225/32 is directly connected, Serial0/0/0
C 10.0.0.228/30 is directly connected, Serial0/0/1
L 10.0.0.229/32 is directly connected, Serial0/0/1
L 10.0.0.229/32 is directly connected, Serial0/0/1
L 10.0.0.228/30 is directly connected, Serial0/0/1
D 10.0.0.232/30 [90/2681856] via 10.0.0.226, 00:07:51, Serial0/0/0
[90/2681856] via 10.0.0.230, 00:05:20, Serial0/0/1
```

#### R2

R2(config)#router eigrp 1
R2(config-router)#network 10.0.0.224 0.0.0.3
R2(config-router)#network 10.0.0.232 0.0.0.3

R2(config-router)#network 10.0.0.192 0.0.0.31

```
R2#show ip rout
R2#show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
D - EIGRR, EX - EIGRP external, O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, R2 - 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

10.0.0.0/8 is variably subnetted, 9 subnets, 5 masks
D 10.0.0.0/25 [90/2172416] via 10.0.0.234, 00:08:28, Serial0/0/1
D 10.0.0.128/26 [90/2172416] via 10.0.0.235, 00:10:03, Serial0/0/0
C 10.0.0.193/32 is directly connected, GigabitEthernet0/0
L 10.0.0.193/32 is directly connected, GigabitEthernet0/0
C 10.0.0.226/32 is directly connected, Serial0/0/0
D 10.0.0.228/30 [80/2681856] via 10.0.0.225, 00:10:38, Serial0/0/0
D 10.0.0.232/30 is directly connected, Serial0/0/1
C 10.0.0.233/32 is directly connected, Serial0/0/1
L 10.0.0.233/32 is directly connected, Serial0/0/1
L 10.0.0.233/32 is directly connected, Serial0/0/1
L 10.0.0.233/32 is directly connected, Serial0/0/1
```

#### R3

R3(config)#router eigrp 1
R3(config-router)#network 10.0.0.0 0.0.0.127
R3(config-router)#network 10.0.0.228 0.0.0.3
R3(config-router)#network 10.0.0.232 0.0.0.3

### c. OSPF

#### **R1**

R1(config)#router ospf 1

R1(config-router)#network 10.0.0.228 0.0.0.3 area 0 R1(config-router)#network 10.0.0.128 0.0.0.127 area 0 R1(config-router)#network 10.0.0.224 0.0.0.3 area 0

```
Rifshow ip rou

Rifshow ip route

Codes: L - local, C - connected, S - static, 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

10.0.0.0/8 is variably subnetted, 9 subnets, 5 masks

O 10.0.0.0/25 [110/65] via 10.0.0.230, 00:03:00, Serial0/0/1

C 10.0.0.128/26 is directly connected, GigabitEthernet0/0

L 10.0.0.129/32 is directly connected, GigabitEthernet0/0

C 10.0.0.224/30 is directly connected, Serial0/0/0

L 10.0.0.225/32 is directly connected, Serial0/0/0

C 10.0.0.228/30 is directly connected, Serial0/0/1

L 10.0.0.229/32 is directly connected, Serial0/0/1

L 10.0.0.229/32 is directly connected, Serial0/0/1

L 10.0.0.229/32 is directly connected, Serial0/0/1

L 10.0.0.232/30 [110/128] via 10.0.0.230, 00:03:28, Serial0/0/1

[110/128] via 10.0.0.226, 00:03:28, Serial0/0/0
```

#### **R2**

R2(config)#router ospf 1

R2(config-router)#network 10.0.0.192 0.0.0.31 area 0 R2(config-router)#network 10.0.0.232 0.0.0.3 area 0 R2(config-router)#network 10.0.0.224 0.0.0.3 area 0

```
R2#SHow IP ROUTE

Codes: L - local, C - connected, S - static, 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

10.0.0.0/8 is variably subnetted, 9 subnets, 5 masks

0 10.0.0.0/25 [110/65] via 10.0.0.234, 00:13:05, Serial0/0/1

0 10.0.0.128/26 [110/65] via 10.0.0.234, 00:13:05, Serial0/0/0

C 10.0.0.193/32 is directly connected, GigabitThernet0/0

L 10.0.0.224/30 is directly connected, GigabitThernet0/0

L 10.0.0.226/32 is directly connected, Serial0/0/0

0 10.0.0.226/32 is directly connected, Serial0/0/0

C 10.0.0.228/30 [110/128] via 10.0.0.234, 00:13:33, Serial0/0/1

[110/128] via 10.0.0.225, 00:13:33, Serial0/0/0

C 10.0.0.233/30 is directly connected, Serial0/0/1

L 10.0.0.233/32 is directly connected, Serial0/0/1
```

### **R3**

R3(config)#ROUter ospf 1

R3(config-router)#network 10.0.0.228 0.0.0.3 area 0 R3(config-router)#network 10.0.0.232 0.0.0.3 area 0 R3(config-router)#network 10.0.0.0 0.0.0.127 area 0

```
Rajshow ip route

Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP

D - EIGRR, 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

10.0.0.0/8 is variably submetted, 9 submets, 5 masks

10.0.0.0/8 is variably submetted, GigabitEthernet0/0

L 10.0.0.1/32 is directly connected, GigabitEthernet0/0

10.0.0.1/32 is directly connected, GigabitEthernet0/0

10.0.0.1/32/E [110/65] via 10.0.0.233, 00:14:35, Serial0/0/1

0 10.0.0.224/30 [110/128] via 10.0.0.239, 00:14:35, Serial0/0/1

C 10.0.0.233/32 is directly connected, Serial0/0/0

L 10.0.0.233/32 is directly connected, Serial0/0/0

L 10.0.0.233/33 is directly connected, Serial0/0/1

L 10.0.0.234/30 is directly connected, Serial0/0/1
```