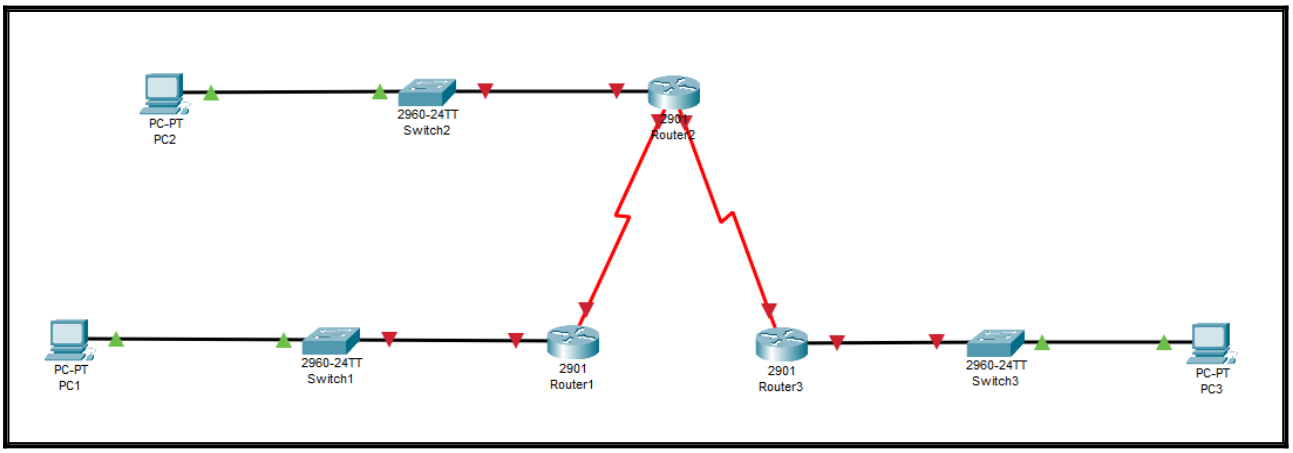
TP8 : Configuration de base du protocole RIPv1

Sommaire :

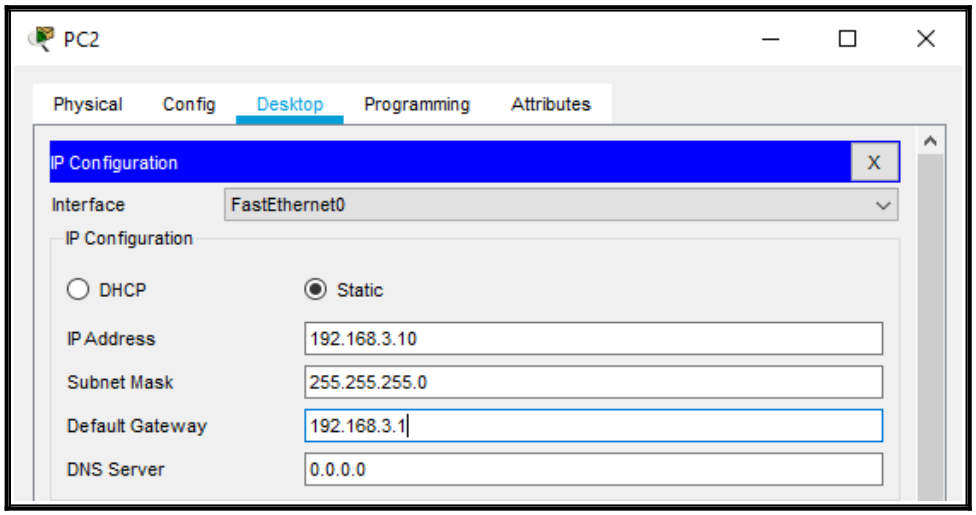
1. Configuration de la topologie et initialisation des périphériques

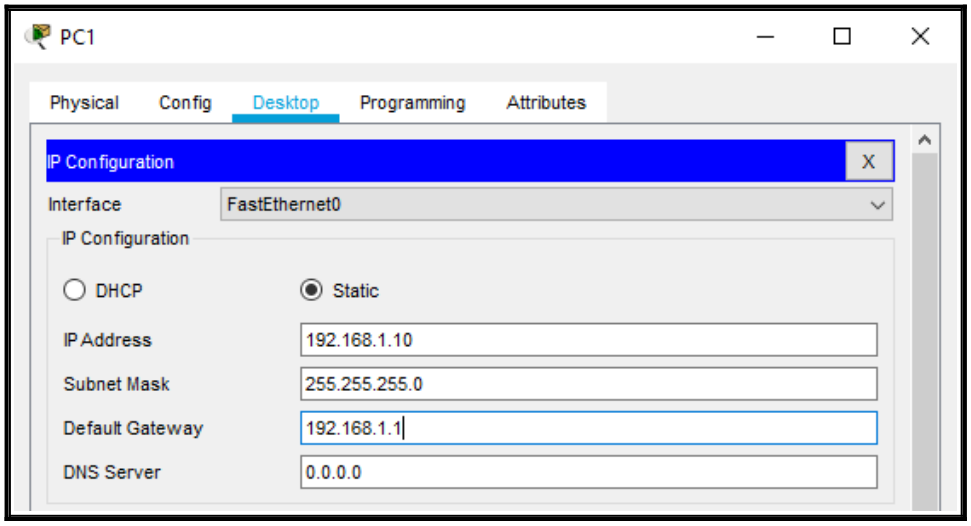


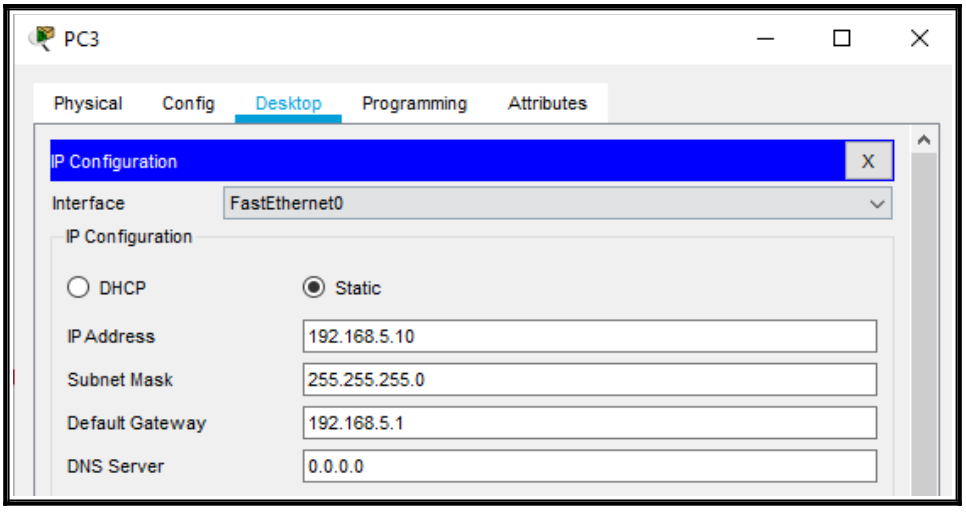
1ère étape : Nous câblons le réseau conformément à la topologie.

2. Configuration des paramètres de base des périphériques

Étape 1 : Configurez les interfaces des ordinateurs.







1ère étape:Nous configurons chaque interfaces des trois ordinateurs.

Étape 2 : Configurez les routeurs

```
R1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R1(config)#interface g0/0
R1(config-if)#ip address 192.168.1.1 255.255.255.0
R1(config-if)#description R1 LAN
R1(config-if)#no shutdown

R1(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up

R1(config-if)#interface serial 0/0/0
R1(config-if)#ip address 192.168.2.1 255.255.255.0
R1(config-if)#clock rate 64000
R1(config-if)#description Link to R2
R1(config-if)#no shutdown

%LINK-5-CHANGED: Interface Serial0/0/0, changed state to down
R1(config-if)#
```

R1

```
Router>en
Router#config terminal
Enter configuration commands, one per line.  End with CNT
Router(config)#hostname R2
R2(config)#no ip domain-lookup
R2(config)#security passwords min-length 10
R2(config)#enable secret classclass
R2(config)#line con 0
R2(config-line)#password ciscoconpass
R2(config-line)#login
R2(config-line)#exec-timeout 5 0
R2(config-line)#logging synchronous
R2(config-line)#exit
R2(config)#line vty 0 4
R2(config-line)#password ciscovtypass
R2(config-line)#login
R2(config-line)#exec-timeout 5 0
R2(config-line)#logging synchronous
R2(config-line)#exit
R2(config)#service password-encryption
```

R2

```
Router>en
Router#config terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#hostname R3
R3(config)#no ip domain-lookup
R3(config)#security passwords min length 10
                                ^
% Invalid input detected at '^' marker.

R3(config)#security passwords min-length 10
R3(config)#enbale secret classclass
              ^
% Invalid input detected at '^' marker.

R3(config)#enbale secret classclass
              ^
% Invalid input detected at '^' marker.

R3(config)#enable secret classclass
R3(config)#line con 0
R3(config-line)#password ciscoconpass
R3(config-line)#login
R3(config-line)#exec-timeout 5 0
R3(config-line)#logging synchronous
R3(config-line)#exit
R3(config)#line vty 0 4
R3(config-line)#password ciscovtypass
R3(config-line)#login
R3(config-line)#exec-timeout 5 0
R3(config-line)#logging synchronous
R3(config-line)#exit
R3(config)#service password-encryption
```

R3

2ème étape : Nous configurons par la suite chaque routeurs.

Étape 3 : Configurez les interfaces LAN et WAN.

```
R1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R1(config)#interface g0/0
R1(config-if)#ip address 192.168.1.1 255.255.255.0
R1(config-if)#description R1 LAN
R1(config-if)#no shutdown

R1(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up

R1(config-if)#interface serial 0/0/0
R1(config-if)#ip address 192.168.2.1 255.255.255.0
R1(config-if)#clock rate 64000
R1(config-if)#description Link to R2
R1(config-if)#no shutdown

%LINK-5-CHANGED: Interface Serial0/0/0, changed state to down
R1(config-if)#
```

R1

```
R2#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R2(config)#interface g0/0
R2(config-if)#ip address 192.168.3.1 255.255.255.0
R2(config-if)#description R2 LAN
R2(config-if)#no shutdown

R2(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up

R2(config-if)#interface serial 0/0/0
R2(config-if)#ip address 192.168.2.2 255.255.255.0
R2(config-if)#description Link to R1
R2(config-if)#no shutdown

R2(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up
```

```
R2(config)#interface serial 0/0/1
R2(config-if)#ip address 192.168.4.2 255.255.255.0
R2(config-if)#clock rate 64000
R2(config-if)#description Link to R3
R2(config-if)#no shutdown
```

R2

```
R3(config)#interface g0/0
R3(config-if)#ip address 192.168.5.1 255.255.255.0
R3(config-if)#description R3 LAN
R3(config-if)#no shutdown

R3(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up

R3(config-if)#interface serial 0/0/1
R3(config-if)#ip address 192.168.4.1 255.255.255.0
R3(config-if)#description Link to R2
R3(config-if)#no shutdown
```

R3

3ème étape: Nous configurons ensuite les interfaces LAN et WAN de chaque routeur en prenant en compte les DCE.

3. Configuration du protocole RIPv1

Étape 1 : activation du routage dynamique

```
R1(config)#router ?
  bgp     Border Gateway Protocol (BGP)
  eigrp   Enhanced Interior Gateway Routing Protocol (EIGRP)
  ospf    Open Shortest Path First (OSPF)
  rip     Routing Information Protocol (RIP)
```

```
R1(config)#router rip
R1(config-router)#
```

1ère étape : Après avoir saisit la commande « **router ?** » afin d'afficher la liste des protocoles de routage disponible sur le routeur, nous saisissons la commande « **router rip** » pour activer le protocole **RIP**.

Étape 2 : saisie des adresses réseau par classe

```
R1(config-router)#network 192.168.1.0
R1(config-router)#network 192.168.2.0
```

```
R2(config)#router rip
R2(config-router)#network 192.168.2.0
R2(config-router)#network 192.168.3.0
R2(config-router)#network 192.168.4.0
```

```
R3(config)#router rip
R3(config-router)#network 192.168.5.0
R3(config-router)#network 192.168.4.0
```

2ème étape : Depuis le mode de configuration des routeurs, nous entrons les adresses réseau par classe de chaque réseau directement connecté à l'aide de la commande **network**.

Étape 3 : configuration de R1 pour bloquer l'émission des mises à jour via l'interface G0/0

```
R1(config-router)#passive-interface g0/0
R1(config-router)#end
```

```
R2(config-router)#passive-interface g0/0
R2(config-router)#end
R2#
```

```
R3(config-router)#passive-interface g0/0
R3(config-router)#end
```

3ème étape : Nous débloquons désormais sur chaque routeur l'émission des mise à jour via l'interface G0/0.

4. Vérification du routage RIP

Étape 1 : utilisation de la commande show ip route pour vérifier que la topologie de la table de routage de chaque routeur contient tous les réseaux

```
R1#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

     192.168.1.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.1.0/24 is directly connected, GigabitEthernet0/0
L       192.168.1.1/32 is directly connected, GigabitEthernet0/0
     192.168.2.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.2.0/24 is directly connected, Serial0/0/0
L       192.168.2.1/32 is directly connected, Serial0/0/0
R    192.168.3.0/24 [120/1] via 192.168.2.2, 00:00:23, Serial0/0/0
R    192.168.4.0/24 [120/1] via 192.168.2.2, 00:00:23, Serial0/0/0
R    192.168.5.0/24 [120/2] via 192.168.2.2, 00:00:23, Serial0/0/0
```

R1

```
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

R    192.168.1.0/24 [120/1] via 192.168.2.1, 00:00:12, Serial0/0/0
     192.168.2.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.2.0/24 is directly connected, Serial0/0/0
L       192.168.2.2/32 is directly connected, Serial0/0/0
     192.168.3.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.3.0/24 is directly connected, GigabitEthernet0/0
L       192.168.3.1/32 is directly connected, GigabitEthernet0/0
     192.168.4.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.4.0/24 is directly connected, Serial0/0/1
L       192.168.4.2/32 is directly connected, Serial0/0/1
R    192.168.5.0/24 [120/1] via 192.168.4.1, 00:00:13, Serial0/0/1
```

R2

```
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

R    192.168.1.0/24 [120/2] via 192.168.4.2, 00:00:25, Serial0/0/1
R    192.168.2.0/24 [120/1] via 192.168.4.2, 00:00:25, Serial0/0/1
R    192.168.3.0/24 [120/1] via 192.168.4.2, 00:00:25, Serial0/0/1
     192.168.4.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.4.0/24 is directly connected, Serial0/0/1
L       192.168.4.1/32 is directly connected, Serial0/0/1
     192.168.5.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.5.0/24 is directly connected, GigabitEthernet0/0
L       192.168.5.1/32 is directly connected, GigabitEthernet0/0
```

R3

1ère étape : La commande permet de vérifier que la topologie de la table de routage de chaque routeur contient tous les réseaux.

Étape 2 : saisie des adresses réseau par classe

```
C:\>ping 192.168.3.10

Pinging 192.168.3.10 with 32 bytes of data:

Reply from 192.168.3.10: bytes=32 time=5ms TTL=126
Reply from 192.168.3.10: bytes=32 time=1ms TTL=126
Reply from 192.168.3.10: bytes=32 time=1ms TTL=126
Reply from 192.168.3.10: bytes=32 time=1ms TTL=126

Ping statistics for 192.168.3.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 5ms, Average = 2ms
```

PC-1 à PC-2

```
C:\>ping 192.168.5.10

Pinging 192.168.5.10 with 32 bytes of data:

Reply from 192.168.5.10: bytes=32 time=9ms TTL=125
Reply from 192.168.5.10: bytes=32 time=3ms TTL=125
Reply from 192.168.5.10: bytes=32 time=2ms TTL=125
Reply from 192.168.5.10: bytes=32 time=3ms TTL=125

Ping statistics for 192.168.5.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 2ms, Maximum = 9ms, Average = 4ms
```

PC-1 à PC-3

```
C:\>ping 192.168.1.10

Pinging 192.168.1.10 with 32 bytes of data:

Reply from 192.168.1.10: bytes=32 time=5ms TTL=126
Reply from 192.168.1.10: bytes=32 time=2ms TTL=126
Reply from 192.168.1.10: bytes=32 time=1ms TTL=126
Reply from 192.168.1.10: bytes=32 time=1ms TTL=126

Ping statistics for 192.168.1.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 5ms, Average = 2ms
```

PC-2 à PC-1

```
C:\>ping 192.168.5.10

Pinging 192.168.5.10 with 32 bytes of data:

Reply from 192.168.5.10: bytes=32 time=2ms TTL=126
Reply from 192.168.5.10: bytes=32 time=1ms TTL=126
Reply from 192.168.5.10: bytes=32 time=1ms TTL=126
Reply from 192.168.5.10: bytes=32 time=1ms TTL=126

Ping statistics for 192.168.5.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 2ms, Average = 1ms
```

PC-2 à PC-3

```
C:\>ping 192.168.1.10

Pinging 192.168.1.10 with 32 bytes of data:

Reply from 192.168.1.10: bytes=32 time=3ms TTL=125
Reply from 192.168.1.10: bytes=32 time=2ms TTL=125
Reply from 192.168.1.10: bytes=32 time=2ms TTL=125
Reply from 192.168.1.10: bytes=32 time=2ms TTL=125

Ping statistics for 192.168.1.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 2ms, Maximum = 3ms, Average = 2ms
```

PC- 3 à PC-1

```
C:\>ping 192.168.3.10

Pinging 192.168.3.10 with 32 bytes of data:

Reply from 192.168.3.10: bytes=32 time=1ms TTL=126
Reply from 192.168.3.10: bytes=32 time=1ms TTL=126
Reply from 192.168.3.10: bytes=32 time=4ms TTL=126
Reply from 192.168.3.10: bytes=32 time=1ms TTL=126

Ping statistics for 192.168.3.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 4ms, Average = 1ms
```

PC-3 à PC-2

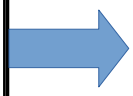
2ème étape : Nous testons la connectivité entre chaque PC, celle-ci ne semble pas perturber et fonctionne correctement.

Étape 3 : configuration de R1 pour bloquer l'émission des mises à jour via l'interface G0/0

```
R1#show ip protocols
Routing Protocol is "rip"
Sending updates every 30 seconds, next due in 9 seconds
Invalid after 180 seconds, hold down 180, flushed after 240
Outgoing update filter list for all interfaces is not set
Incoming update filter list for all interfaces is not set
Redistributing: rip
Default version control: send version 1, receive any version
  Interface              Send  Recv  Triggered RIP  Key-chain
  Serial0/0/0            1     2 1
Automatic network summarization is in effect
Maximum path: 4
Routing for Networks:
           192.168.1.0
           192.168.2.0
Passive Interface(s):
           GigabitEthernet0/0
Routing Information Sources:
           Gateway         Distance      Last Update
           192.168.2.2           120      00:00:00
Distance: (default is 120)
```

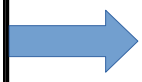
R1

```
R2#show ip protocols
Routing Protocol is "rip"
Sending updates every 30 seconds, next due in 11 seconds
Invalid after 180 seconds, hold down 180, flushed after 240
Outgoing update filter list for all interfaces is not set
Incoming update filter list for all interfaces is not set
Redistributing: rip
Default version control: send version 1, receive any version
  Interface              Send  Recv  Triggered RIP  Key-chain
  Serial0/0/0            1     2 1
  Serial0/0/1            1     2 1
Automatic network summarization is in effect
Maximum path: 4
Routing for Networks:
            192.168.2.0
            192.168.3.0
            192.168.4.0
Passive Interface(s):
            GigabitEthernet0/0
Routing Information Sources:
            Gateway         Distance      Last Update
            192.168.2.1           120      00:00:04
            192.168.4.1           120      00:00:04
Distance: (default is 120)
```



R2

```
R3#show ip protocols
Routing Protocol is "rip"
Sending updates every 30 seconds, next due in 10 seconds
Invalid after 180 seconds, hold down 180, flushed after 240
Outgoing update filter list for all interfaces is not set
Incoming update filter list for all interfaces is not set
Redistributing: rip
Default version control: send version 1, receive any version
  Interface              Send  Recv  Triggered RIP  Key-chain
  Serial0/0/1            1     2 1
Automatic network summarization is in effect
Maximum path: 4
Routing for Networks:
            192.168.4.0
            192.168.5.0
Passive Interface(s):
            GigabitEthernet0/0
Routing Information Sources:
            Gateway         Distance      Last Update
            192.168.4.2           120      00:00:26
Distance: (default is 120)
```



R3

3ème étape : Nous affichons avec cette commande les informations relatives au processus de routage.

Étape 4 : configuration du protocole RIP sur les routeurs R2 et R3 à l'aide des commandes router rip, network et passive-interface

```
R1#debug ip rip
RIP protocol debugging is on
R1#RIP: sending  v1 update to 255.255.255.255 via Serial0/0/0 (192.168.2.1)
RIP: build update entries
      network 192.168.1.0 metric 1

R1#RIP: received v1 update from 192.168.2.2 on Serial0/0/0
      192.168.3.0 in 1 hops
      192.168.4.0 in 1 hops
      192.168.5.0 in 2 hops

R1#RIP: sending  v1 update to 255.255.255.255 via Serial0/0/0 (192.168.2.1)
RIP: build update entries
      network 192.168.1.0 metric 1
```

R1

```
R2#debug ip rip
RIP protocol debugging is on
R2#RIP: sending  v1 update to 255.255.255.255 via Serial0/0/0 (192.168.2.2)
RIP: build update entries
      network 192.168.3.0 metric 1
      network 192.168.4.0 metric 1
      network 192.168.5.0 metric 2
RIP: sending  v1 update to 255.255.255.255 via Serial0/0/1 (192.168.4.2)
RIP: build update entries
      network 192.168.1.0 metric 2
      network 192.168.2.0 metric 1
      network 192.168.3.0 metric 1

R2#RIP: received v1 update from 192.168.4.1 on Serial0/0/1
      192.168.5.0 in 1 hops

R2#RIP: received v1 update from 192.168.2.1 on Serial0/0/0
      192.168.1.0 in 1 hops
```

R2

```
R3#debug ip rip
RIP protocol debugging is on
R3#RIP: received v1 update from 192.168.4.2 on Serial0/0/1
      192.168.1.0 in 2 hops
      192.168.2.0 in 1 hops
      192.168.3.0 in 1 hops

R3#RIP: sending  v1 update to 255.255.255.255 via Serial0/0/1 (192.168.4.1)
RIP: build update entries
      network 192.168.5.0 metric 1
```

R3

4ème étape : Nous affichons les messages **RIP** envoyé et reçus.

Étape 5 : arrêt des données de débogage à l'aide de la commande undebug all

```
R3#undebug all
All possible debugging has been turned off
R3#
```

5ème étape : Cette commande est saisit sur chaque routeur permettant d'arrêter des données de débogage, tous les débogages possibles sont donc inactifs.