



Universitat de Lleida
Escola Politècnica Superior

EXERCICI OPTATIU GNS3: BGP

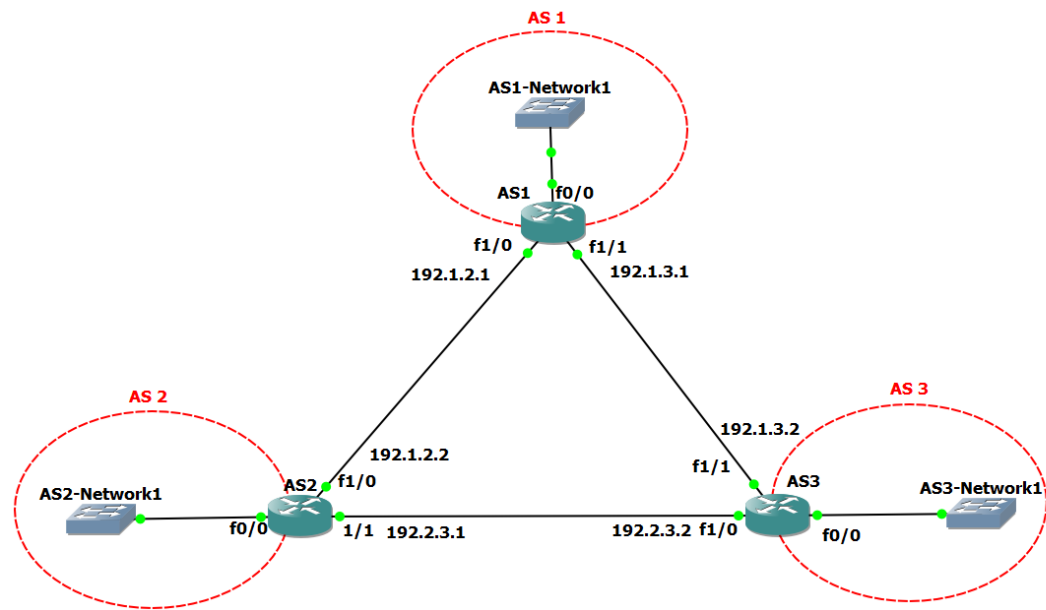
Xarxes de Sistemes d'Informació

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EXERCICI 1

DISSENY DE XARXA



AS1

show configuration

```
interface FastEthernet0/0
 ip address 1.99.0.1 255.255.255.0
 duplex half
!
interface FastEthernet1/0
 ip address 192.1.2.1 255.255.255.0
 duplex auto
 speed auto
!
interface FastEthernet1/1
 ip address 192.1.3.1 255.255.255.0
 duplex auto
 speed auto
!
interface FastEthernet2/0
 no ip address
 shutdown
 duplex auto
 speed auto
!
interface FastEthernet2/1
 no ip address
 shutdown
 duplex auto
 speed auto
!
router bgp 2
 no synchronization
 bgp log-neighbor-changes
 network 1.99.0.0 mask 255.255.255.0
 neighbor 192.1.2.2 remote-as 2
 neighbor 192.1.3.2 remote-as 3
 no auto-summary
```

Show ip route

```
Gateway of last resort is not set

    1.0.0.0/24 is subnetted, 1 subnets
C       1.99.0.0 is directly connected, FastEthernet0/0
    2.0.0.0/24 is subnetted, 1 subnets
B       2.99.0.0 [20/0] via 192.1.2.2, 00:36:54
    3.0.0.0/24 is subnetted, 1 subnets
B       3.99.0.0 [20/0] via 192.1.3.2, 00:32:56
C     192.1.2.0/24 is directly connected, FastEthernet1/0
C     192.1.3.0/24 is directly connected, FastEthernet1/1
B     192.2.3.0/24 [20/0] via 192.1.3.2, 00:32:25
```

show ip bgp

| Network | Next Hop | Metric | LocPrf | Weight | Path |
|----------------|-----------|--------|--------|--------|-------|
| *> 1.99.0.0/24 | 0.0.0.0 | 0 | | 32768 | i |
| * 2.99.0.0/24 | 192.1.3.2 | | | 0 | 3 2 i |
| *> | 192.1.2.2 | 0 | | 0 | 2 i |
| * 3.99.0.0/24 | 192.1.2.2 | | | 0 | 2 3 i |
| *> | 192.1.3.2 | 0 | | 0 | 3 i |
| * 192.1.2.0 | 192.1.2.2 | 0 | | 0 | 2 i |
| *> | 0.0.0.0 | 0 | | 32768 | i |
| * 192.1.3.0 | 192.1.3.2 | 0 | | 0 | 3 i |
| *> | 0.0.0.0 | 0 | | 32768 | i |
| * 192.2.3.0 | 192.1.2.2 | | | 0 | 2 3 i |
| *> | 192.1.3.2 | 0 | | 0 | 3 i |

AS2

show configuration

```
interface FastEthernet0/0
ip address 2.99.0.1 255.255.255.0
duplex half
!
interface FastEthernet1/0
ip address 192.1.2.2 255.255.255.0
duplex auto
speed auto
!
interface FastEthernet1/1
ip address 192.2.3.1 255.255.255.0
duplex auto
speed auto
!
interface FastEthernet2/0
no ip address
shutdown
duplex auto
speed auto
!
interface FastEthernet2/1
no ip address
shutdown
duplex auto
speed auto
!
router bgp 2
no synchronization
bgp log-neighbor-changes
network 2.99.0.0 mask 255.255.255.0
neighbor 192.1.2.1 remote-as 1
neighbor 192.2.3.2 remote-as 3
no auto-summary
```

show ip route

```
Gateway of last resort is not set

    1.0.0.0/24 is subnetted, 1 subnets
B       1.99.0.0 [20/0] via 192.1.2.1, 01:00:41
    2.0.0.0/24 is subnetted, 1 subnets
C       2.99.0.0 is directly connected, FastEthernet0/0
    3.0.0.0/24 is subnetted, 1 subnets
B       3.99.0.0 [20/0] via 192.2.3.2, 00:58:21
C     192.1.2.0/24 is directly connected, FastEthernet1/0
B     192.1.3.0/24 [20/0] via 192.1.2.1, 01:00:11
C     192.2.3.0/24 is directly connected, FastEthernet1/1
```

show ip bgp

| | Network | Next Hop | Metric | LocPrf | Weight | Path |
|----|-------------|-----------|--------|--------|--------|------|
| * | 1.99.0.0/24 | 192.2.3.2 | | | 0 3 1 | i |
| *> | | 192.1.2.1 | 0 | | 0 1 | i |
| *> | 2.99.0.0/24 | 0.0.0.0 | 0 | | 32768 | i |
| * | 3.99.0.0/24 | 192.1.2.1 | | | 0 1 3 | i |
| *> | | 192.2.3.2 | 0 | | 0 3 | i |
| *> | 192.1.2.0 | 0.0.0.0 | 0 | | 32768 | i |
| * | | 192.2.3.2 | | | 0 3 1 | i |
| * | | 192.1.2.1 | 0 | | 0 1 | i |
| * | 192.1.3.0 | 192.2.3.2 | 0 | | 0 3 | i |
| *> | | 192.1.2.1 | 0 | | 0 1 | i |
| r | 192.2.3.0 | 192.1.2.1 | | | 0 1 3 | i |
| r> | | 192.2.3.2 | 0 | | 0 3 | i |

AS3

show configuration

```
interface FastEthernet0/0
ip address 3.99.0.1 255.255.255.0
duplex half
!
interface FastEthernet1/0
ip address 192.2.3.2 255.255.255.0
duplex auto
speed auto
!
interface FastEthernet1/1
ip address 192.1.3.2 255.255.255.0
duplex auto
speed auto
!
interface FastEthernet2/0
no ip address
shutdown
duplex auto
speed auto
!
interface FastEthernet2/1
no ip address
shutdown
duplex auto
speed auto
!
router bgp 2
no synchronization
bgp log-neighbor-changes
network 3.99.0.0 mask 255.255.255.0
neighbor 192.1.3.1 remote-as 1
neighbor 192.2.3.1 remote-as 2
no auto-summary
```

show ip route

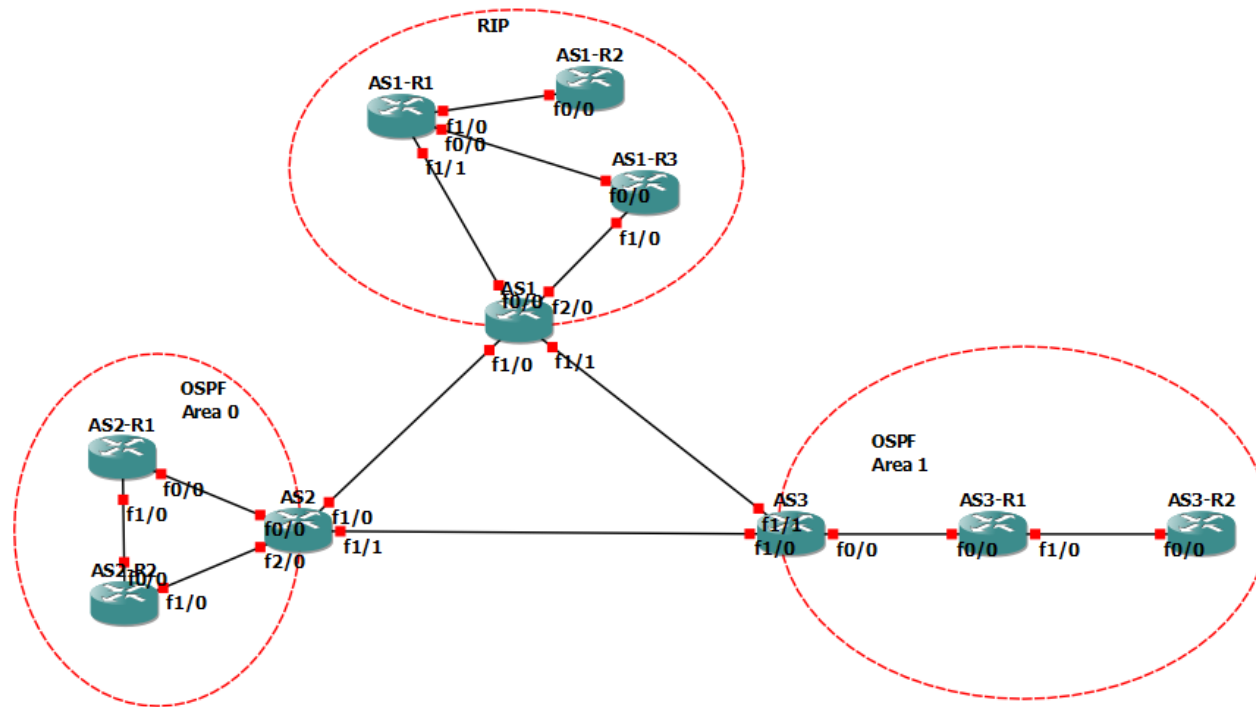
```
1.0.0.0/24 is subnetted, 1 subnets
B    1.99.0.0 [20/0] via 192.1.3.1, 01:04:08
2.0.0.0/24 is subnetted, 1 subnets
B    2.99.0.0 [20/0] via 192.2.3.1, 01:05:15
3.0.0.0/24 is subnetted, 1 subnets
C    3.99.0.0 is directly connected, FastEthernet0/0
B    192.1.2.0/24 [20/0] via 192.1.3.1, 01:03:38
C    192.1.3.0/24 is directly connected, FastEthernet1/1
C    192.2.3.0/24 is directly connected, FastEthernet1/0
```

show ip bgp

| | Network | Next Hop | Metric | LocPrf | Weight | Path |
|----|-------------|-----------|--------|--------|--------|------|
| * | 1.99.0.0/24 | 192.2.3.1 | | | 0 2 1 | i |
| *> | | 192.1.3.1 | 0 | | 0 1 | i |
| * | 2.99.0.0/24 | 192.1.3.1 | | | 0 1 2 | i |
| *> | | 192.2.3.1 | 0 | | 0 2 | i |
| *> | 3.99.0.0/24 | 0.0.0.0 | 0 | | 32768 | i |
| * | 192.1.2.0 | 192.2.3.1 | 0 | | 0 2 | i |
| *> | | 192.1.3.1 | 0 | | 0 1 | i |
| *> | 192.1.3.0 | 0.0.0.0 | 0 | | 32768 | i |
| * | | 192.2.3.1 | | | 0 2 1 | i |
| * | | 192.1.3.1 | 0 | | 0 1 | i |
| *> | 192.2.3.0 | 0.0.0.0 | 0 | | 32768 | i |

EXERCICI 2

DISSENY DE XARXA



AS1

show ip route

```
1.0.0.0/24 is subnetted, 3 subnets
C    1.0.1.0 is directly connected, FastEthernet0/0
C    1.0.3.0 is directly connected, FastEthernet2/0
R    1.1.3.0 [120/1] via 1.0.3.2, 00:00:27, FastEthernet2/0
C    192.1.2.0/24 is directly connected, FastEthernet1/0
C    192.1.3.0/24 is directly connected, FastEthernet1/1
B    192.2.3.0/24 [20/0] via 192.1.2.2, 00:12:42
```

show configuration

```
interface FastEthernet0/0
 ip address 1.0.1.1 255.255.255.0
 duplex half
!
interface FastEthernet1/0
 ip address 192.1.2.1 255.255.255.0
 duplex auto
 speed auto
!
interface FastEthernet1/1
 ip address 192.1.3.1 255.255.255.0
 duplex auto
 speed auto
!
interface FastEthernet2/0
 ip address 1.0.3.1 255.255.255.0
 duplex auto
 speed auto
!
interface FastEthernet2/1
 no ip address
 shutdown
 duplex auto
 speed auto
!
router rip
 version 2
 network 1.0.0.0
!
router bgp 1
 no synchronization
 bgp log-neighbor-changes
 network 192.1.2.0
 network 192.1.3.0
 neighbor 192.1.2.2 remote-as 2
 neighbor 192.1.3.2 remote-as 3
 no auto-summary
```

AS1-R1

show ip route

```
1.0.0.0/24 is subnetted, 4 subnets
C    1.0.1.0 is directly connected, FastEthernet1/1
C    1.1.2.0 is directly connected, FastEthernet1/0
R    1.0.3.0 [120/1] via 1.1.3.2, 00:00:20, FastEthernet0/0
      [120/1] via 1.0.1.1, 00:00:18, FastEthernet1/1
C    1.1.3.0 is directly connected, FastEthernet0/0
```

show configuration

```
interface FastEthernet0/0
 ip address 1.1.3.1 255.255.255.0
 duplex half
!
interface FastEthernet1/0
 ip address 1.1.2.1 255.255.255.0
 duplex auto
 speed auto
!
interface FastEthernet1/1
 ip address 1.0.1.2 255.255.255.0
 duplex auto
 speed auto
!
interface FastEthernet2/0
 no ip address
 shutdown
 duplex auto
 speed auto
!
interface FastEthernet2/1
 no ip address
 shutdown
 duplex auto
 speed auto
!
router rip
 network 1.0.0.0
```


AS1-R2

show ip route

```
1.0.0.0/24 is subnetted, 1 subnets
C      1.1.2.0 is directly connected, FastEthernet0/0
```

show configuration

```
interface FastEthernet0/0
 ip address 1.1.2.2 255.255.255.0
 duplex half
!
interface FastEthernet1/0
 no ip address
 shutdown
 duplex auto
 speed auto
!
interface FastEthernet1/1
 no ip address
 shutdown
 duplex auto
 speed auto
!
interface FastEthernet2/0
 no ip address
 shutdown
 duplex auto
 speed auto
!
interface FastEthernet2/1
 no ip address
 shutdown
 duplex auto
 speed auto
!
router rip
 version 2
 network 1.0.0.0
.
```

AS1-R3

show ip route

```
1.0.0.0/24 is subnetted, 3 subnets
R      1.0.1.0 [120/1] via 1.0.3.1, 00:00:10, FastEthernet1/0
C      1.0.3.0 is directly connected, FastEthernet1/0
C      1.1.3.0 is directly connected, FastEthernet0/0
```

show configuration

```
interface FastEthernet0/0
 ip address 1.1.3.2 255.255.255.0
 duplex half
!
interface FastEthernet1/0
 ip address 1.0.3.2 255.255.255.0
 duplex auto
 speed auto
!
interface FastEthernet1/1
 no ip address
 shutdown
 duplex auto
 speed auto
!
interface FastEthernet2/0
 no ip address
 shutdown
 duplex auto
 speed auto
!
interface FastEthernet2/1
 no ip address
 shutdown
 duplex auto
 speed auto
!
router rip
 version 2
 network 1.0.0.0
```

AS2-R0

show ip route

```
2.0.0.0/24 is subnetted, 3 subnets
C      2.0.2.0 is directly connected, FastEthernet2/0
O      2.1.2.0 [110/2] via 2.0.2.2, 01:11:41, FastEthernet2/0
      [110/2] via 2.0.1.2, 01:11:41, FastEthernet0/0
C      2.0.1.0 is directly connected, FastEthernet0/0
C      192.1.2.0/24 is directly connected, FastEthernet1/0
B      192.1.3.0/24 [20/0] via 192.2.3.2, 01:10:03
C      192.2.3.0/24 is directly connected, FastEthernet1/1
```

show configuration

```
interface FastEthernet0/0
 ip address 2.0.1.1 255.255.255.0
 duplex half
!
interface FastEthernet1/0
 ip address 192.1.2.2 255.255.255.0
 duplex auto
 speed auto
!
interface FastEthernet1/1
 ip address 192.2.3.1 255.255.255.0
 duplex auto
 speed auto
!
interface FastEthernet2/0
 ip address 2.0.2.1 255.255.255.0
 duplex auto
 speed auto
!
interface FastEthernet2/1
 no ip address
 shutdown
 duplex auto
 speed auto
!
router ospf 1
 log-adjacency-changes
 network 2.0.0.0 0.255.255.255 area 0
!
router bgp 2
 no synchronization
 bgp log-neighbor-changes
 network 192.1.2.0
 network 192.2.3.0
 neighbor 192.1.2.1 remote-as 1
 neighbor 192.2.3.2 remote-as 3
 no auto-summary
!
```

AS2-R1

show ip route

```
2.0.0.0/24 is subnetted, 3 subnets
O      2.0.2.0 [110/2] via 2.1.2.2, 01:44:49, FastEthernet1/0
        [110/2] via 2.0.1.1, 01:44:49, FastEthernet0/0
C      2.1.2.0 is directly connected, FastEthernet1/0
C      2.0.1.0 is directly connected, FastEthernet0/0
```

show configuration

```
interface FastEthernet0/0
 ip address 2.0.1.2 255.255.255.0
 duplex half
!
interface FastEthernet1/0
 ip address 2.1.2.1 255.255.255.0
 duplex auto
 speed auto
!
interface FastEthernet1/1
 no ip address
 shutdown
 duplex auto
 speed auto
!
interface FastEthernet2/0
 no ip address
 shutdown
 duplex auto
 speed auto
!
interface FastEthernet2/1
 no ip address
 shutdown
 duplex auto
 speed auto
!
router ospf 1
 log-adjacency-changes
 network 2.0.0.0 0.255.255.255 area 0
```

AS2-R2

show ip route

```
      2.0.0.0/24 is subnetted, 3 subnets
C       2.0.2.0 is directly connected, FastEthernet1/0
C       2.1.2.0 is directly connected, FastEthernet0/0
O       2.0.1.0 [110/2] via 2.1.2.1, 00:01:44, FastEthernet0/0
      [110/2] via 2.0.2.1, 00:01:44, FastEthernet1/0
```

show configuration

```
interface FastEthernet0/0
 ip address 2.1.2.2 255.255.255.0
 duplex half
!
interface FastEthernet1/0
 ip address 2.0.2.2 255.255.255.0
 duplex auto
 speed auto
!
interface FastEthernet1/1
 no ip address
 shutdown
 duplex auto
 speed auto
!
interface FastEthernet2/0
 no ip address
 shutdown
 duplex auto
 speed auto
!
interface FastEthernet2/1
 no ip address
 shutdown
 duplex auto
 speed auto
!
router ospf 1
 log-adjacency-changes
 network 2.0.0.0 0.255.255.255 area 0
!
```

AS3-R0

show ip route

```
3.0.0.0/24 is subnetted, 2 subnets
O      3.1.2.0 [110/2] via 3.0.1.2, 00:47:44, FastEthernet0/0
C      3.0.1.0 is directly connected, FastEthernet0/0
B      192.1.2.0/24 [20/0] via 192.2.3.1, 01:21:58
C      192.1.3.0/24 is directly connected, FastEthernet1/1
C      192.2.3.0/24 is directly connected, FastEthernet1/0
```

show configuration

```
interface FastEthernet0/0
 ip address 3.0.1.1 255.255.255.0
 duplex half
!
interface FastEthernet1/0
 ip address 192.2.3.2 255.255.255.0
 duplex auto
 speed auto
!
interface FastEthernet1/1
 ip address 192.1.3.2 255.255.255.0
 duplex auto
 speed auto
!
interface FastEthernet2/0
 no ip address
 shutdown
 duplex auto
 speed auto
!
interface FastEthernet2/1
 no ip address
 shutdown
 duplex auto
 speed auto
!
router ospf 1
 log-adjacency-changes
 network 3.0.0.0 0.255.255.255 area 1
!
router bgp 3
 no synchronization
 bgp log-neighbor-changes
 network 192.1.3.0
 network 192.2.3.0
 neighbor 192.1.3.1 remote-as 1
 neighbor 192.2.3.1 remote-as 2
 no auto-summary
```

AS3-R1

show ip route

```
3.0.0.0/24 is subnetted, 2 subnets
C      3.1.2.0 is directly connected, FastEthernet1/0
C      3.0.1.0 is directly connected, FastEthernet0/0
AS3-R1#
```

show configuration

```
interface FastEthernet0/0
 ip address 3.0.1.2 255.255.255.0
 duplex half
!
interface FastEthernet1/0
 ip address 3.1.2.1 255.255.255.0
 duplex auto
 speed auto
!
interface FastEthernet1/1
 no ip address
 shutdown
 duplex auto
 speed auto
!
interface FastEthernet2/0
 no ip address
 shutdown
 duplex auto
 speed auto
!
interface FastEthernet2/1
 no ip address
 shutdown
 duplex auto
 speed auto
!
router ospf 1
 log-adjacency-changes
 network 3.0.0.0 0.255.255.255 area 1
.
```

AS3-R2

show ip route

```
      3.0.0.0/24 is subnetted, 2 subnets  
C       3.1.2.0 is directly connected, FastEthernet0/0  
O       3.0.1.0 [110/2] via 3.1.2.1, 01:00:34, FastEthernet0/0
```

show configuration

```
interface FastEthernet0/0  
 ip address 3.1.2.2 255.255.255.0  
 duplex half  
!  
interface FastEthernet1/0  
 no ip address  
 shutdown  
 duplex auto  
 speed auto  
!  
interface FastEthernet1/1  
 no ip address  
 shutdown  
 duplex auto  
 speed auto  
!  
interface FastEthernet2/0  
 no ip address  
 shutdown  
 duplex auto  
 speed auto  
!  
interface FastEthernet2/1  
 no ip address  
 shutdown  
 duplex auto  
 speed auto  
!  
router ospf 1  
 log-adjacency-changes  
 network 3.0.0.0 0.255.255.255 area 1
```