Memòria Treball de Laboratori XC2

Tardor 2020-2021

Laboratori 4 – Inter-Domain Routing (BGPv4)

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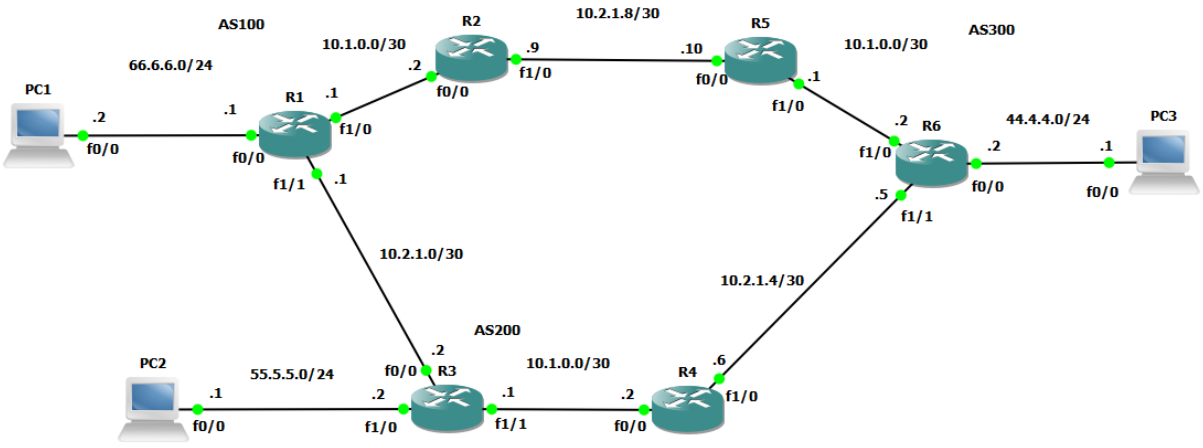
1. Esquema de la xarxa desenvolupada



2. Relació de les línies de programació

R1	R2
interface Loopback0 ip address 10.0.11.1 255.255.255.252 ! interface FastEthernet0/0 ip address 66.6.6.1 255.255.255.0 duplex half ! interface FastEthernet1/0 ip address 10.1.0.1 255.255.255.252 duplex auto speed auto ! interface FastEthernet1/1 ip address 10.2.1.1 255.255.255.252 duplex auto speed auto ! router ospf 1 passive-interface FastEthernet0/0 passive-interface FastEthernet1/1 network 10.0.11.0 0.0.0.3 area 0 network 10.1.0.0 0.0.0.3 area 0 network 66.6.6.0 0.0.0.255 area 0 ! router bgp 100 bgp log-neighbor-changes network 66.6.6.0 mask 255.255.255.0 neighbor 10.0.11.2 remote-as 100 neighbor 10.0.11.2 update-source Loopback0 neighbor 10.2.1.2 remote-as 200	interface Loopback0 ip address 10.0.11.2 255.255.255.252 ! interface FastEthernet0/0 ip address 10.1.0.2 255.255.255.252 duplex half ! interface FastEthernet1/0 ip address 10.2.1.9 255.255.255.252 duplex auto speed auto ! router ospf 2 passive-interface FastEthernet1/0 network 10.0.11.0 0.0.0.3 area 0 network 10.1.0.0 0.0.0.3 area 0 network 10.2.1.8 0.0.0.3 area 0 ! router bgp 100 bgp log-neighbor-changes network 66.6.6.0 mask 255.255.255.0 neighbor 10.0.11.1 remote-as 100 neighbor 10.0.11.1 update-source Loopback0 neighbor 10.2.1.10 remote-as 300

R3	R4
interface Loopback0 ip address 10.0.12.1 255.255.255.252 ! interface FastEthernet0/0 ip address 10.2.1.2 255.255.255.252 duplex half ! interface FastEthernet1/0 ip address 55.5.5.2 255.255.255.0 duplex auto speed auto ! interface FastEthernet1/1 ip address 10.1.0.1 255.255.255.252 duplex auto speed auto ! router ospf 1 passive-interface FastEthernet0/0 passive-interface FastEthernet1/0 network 10.0.12.0 0.0.0.3 area 0 network 10.1.0.0 0.0.0.3 area 0 network 10.2.1.0 0.0.0.3 area 0 network 55.5.5.0 0.0.0.255 area 0 ! router bgp 200 bgp log-neighbor-changes network 55.5.5.0 mask 255.255.255.0 neighbor 10.0.12.2 remote-as 200 neighbor 10.0.12.2 update-source Loopback0 neighbor 10.2.1.1 remote-as 100	interface Loopback0 ip address 10.0.12.2 255.255.255.252 ! interface FastEthernet0/0 ip address 10.1.0.2 255.255.255.252 duplex half ! interface FastEthernet1/0 ip address 10.2.1.6 255.255.255.252 duplex auto speed auto ! interface FastEthernet1/1 no ip address shutdown duplex auto speed auto ! router ospf 2 passive-interface FastEthernet1/0 network 10.0.12.0 0.0.0.3 area 0 network 10.1.0.0 0.0.0.3 area 0 network 10.2.1.4 0.0.0.3 area 0 ! router bgp 200 bgp log-neighbor-changes network 55.5.5.0 mask 255.255.255.0 neighbor 10.0.12.1 remote-as 200 neighbor 10.0.12.1 update-source Loopback0 neighbor 10.2.1.5 remote-as 300

R5	R6
interface Loopback0 ip address 10.0.13.1 255.255.255.252 ! interface FastEthernet0/0 ip address 10.2.1.10 255.255.255.252 duplex half ! interface FastEthernet1/0 ip address 10.1.0.1 255.255.255.252 duplex auto speed auto ! interface FastEthernet1/1 no ip address shutdown duplex auto speed auto ! router ospf 2 passive-interface FastEthernet0/0 network 10.0.13.0 0.0.0.3 area 0 network 10.1.0.0 0.0.0.3 area 0 network 10.2.1.8 0.0.0.3 area 0 ! router bgp 300 bgp log-neighbor-changes network 44.4.4.0 mask 255.255.255.0 neighbor 10.0.13.2 remote-as 300 neighbor 10.0.13.2 update-source Loopback0 neighbor 10.2.1.9 remote-as 100	interface Loopback0 ip address 10.0.13.2 255.255.255.252 ! interface FastEthernet0/0 ip address 44.4.4.2 255.255.255.0 duplex half ! interface FastEthernet1/0 ip address 10.1.0.2 255.255.255.252 duplex auto speed auto ! interface FastEthernet1/1 ip address 10.2.1.5 255.255.255.252 duplex auto speed auto ! router ospf 1 passive-interface FastEthernet0/0 passive-interface FastEthernet1/1 network 10.0.13.0 0.0.0.3 area 0 network 10.1.0.0 0.0.0.3 area 0 network 10.2.1.4 0.0.0.3 area 0 network 44.4.4.0 0.0.0.255 area 0 ! router bgp 300 bgp log-neighbor-changes network 44.4.4.0 mask 255.255.255.0 neighbor 10.0.13.1 remote-as 300 neighbor 10.0.13.1 update-source Loopback0 neighbor 10.2.1.6 remote-as 200

PC1	PC2	PC3
interface FastEthernet0/0 ip address 66.6.6.2 255.255.255.0 duplex half ! ip route 0.0.0.0 0.0.0.0 66.6.6.1	interface FastEthernet0/0 ip address 55.5.5.1 255.255.255.0 duplex half ! ip route 0.0.0.0 0.0.0.0 55.5.5.2	interface FastEthernet0/0 ip address 44.4.4.1 255.255.255.0 duplex half ! ip route 0.0.0.0 0.0.0.0 44.4.4.2

3. Comentaris

Cap problema

4. Resultats

4.1 Taules d'enruntament

R1	R3	R6
10.0.0.0/8 is variably subnetted, 8 subnets, 2 masks C 10.0.11.0/30 is directly connected, Loopback0 L 10.0.11.1/32 is directly connected, Loopback0 O 10.0.11.2/32 [110/2] via 10.1.0.2, 00:04:26, FastEthernet1/0 C 10.1.0.0/30 is directly connected, FastEthernet1/0 L 10.1.0.1/32 is directly connected, FastEthernet1/0 C 10.2.1.0/30 is directly connected, FastEthernet1/1 L 10.2.1.1/32 is directly connected, FastEthernet1/1 O 10.2.1.8/30 [110/2] via 10.1.0.2, 00:04:26, FastEthernet1/0 44.0.0.0/24 is subnetted, 1 subnets B 44.4.4.0 [200/2] via 10.2.1.10, 00:03:57 55.0.0.0/24 is subnetted, 1 subnets B 55.5.5.0 [20/0] via 10.2.1.2, 00:03:56 66.0.0.0/8 is variably subnetted, 2 subnets, 2 masks C 66.6.6.0/24 is directly connected, FastEthernet0/0 L 66.6.6.1/32 is directly connected, FastEthernet0/0	10.0.0.0/8 is variably subnetted, 8 subnets, 2 masks C 10.0.12.0/30 is directly connected, Loopback0 L 10.0.12.1/32 is directly connected, Loopback0 O 10.0.12.2/32 [110/2] via 10.1.0.2, 00:04:30, FastEthernet1/1 C 10.1.0.0/30 is directly connected, FastEthernet1/1 L 10.1.0.1/32 is directly connected, FastEthernet1/1 C 10.2.1.0/30 is directly connected, FastEthernet0/0 L 10.2.1.2/32 is directly connected, FastEthernet0/0 O 10.2.1.4/30 [110/2] via 10.1.0.2, 00:04:20, FastEthernet1/1 44.0.0.0/24 is subnetted, 1 subnets B 44.4.4.0 [200/0] via 10.2.1.5, 00:03:58 55.0.0.0/8 is variably subnetted, 2 subnets, 2 masks C 55.5.5.0/24 is directly connected, FastEthernet1/0 L 55.5.5.2/32 is directly connected, FastEthernet1/0 66.0.0.0/24 is subnetted, 1 subnets B 66.6.6.0 [20/0] via 10.2.1.1, 00:04:14	10.0.0.0/8 is variably subnetted, 8 subnets, 2 masks C 10.0.13.0/30 is directly connected, Loopback0 O 10.0.13.1/32 [110/2] via 10.1.0.1, 00:05:02, FastEthernet1/0 L 10.0.13.2/32 is directly connected, Loopback0 C 10.1.0.0/30 is directly connected, FastEthernet1/0 L 10.1.0.2/32 is directly connected, FastEthernet1/0 C 10.2.1.4/30 is directly connected, FastEthernet1/1 L 10.2.1.5/32 is directly connected, FastEthernet1/1 O 10.2.1.8/30 [110/2] via 10.1.0.1, 00:05:02, FastEthernet1/0 44.0.0.0/8 is variably subnetted, 2 subnets, 2 masks C 44.4.4.0/24 is directly connected, FastEthernet0/0 L 44.4.4.2/32 is directly connected, FastEthernet0/0 55.0.0.0/24 is subnetted, 1 subnets B 55.5.5.0 [20/2] via 10.2.1.6, 00:03:44 66.0.0.0/24 is subnetted, 1 subnets B 66.6.6.0 [200/2] via 10.2.1.9, 00:04:15

R2	R4	R5
10.0.0.0/8 is variably subnetted, 7 subnets, 2 masks C 10.0.11.0/30 is directly connected, Loopback0 O 10.0.11.1/32 [110/2] via 10.1.0.1, 00:10:23, FastEthernet0/0 L 10.0.11.2/32 is directly connected, Loopback0 C 10.1.0.0/30 is directly connected, FastEthernet0/0 L 10.1.0.2/32 is directly connected, FastEthernet0/0 C 10.2.1.8/30 is directly connected, FastEthernet1/0 L 10.2.1.9/32 is directly connected, FastEthernet1/0 44.0.0.0/24 is subnetted, 1 subnets B 44.4.4.0 [20/2] via 10.2.1.10, 00:09:54 55.0.0.0/24 is subnetted, 1 subnets B 55.5.5.0 [20/0] via 10.2.1.10, 00:09:24 66.0.0.0/24 is subnetted, 1 subnets O 66.6.6.0 [110/2] via 10.1.0.1, 00:10:23, FastEthernet0/0	10.0.0.0/8 is variably subnetted, 8 subnets, 2 masks C 10.0.13.0/30 is directly connected, Loopback0 L 10.0.13.1/32 is directly connected, Loopback0 O 10.0.13.2/32 [110/2] via 10.1.0.2, 00:10:53, FastEthernet1/0 C 10.1.0.0/30 is directly connected, FastEthernet1/0 L 10.1.0.1/32 is directly connected, FastEthernet1/0 O 10.2.1.4/30 [110/2] via 10.1.0.2, 00:10:53, FastEthernet1/0 C 10.2.1.8/30 is directly connected, FastEthernet0/0 L 10.2.1.10/32 is directly connected, FastEthernet0/0 44.0.0.0/24 is subnetted, 1 subnets O 44.4.4.0 [110/2] via 10.1.0.2, 00:10:53, FastEthernet1/0 55.0.0.0/24 is subnetted, 1 subnets B 55.5.5.0 [200/2] via 10.2.1.6, 00:09:35 66.0.0.0/24 is subnetted, 1 subnets B 66.6.6.0 [20/2] via 10.2.1.9, 00:10:23	10.0.0.0/8 is variably subnetted, 8 subnets, 2 masks C 10.0.12.0/30 is directly connected, Loopback0 O 10.0.12.1/32 [110/2] via 10.1.0.1, 00:10:55, FastEthernet0/0 L 10.0.12.2/32 is directly connected, Loopback0 C 10.1.0.0/30 is directly connected, FastEthernet0/0 L 10.1.0.2/32 is directly connected, FastEthernet0/0 O 10.2.1.0/30 [110/2] via 10.1.0.1, 00:10:55, FastEthernet0/0 C 10.2.1.4/30 is directly connected, FastEthernet1/0 L 10.2.1.6/32 is directly connected, FastEthernet1/0 44.0.0.0/24 is subnetted, 1 subnets B 44.4.4.0 [20/0] via 10.2.1.5, 00:10:23 55.0.0.0/24 is subnetted, 1 subnets O 55.5.5.0 [110/2] via 10.1.0.1, 00:10:55, FastEthernet0/0 66.0.0.0/24 is subnetted, 1 subnets B 66.6.6.0 [200/0] via 10.2.1.1, 00:10:36

4.2 Pings/Traceroute de Host a Host

Ping PC1 a PC3 y PC2

```
PC1#ping 44.4.4.1

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 44.4.4.1, timeout is 2 seconds:

!!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 696/879/1024 ms

PC1#ping 55.5.5.1

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 55.5.5.1, timeout is 2 seconds:

!!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 440/521/588 ms
```

Traceroute PC2 a PC3 y PC1

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PC2#traceroute 44.4.4.1

Type escape sequence to abort.

Tracing the route to 44.4.4.1

VRF info: (vrf in name/id, vrf out name/id)

  1 55.5.5.2 204 msec 132 msec 236 msec

  2 10.1.0.2 192 msec 468 msec 432 msec

  3 10.2.1.5 356 msec 604 msec 452 msec

  4 44.4.4.1 672 msec 620 msec 676 msec

PC2#traceroute 66.6.6.2

Type escape sequence to abort.

Tracing the route to 66.6.6.2

VRF info: (vrf in name/id, vrf out name/id)

  1 55.5.5.2 128 msec 116 msec 128 msec

  2 10.2.1.1 376 msec 464 msec 360 msec

  3 66.6.6.2 388 msec 620 msec 588 msec
```