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Practica 2 - Redes de Computadoras 1

De acuerdo al enunciado de la practica, para las direcciones IP hay una "X" la cual debe de ser reemplazada por la sumatoria de los últimos dos números del carnet, mas el numero del grupo. En este caso: **X = 1 + 1 + 12 = 14**

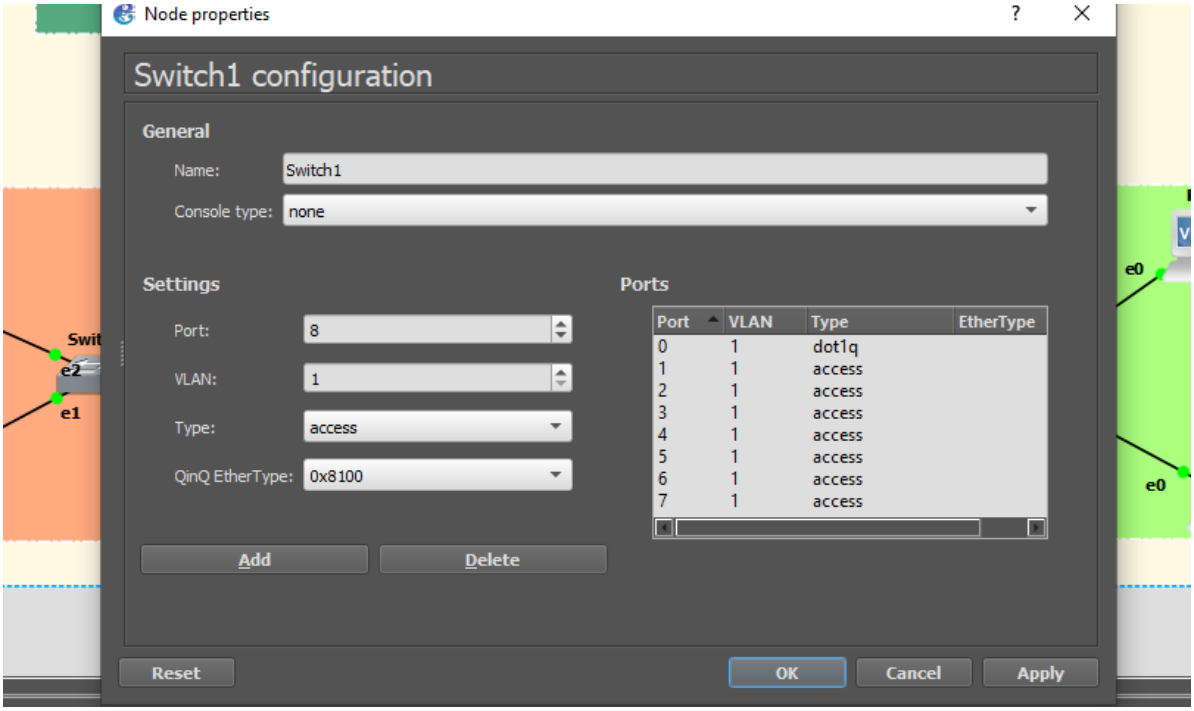
Quedando las direcciones IP en VPC's de la siguiente manera:

Topología	Dirección IP	Gateway
1	192.168.141.10/24	192.168.141.1
2	192.168.141.20/24	192.168.141.1
3	192.168.142.10/24	192.168.142.1
4	192.168.142.20/24	192.168.142.1
5	192.168.143.10/24	142.168.143.1
6	192.168.143.20/24	142.168.143.1

Dirección IP en routers:

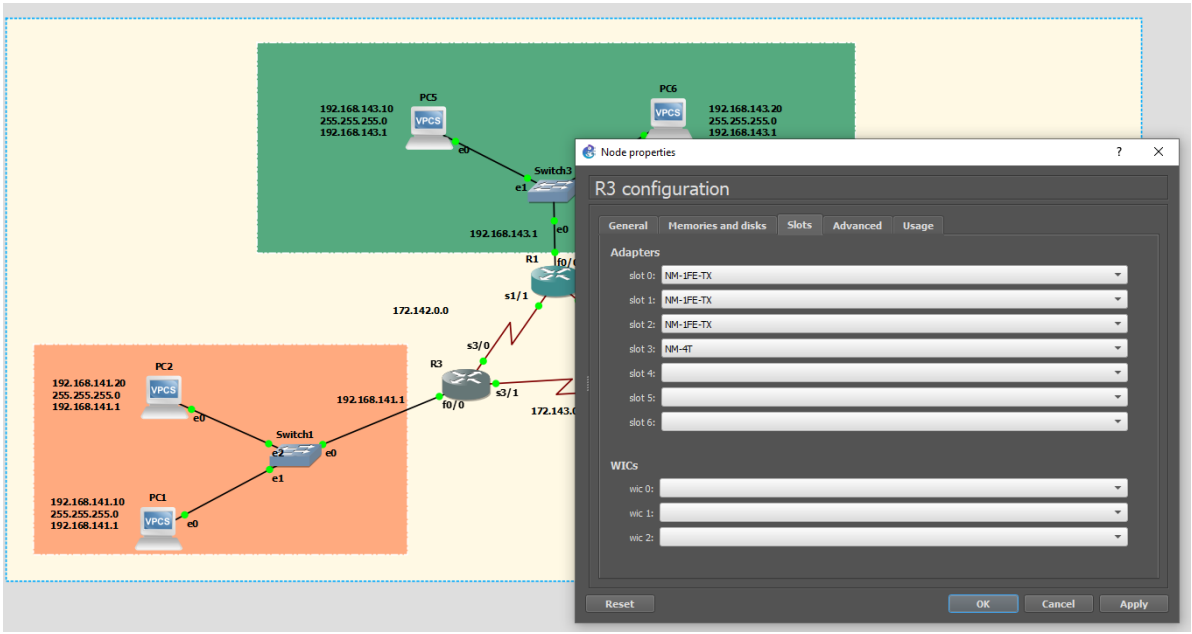
Topología	Dirección de RED	Primera Dirección Asignable	Gateway
R1-R2	172.141.0.0/16	172.141.0.1	N.A.
R1-R3	172.142.0.0/16	172.142.0.1	N.A.
R3-R2	172.143.0.0/16	172.143.0.1	N.A

Configuración de puertos en Switch para colocar en Modo Truncal



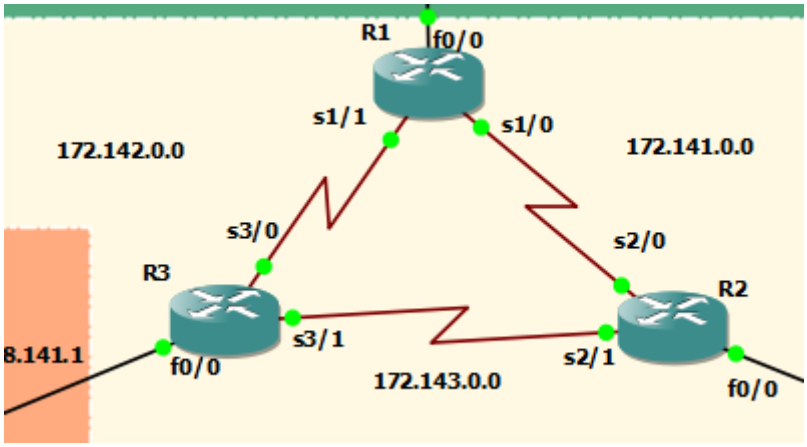
como se puede observar el puerto cero esta en modo dot1q (trunk), esto debido a que en ese puerto se conecta al router, y esto se hace para cada switch en el puerto que esta conectado al router, en esta practica el puerto e0 de cada switch se configuro en modo trunk para la conexión con el router.

Configuración del modo FastEthernet y puertos serial en cada Router

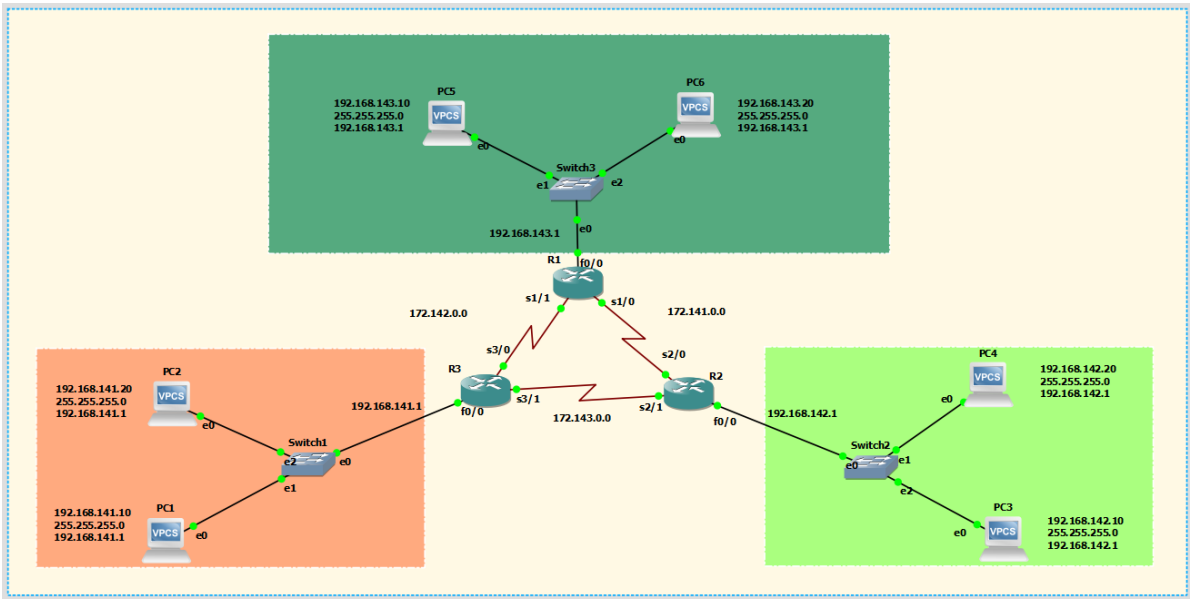


Conexion entre Routers

- R1 - R2 ---- S1/0 - S2/0
- R1 - R3 ---- S1/1 - S3/0
- R2 - R3 ---- S2/1 - S3/1



Esquema General:



Configuracion en VPC

VPC1

ip 192.168.141.10/24 192.168.141.1

VPC2

ip 192.168.141.20/24 192.168.141.1

VPC3

ip 192.168.142.10/24 192.168.142.1

VPC4

ip 192.168.142.20/24 192.168.142.1

VPC5

ip 192.168.143.10/24 192.168.143.1

VPC6

ip 192.168.143.20/24 192.168.143.1

Configuracion Routers (comunicación entre switch)

R1

- [ ] configure terminal
- [ ] interface f0/0
- [ ] ip address 192.168.143.1 255.255.255.0
- [ ] no shutdown
- [ ] exit

R2

- [ ] configure terminal
- [ ] interface f0/0
- [ ] ip address 192.168.142.1 255.255.255.0
- [ ] no shutdown
- [ ] exit

R3

- [ ] configure terminal
- [ ] interface f0/0
- [ ] ip address 192.168.141.1 255.255.255.0
- [ ] no shutdown
- [ ] exit

Configuración de Routers (Comunicacion a VPC)

R1 --> R2

- [ ] configure terminal
- [ ] int s1/0
- [ ] ip address 172.141.0.1 255.255.0.0
- [ ] no shutdown

R2 --> R1

- [ ] configure terminal
- [ ] int s2/0
- [ ] ip address 172.141.0.2 255.255.0.0
- [ ] no shutdown

R1 --> R3

- [ ] configure terminal
- [ ] int s2/0
- [ ] ip address 172.142.0.1 255.255.0.0
- [ ] no shutdown

R3 --> R1

- [ ] configure terminal
- [ ] int s2/0
- [ ] ip address 172.142.0.2 255.255.0.0
- [ ] no shutdown

R3 --> R2

- [ ] configure terminal
- [ ] int s3/1
- [ ] ip address 172.143.0.1 255.255.0.0
- [ ] no shutdown

R2 --> R3

- [ ] configure terminal
- [ ] int s2/1
- [ ] ip address 172.143.0.2 255.255.0.0
- [ ] no shutdown

Routers (Enrutamiento Estático)

R1 - R2

- [ ] configure terminal
- [ ] ip route 192.168.142.0 255.255.255.0 172.141.0.2

R2 - R1

- [ ] configure terminal
- [ ] ip route 192.168.143.0 255.255.255.0 172.141.0.1

R1 - R3

- [ ] configure terminal
- [ ] ip route 192.168.141.0 255.255.255.0 172.142.0.2

R3 - R1

- [ ] configure terminal
- [ ] ip route 192.168.143.0 255.255.255.0 172.142.0.1

R3 - R2

- [ ] configure terminal
- [ ] ip route 192.168.142.0 255.255.255.0 172.143.0.2

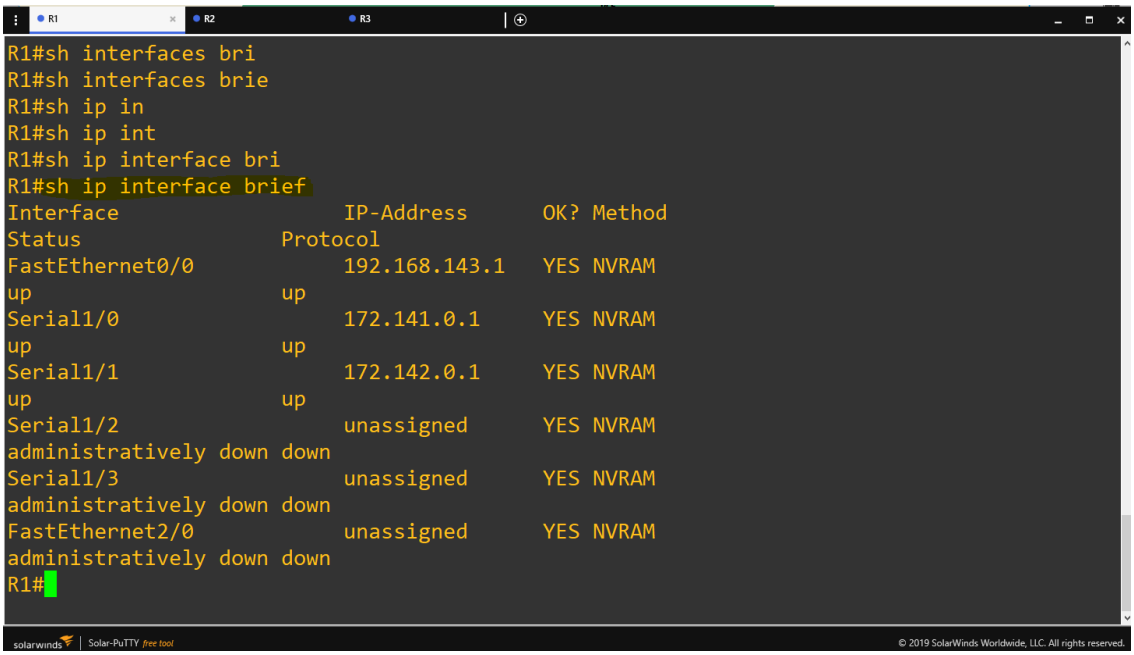
R2 - R3

- [ ] configure terminal
- [ ] ip route 192.168.141.0 255.255.255.0 172.143.0.1

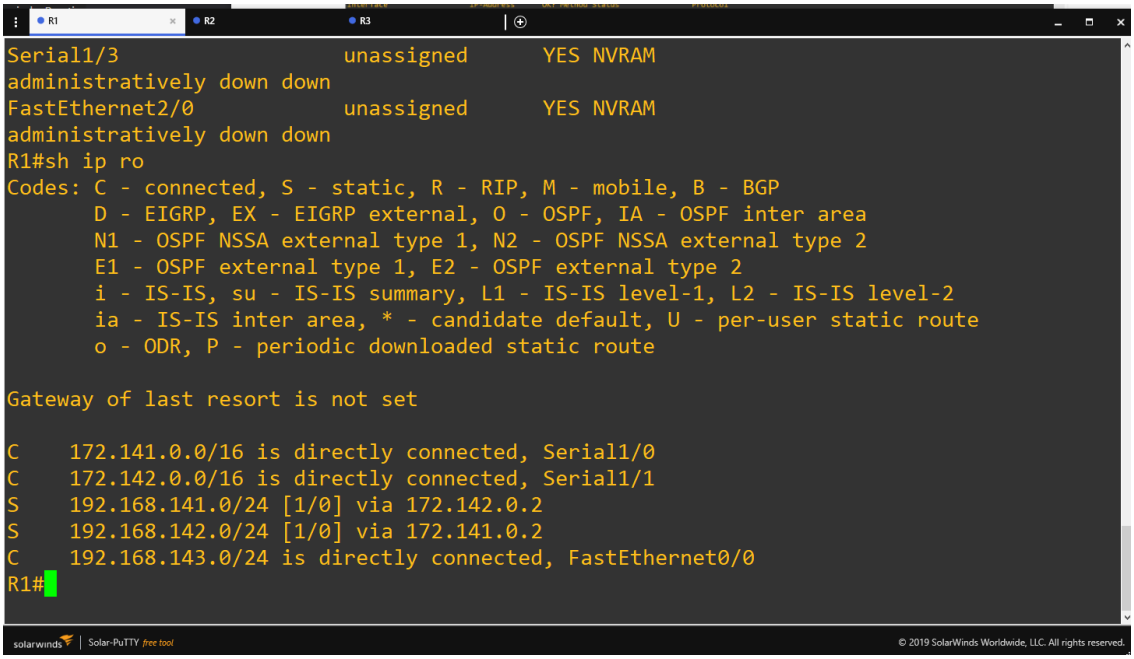
Capturas de configuración de routers

Router 1

- sh ip interface brief



- sh ip ro



Router 2

- sh ip interface brief

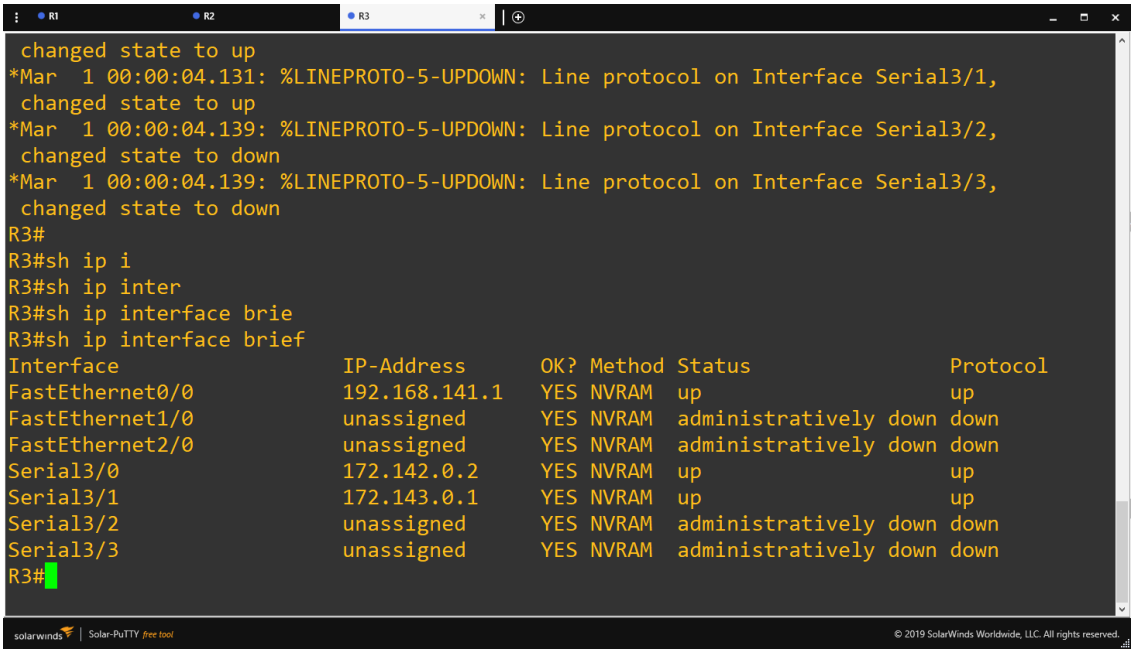
```
*Mar  1 00:00:04.167: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/1,
 changed state to up
*Mar  1 00:00:04.175: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/2,
 changed state to down
*Mar  1 00:00:04.175: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/3,
 changed state to down
R2#
R2#
R2#sh inter
R2#sh ip in
R2#sh ip inte
R2#sh ip interface bri
R2#sh ip interface brief
Interface                  IP-Address      OK? Method Status                Protocol
FastEthernet0/0            192.168.142.1   YES NVRAM  up                    up
FastEthernet1/0            unassigned      YES NVRAM  administratively down down
Serial2/0                  172.141.0.2     YES NVRAM  up                    up
Serial2/1                  172.143.0.2     YES NVRAM  up                    up
Serial2/2                  unassigned      YES NVRAM  administratively down down
Serial2/3                  unassigned      YES NVRAM  administratively down down
R2#
```

- sh ip ro

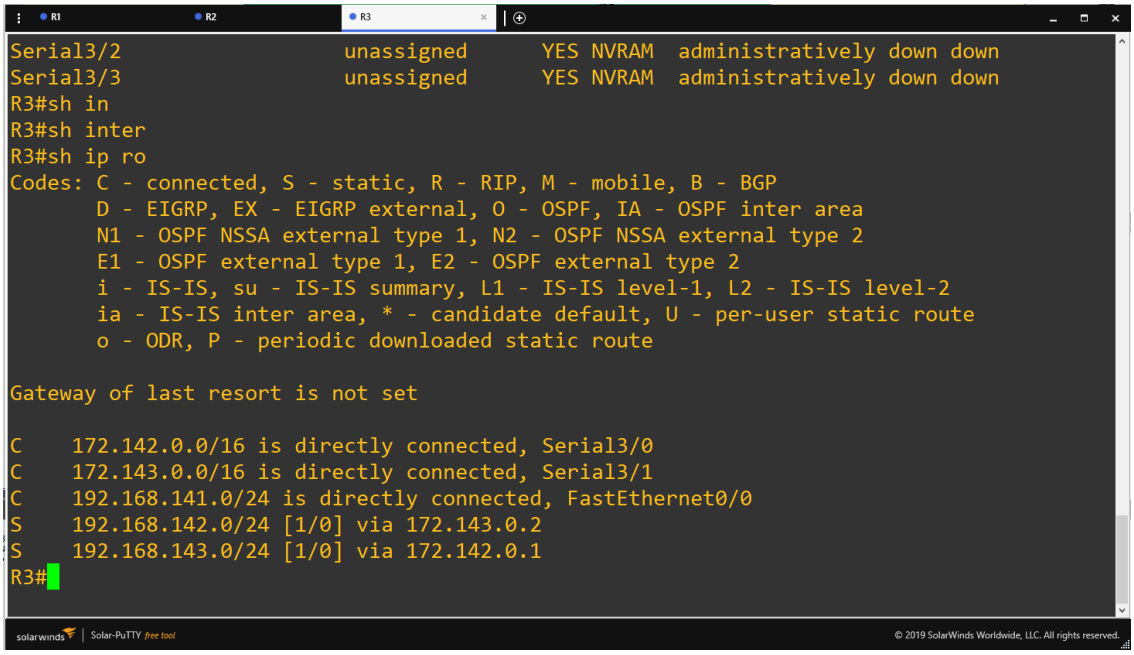
```
% Invalid input detected at '^' marker.

R2#sh ip ro
Codes: 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
       i - IS-IS, su - IS-IS summary, 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

C    172.141.0.0/16 is directly connected, Serial2/0
C    172.143.0.0/16 is directly connected, Serial2/1
S    192.168.141.0/24 [1/0] via 172.143.0.1
                      [1/0] via 172.141.0.1
C    192.168.142.0/24 is directly connected, FastEthernet0/0
S    192.168.143.0/24 [1/0] via 172.143.0.1
                      [1/0] via 172.141.0.1
R2#
```

Router 3

- sh ip interace brief



- sh ip ro



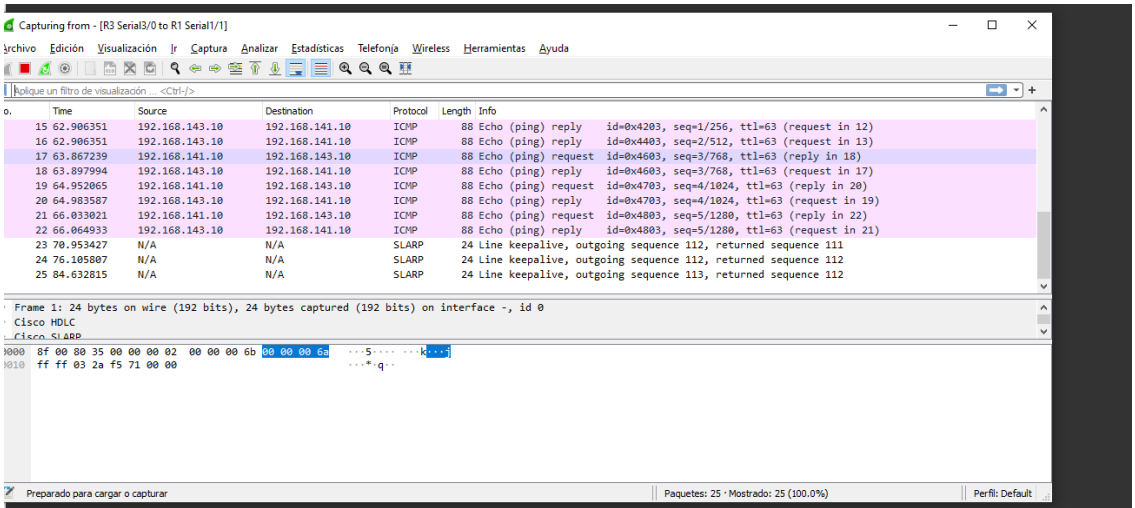
PING desde VPC 1 a las demás VPC

```
PC1> ping 192.168.141.20
84 bytes from 192.168.141.20 icmp_seq=1 ttl=64 time=0.889 ms
84 bytes from 192.168.141.20 icmp_seq=2 ttl=64 time=2.079 ms
84 bytes from 192.168.141.20 icmp_seq=3 ttl=64 time=2.098 ms
84 bytes from 192.168.141.20 icmp_seq=4 ttl=64 time=1.111 ms
84 bytes from 192.168.141.20 icmp_seq=5 ttl=64 time=1.851 ms

PC1> ping 192.168.142.10
192.168.142.10 icmp_seq=1 timeout
84 bytes from 192.168.142.10 icmp_seq=2 ttl=62 time=61.989 ms
84 bytes from 192.168.142.10 icmp_seq=3 ttl=62 time=62.213 ms
84 bytes from 192.168.142.10 icmp_seq=4 ttl=62 time=62.770 ms
84 bytes from 192.168.142.10 icmp_seq=5 ttl=62 time=60.398 ms

PC1> ping 192.168.142.20
192.168.142.20 icmp_seq=1 timeout
84 bytes from 192.168.142.20 icmp_seq=2 ttl=61 time=76.749 ms
84 bytes from 192.168.142.20 icmp_seq=3 ttl=61 time=76.583 ms
84 bytes from 192.168.142.20 icmp_seq=4 ttl=61 time=76.090 ms
84 bytes from 192.168.142.20 icmp_seq=5 ttl=61 time=75.653 ms
```

```
PC1> ping 192.168.143.10
192.168.143.10 icmp_seq=1 timeout
84 bytes from 192.168.143.10 icmp_seq=2 ttl=62 time=61.084 ms
84 bytes from 192.168.143.10 icmp_seq=3 ttl=62 time=61.544 ms
84 bytes from 192.168.143.10 icmp_seq=4 ttl=62 time=61.606 ms
84 bytes from 192.168.143.10 icmp_seq=5 ttl=62 time=61.026 ms

PC1> ping 192.168.143.20
192.168.143.20 icmp_seq=1 timeout
84 bytes from 192.168.143.20 icmp_seq=2 ttl=62 time=62.369 ms
84 bytes from 192.168.143.20 icmp_seq=3 ttl=62 time=61.412 ms
84 bytes from 192.168.143.20 icmp_seq=4 ttl=62 time=61.283 ms
84 bytes from 192.168.143.20 icmp_seq=5 ttl=62 time=61.182 ms

PC1>
```

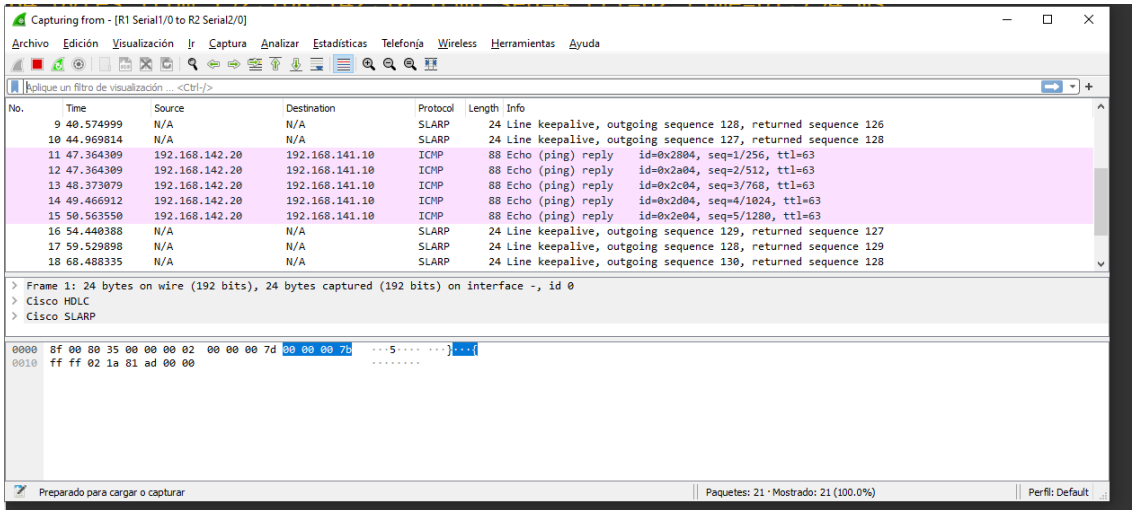
Captura de paquetes en WireShark en R3 - R1

- Captura en R3 - R1



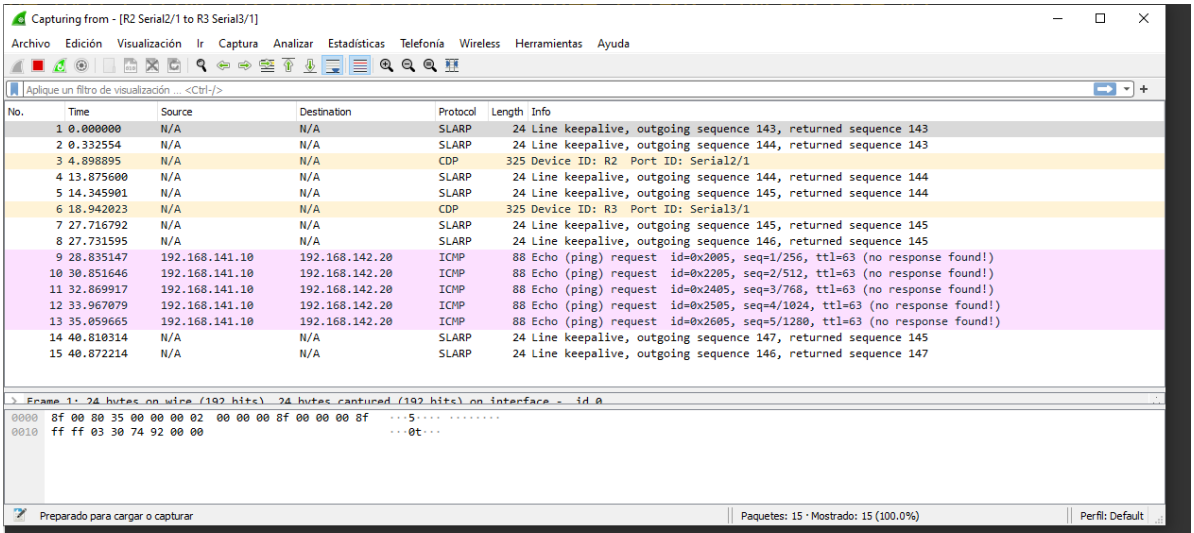

```
PC1> ping 192.168.143.10
192.168.143.10 icmp_seq=1 timeout
192.168.143.10 icmp_seq=2 timeout
84 bytes from 192.168.143.10 icmp_seq=3 ttl=62 time=61.914 ms
84 bytes from 192.168.143.10 icmp_seq=4 ttl=62 time=62.474 ms
84 bytes from 192.168.143.10 icmp_seq=5 ttl=62 time=62.319 ms
```

- Captura en R1 - R2




```
PC1> ping 192.168.142.20
192.168.142.20 icmp_seq=1 timeout
192.168.142.20 icmp_seq=2 timeout
84 bytes from 192.168.142.20 icmp_seq=3 ttl=61 time=77.480 ms
84 bytes from 192.168.142.20 icmp_seq=4 ttl=61 time=76.204 ms
84 bytes from 192.168.142.20 icmp_seq=5 ttl=61 time=76.971 ms
```

- Captura en R3 - R2




```
PC1> ping 192.168.142.20
192.168.142.20 icmp_seq=1 timeout
192.168.142.20 icmp_seq=2 timeout
84 bytes from 192.168.142.20 icmp_seq=3 ttl=61 time=77.140 ms
84 bytes from 192.168.142.20 icmp_seq=4 ttl=61 time=77.108 ms
84 bytes from 192.168.142.20 icmp_seq=5 ttl=61 time=76.317 ms
```