



SECCIÓN TEC. DEL DEPARTAMENTO DE ELECTRICA Y ELECTRONICA
CARRERA DE REDES Y TELECOMUNICACIONES

NRC:

4259

ASIGNATURA:

Redes WAN

EXAMEN PARCIAL 2

TEMA:

EoIP

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FECHA:

26/02/2021

DESARROLLO

1) TEMA:

EoIP

2) Análisis

- a) Diseñamos la topología de acuerdo con el siguiente modelo.

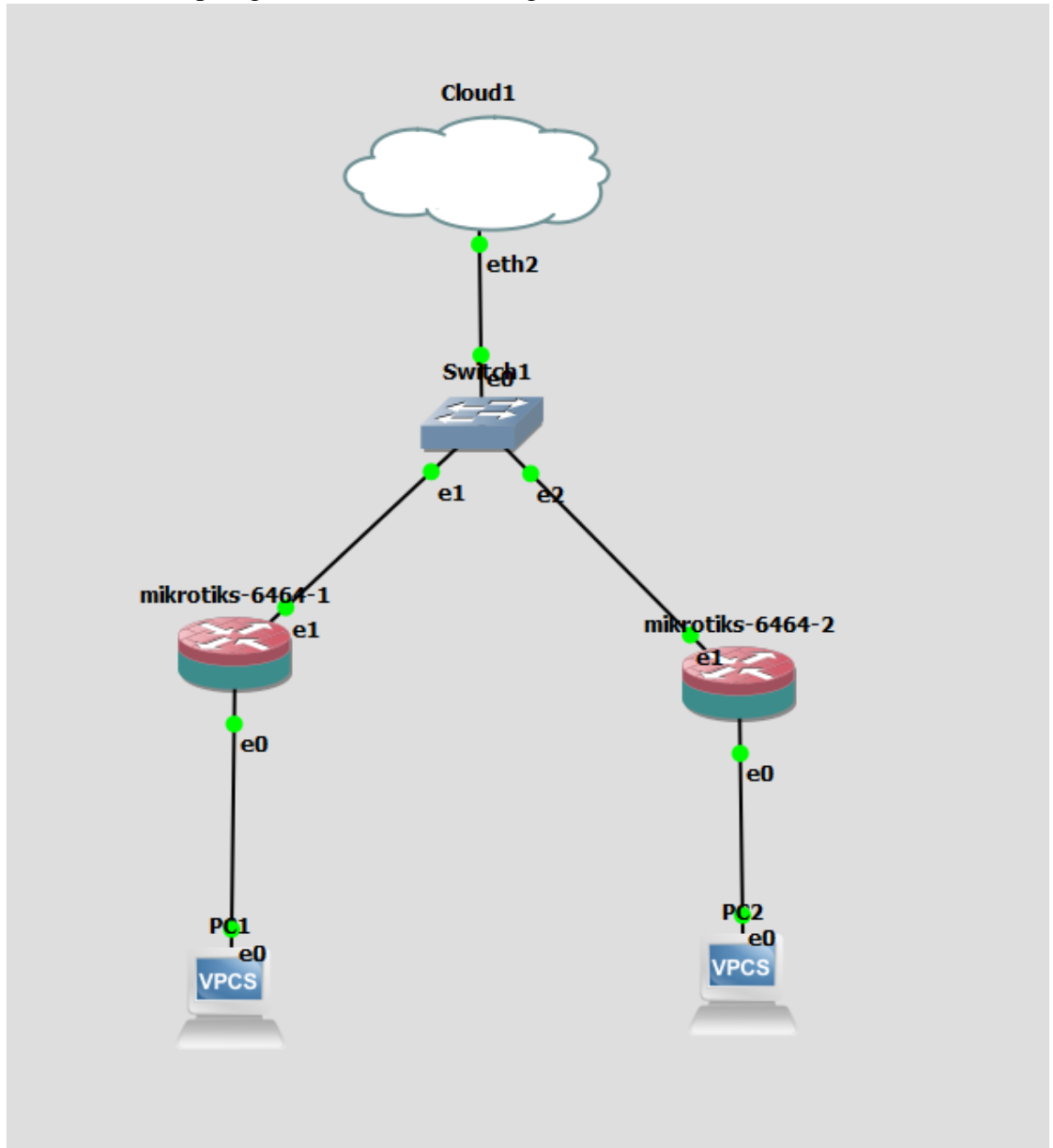


Figura 1 topología de la red.

- b) Verificamos que cada dispositivo se encuentre activado y entramos en la consola del Router mikrotik de la izquierda.

```

[admin@MikroTik] >
[admin@MikroTik] > system identity set name=Marchel_R1
[admin@Marchel_R1] >
[admin@Marchel_R1] > ip address add address=192.168.1.1/24 interface=ether2
[admin@Marchel_R1] > ip firewall nat add action=masquerade out-interface=ether1 chain=srcnat
[admin@Marchel_R1] > ip dhcp-client add interface=ether1 disabled=no
[admin@Marchel_R1] >
[admin@Marchel_R1] > ip add print
Flags: X - disabled, I - invalid, D - dynamic
# ADDRESS NETWORK INTERFACE
0 192.168.1.1/24 192.168.1.0 ether2
1 D 192.168.137.222/24 192.168.137.0 ether1
[admin@Marchel_R1] > ip dhcp-client print
Flags: X - disabled, I - invalid
# INTERFACE USE-PEER-DNS ADD-DEFAULT-ROUTE STATUS AD
0 ether1 yes yes bound 19
[admin@Marchel_R1] > ping 8.8.8.8
SEQ HOST SIZE TTL TIME STATUS
0 8.8.8.8 timeout
1 8.8.8.8 timeout
2 8.8.8.8 56 114 524ms
3 8.8.8.8 56 114 434ms

```

Figura 2 configuración de las interfaces del router mikrotik 1

c) Asignamos las direcciones ip de acuerdo con las interfaces conectadas entre el router, switch y el pc.

```

PC1> ip 192.168.1.2 255.255.255.0 192.168.1.1
Checking for duplicate address...
PC1 : 192.168.1.2 255.255.255.0 gateway 192.168.1.1

```

Figura 3 configuración de la interfaz de la PC1

d) realizamos el mismo procedimiento en el router mikrotik de la derecha o R2

```

Please press "Enter" to continue!
nov/10/2020 00:32:08 system,error,critical router was rebooted without proper shutdown

[admin@MikroTik] >
[admin@MikroTik] > system identity set name=Marchel_R2
[admin@Marchel_R2] >
[admin@Marchel_R2] > ip address add address=192.168.1.9/24 interface=ether2
[admin@Marchel_R2] > ip firewall nat
add disable enable find print reset-counters set
comment edit export move remove reset-counters-all unset
[admin@Marchel_R2] > ip firewall nat add chain=srcnat out-interface=ether1 action=masquerade
[admin@Marchel_R2] >
[admin@Marchel_R2] > ip dhcp-client add interface=ether1
[admin@Marchel_R2] >
[admin@Marchel_R2] > ip add print
Flags: X - disabled, I - invalid, D - dynamic
# ADDRESS NETWORK INTERFACE
0 192.168.1.9/24 192.168.1.0 ether2
[admin@Marchel_R2] > ip add print
Flags: X - disabled, I - invalid, D - dynamic
# ADDRESS NETWORK INTERFACE
0 192.168.1.9/24 192.168.1.0 ether2
[admin@Marchel_R2] > ip

```

Figura 4 configuración de las interfaces del router mikrotik 2

e) Configuramos la dirección ip de la siguiente PC dentro del rango del router R2.



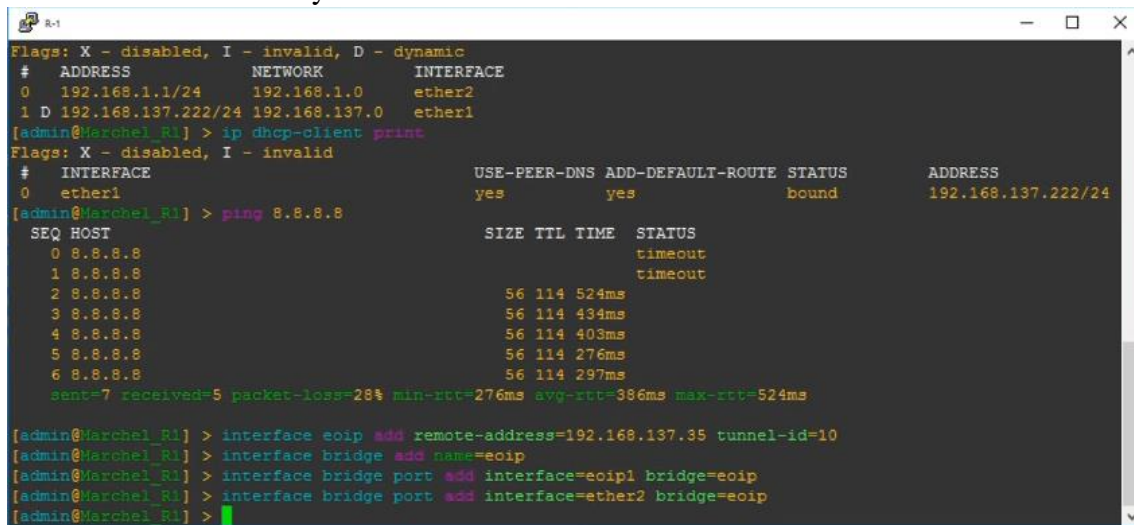
```
PC1 - PuTTY
Press '?' to get help.

Executing the startup file

PC1> ip 192.168.1.2 255.255.255.0 192.168.1.1
Checking for duplicate address...
PC1 : 192.168.1.2 255.255.255.0 gateway 192.168.1.1
```

Figura 5 configuracion de la interfaz de la PC2

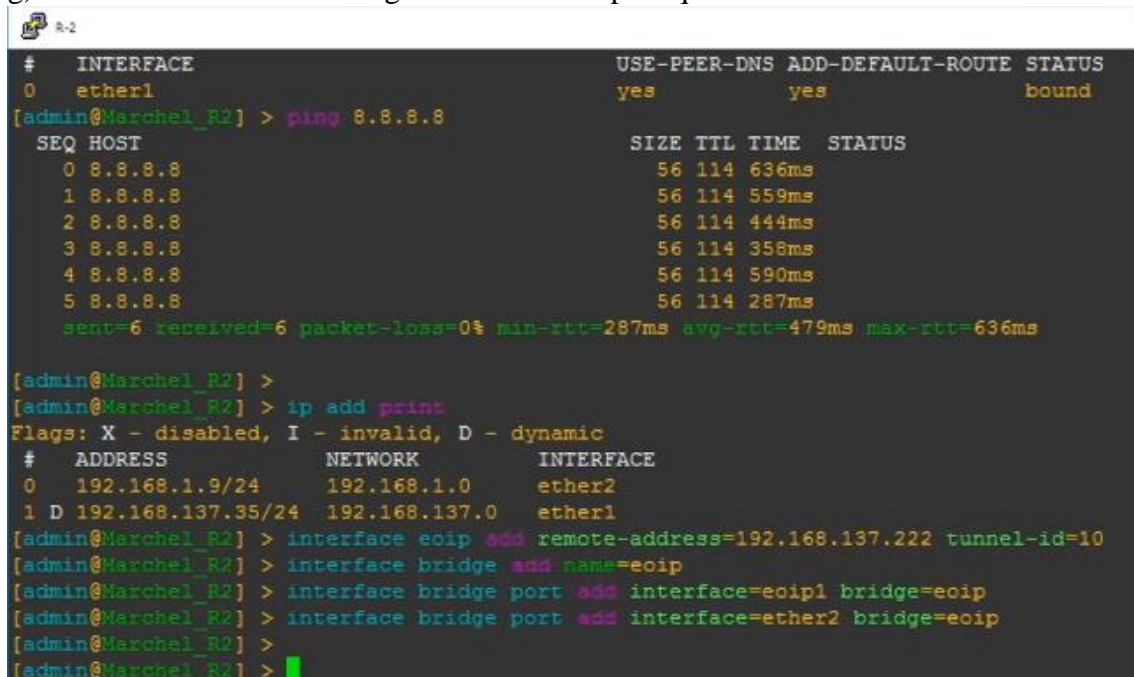
f) En el R1 colocamos los siguientes comandos del protocolo EoIP dentro de las interfaces conectadas con la nube y el switch.



```
R1
Flags: X - disabled, I - invalid, D - dynamic
# ADDRESS NETWORK INTERFACE
0 192.168.1.1/24 192.168.1.0 ether2
1 D 192.168.137.222/24 192.168.137.0 ether1
[admin@Marchel_R1] > ip dhcp-client print
Flags: X - disabled, I - invalid
# INTERFACE USE-PEER-DNS ADD-DEFAULT-ROUTE STATUS ADDRESS
0 ether1 yes yes bound 192.168.137.222/24
[admin@Marchel_R1] > ping 8.8.8.8
SEQ HOST SIZE TTL TIME STATUS
0 8.8.8.8 56 114 524ms timeout
1 8.8.8.8 56 114 434ms timeout
2 8.8.8.8 56 114 403ms
3 8.8.8.8 56 114 276ms
4 8.8.8.8 56 114 297ms
5 8.8.8.8 56 114 276ms
6 8.8.8.8 56 114 297ms
sent=7 received=5 packet-loss=28% min-rtt=276ms avg-rtt=386ms max-rtt=524ms
[admin@Marchel_R1] > interface eoip add remote-address=192.168.137.35 tunnel-id=10
[admin@Marchel_R1] > interface bridge add name=eoip
[admin@Marchel_R1] > interface bridge port add interface=eoip1 bridge=eoip
[admin@Marchel_R1] > interface bridge port add interface=ether2 bridge=eoip
[admin@Marchel_R1] >
```

Figura 6 configuración de EoIP del router mikrotik 1

g) Realizamos la misma configuración de EoIP para que exista conexión entre las dos PC.



```
R2
# INTERFACE USE-PEER-DNS ADD-DEFAULT-ROUTE STATUS
0 ether1 yes yes bound
[admin@Marchel_R2] > ping 8.8.8.8
SEQ HOST SIZE TTL TIME STATUS
0 8.8.8.8 56 114 636ms
1 8.8.8.8 56 114 559ms
2 8.8.8.8 56 114 444ms
3 8.8.8.8 56 114 358ms
4 8.8.8.8 56 114 590ms
5 8.8.8.8 56 114 287ms
sent=6 received=6 packet-loss=0% min-rtt=287ms avg-rtt=479ms max-rtt=636ms
[admin@Marchel_R2] >
[admin@Marchel_R2] > ip add print
Flags: X - disabled, I - invalid, D - dynamic
# ADDRESS NETWORK INTERFACE
0 192.168.1.9/24 192.168.1.0 ether2
1 D 192.168.137.35/24 192.168.137.0 ether1
[admin@Marchel_R2] > interface eoip add remote-address=192.168.137.222 tunnel-id=10
[admin@Marchel_R2] > interface bridge add name=eoip
[admin@Marchel_R2] > interface bridge port add interface=eoip1 bridge=eoip
[admin@Marchel_R2] > interface bridge port add interface=ether2 bridge=eoip
[admin@Marchel_R2] >
[admin@Marchel_R2] >
```

Figura 7 configuración de EoIP del router mikrotik 2

h) Una vez ya configurado cada uno de los dispositivos y que se encuentre de acuerdo al rango de su mascara y dirección dentro de cada PC haremos ping a los routers mikrotik opuestos para comprobar su conexión.

```
PC1> ping 8.8.8.8

84 bytes from 8.8.8.8 icmp_seq=1 ttl=112 time=19.048 ms
84 bytes from 8.8.8.8 icmp_seq=2 ttl=112 time=18.967 ms
84 bytes from 8.8.8.8 icmp_seq=3 ttl=112 time=19.250 ms
84 bytes from 8.8.8.8 icmp_seq=4 ttl=112 time=18.448 ms
^C
PC1> ping 192.168.1.1

84 bytes from 192.168.1.1 icmp_seq=1 ttl=64 time=0.969 ms
84 bytes from 192.168.1.1 icmp_seq=2 ttl=64 time=0.719 ms
84 bytes from 192.168.1.1 icmp_seq=3 ttl=64 time=0.974 ms
84 bytes from 192.168.1.1 icmp_seq=4 ttl=64 time=0.768 ms
84 bytes from 192.168.1.1 icmp_seq=5 ttl=64 time=0.713 ms
^C
```

Figura 8 verificación de conexión 1

```
PC2> ping 8.8.8.8

84 bytes from 8.8.8.8 icmp_seq=1 ttl=112 time=19.162 ms
84 bytes from 8.8.8.8 icmp_seq=2 ttl=112 time=18.790 ms
84 bytes from 8.8.8.8 icmp_seq=3 ttl=112 time=18.306 ms
84 bytes from 8.8.8.8 icmp_seq=4 ttl=112 time=18.337 ms
84 bytes from 8.8.8.8 icmp_seq=5 ttl=112 time=18.484 ms
^C
PC2> ping 192.168.1.9

84 bytes from 192.168.1.9 icmp_seq=1 ttl=64 time=1.122 ms
84 bytes from 192.168.1.9 icmp_seq=2 ttl=64 time=0.787 ms
84 bytes from 192.168.1.9 icmp_seq=3 ttl=64 time=0.523 ms
84 bytes from 192.168.1.9 icmp_seq=4 ttl=64 time=0.704 ms
^C
PC2> ping 192.168.1.1
```

Figura 9 verificación de conexión 2



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