



SERVICIOS DE RED E INTERNET 2º ASIR



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EXAMEN PRÁCTICO - UT1 BIS

Curso 2025/26

1.Nombre:.Cristóbal Suárez Abad..... Fecha:

SERVICIO DHCP

NOMBRE

DEL

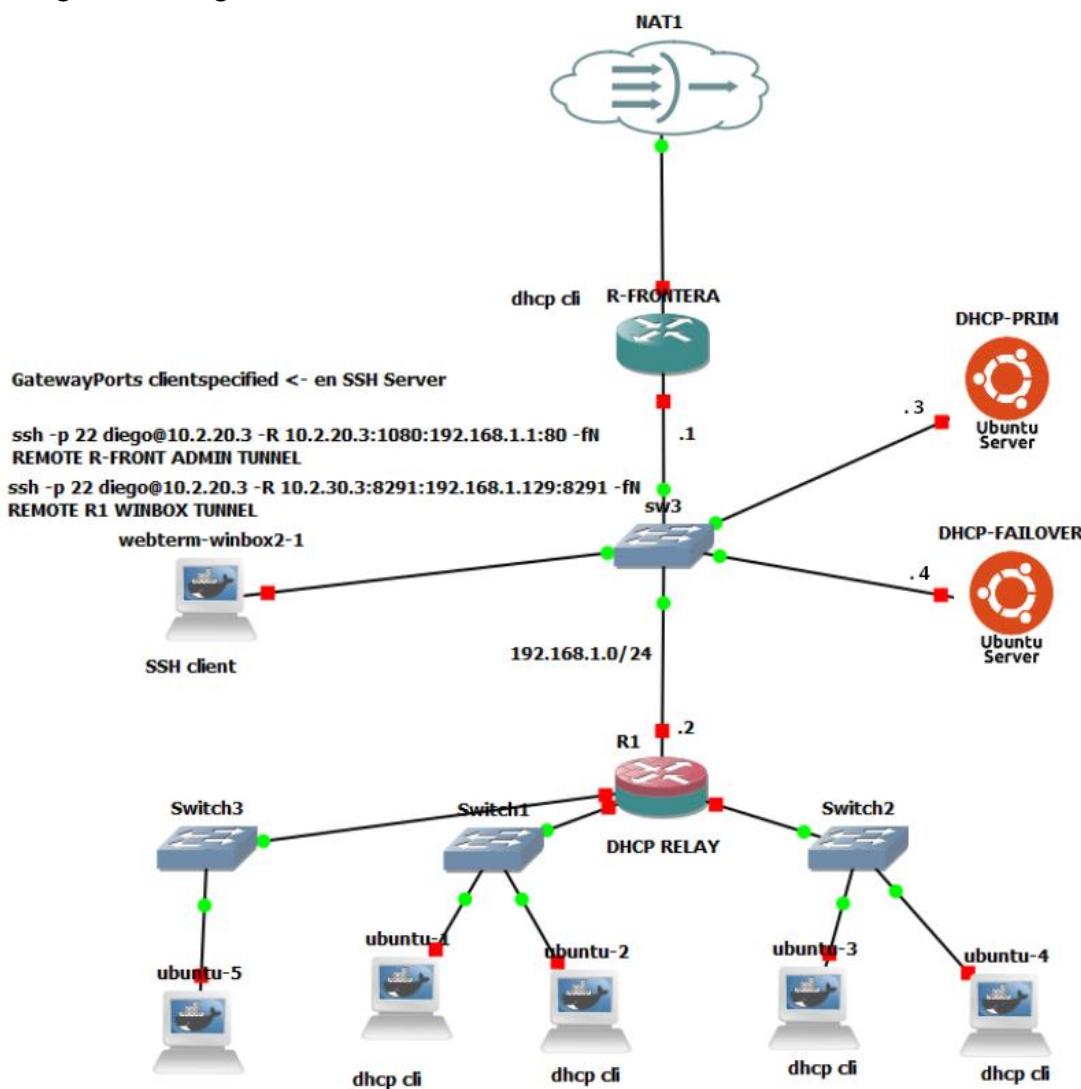
PROYECTO

EN

GNS3:

SRI_Recuperacion_DHCP_Cristobal_Suarez

Crea el siguiente diagrama en GNS3:



El direccionamiento de las LANs será:

- LAN Switch1 10.10.X*2.0/23
- LAN Switch2 10.12.X.32/27
- LAN Switch3 10.8.X.96/28

donde X es vuestro número de lista.



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1. (0.5 pts.) Establece la configuración de red necesaria en los servidores DHCP y las rutas estáticas necesarias para conectar con las redes bajo R1.

MODIFICAMOS EL ARCHIVO: nano /etc/netplan/50-cloud-init.yaml

Servidor DHCP 1:

network:

version: 2

ethernets:

ens3:

match:

macaddress: 0c:3a:40:aa:00:00

set-name: ens3

dhcp4: false

addresses:

- **192.168.1.3/24**

routes:

- **to: 0.0.0.0/0**

via: 192.168.1.1

- **to: 10.10.14.0/23**

via: 192.168.1.2

- **to: 10.12.7.32/27**

via: 192.168.1.2

- **to: 10.8.7.96/28**

via: 192.168.1.2

nameservers:

addresses:

- **172.16.200.1**

- **8.8.8.8**



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```
root@ubuntu-cloud:/home/ubuntu# cat /etc/netplan/50-cloud-init.yaml
network:
  version: 2
  ethernets:
    ens3:
      match:
        macaddress: 0c:3a:40:aa:00:00
      set-name: ens3
      dhcp4: false
      addresses:
        - 192.168.1.3/24
      routes:
        - to: 0.0.0.0/0
          via: 192.168.1.1
        - to: 10.10.14.0/23
          via: 192.168.1.2
        - to: 10.12.7.32/27
          via: 192.168.1.2
        - to: 10.8.7.96/28
          via: 192.168.1.2
      nameservers:
        addresses:
          - 172.16.200.1
          - 8.8.8.8
root@ubuntu-cloud:/home/ubuntu#
```

SERVIDOR DHCP 2:

```
network:
  version: 2
  ethernets:
    ens3:
      match:
        macaddress: 0c:3a:40:aa:00:00
      set-name: ens3
      dhcp4: false
      addresses:
        - 192.168.1.4/24
      routes:
        - to: 0.0.0.0/0
          via: 192.168.1.1
        - to: 10.10.14.0/23
          via: 192.168.1.2
        - to: 10.12.7.32/27
          via: 192.168.1.2
```



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- to: 10.8.7.96/28

via: 192.168.1.2

nameservers:

addresses:

- 172.16.200.1

- 8.8.8.8

```
network:
  version: 2
  ethernets:
    ens3:
      # match:
      #   macaddress: 0c:3a:40:aa:00:00
      #   set-name: ens3
      #   dhcp4: false
      addresses:
        - 192.168.1.4/24
      routes:
        - to: 0.0.0.0/0
          via: 192.168.1.1
        - to: 10.10.14.0/23
          via: 192.168.1.2
        - to: 10.12.7.32/27
          via: 192.168.1.2
        - to: 10.8.7.96/28
          via: 192.168.1.2
      nameservers:
        addresses:
          - 172.16.200.1
          - 8.8.8.8
root@ubuntu-cloud:/home/ubuntu#
```

Una vez terminada la configuración:

netplan apply



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2. (1 pts) Realiza la configuración de red necesaria en R1 para que las peticiones DHCP de las LAN de SW1 y SW2 alcancen el servidor DHCP.

Establecemos el servicio de DHCP Relay en el Router R1 (Mikrotik).

New DHCP Relay

General	Status
Name: <input type="text" value="Relay Switch 1"/>	OK
Interface: <input type="text" value="ether2"/>	Cancel
DHCP Server: <input type="text" value="192.168.1.3"/> <input type="text" value="192.168.1.4"/>	Apply
Delay Threshold: <input type="text"/>	Disable
Local Address: <input type="text"/>	Copy
<input type="checkbox"/> Add Relay Info	Remove
Relay Info Remote ID: <input type="text"/>	Reset Counters
enabled	

New DHCP Relay

General	Status
Name: <input type="text" value="Relay Switch 2"/>	OK
Interface: <input type="text" value="ether3"/>	Cancel
DHCP Server: <input type="text" value="192.168.1.3"/> <input type="text" value="192.168.1.4"/>	Apply
Delay Threshold: <input type="text"/>	Disable
Local Address: <input type="text"/>	Copy
<input type="checkbox"/> Add Relay Info	Remove
Relay Info Remote ID: <input type="text"/>	Reset Counters
enabled	



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3. (3 pts.) Instala el servicio DHCP en los servidores DHCP y configura lo necesario para que se reparta entre ambos (50%/50%) la configuración de red a los equipos de las LAN SW1 y SW2, con las siguientes especificaciones:

- i. Asignar un rango que deje 4 ips para uso como estáticas o reservas.
- ii. Duración de la concesión: 18 horas
- iii. Servidores DNS: 9.9.9.9 y 7.7.5.5
- iv. Asigna una puerta de enlace lógica válida
- v. Dominio "make.it"
- vi. Ambos servidores serán autoritarios.

Ya hemos instalado isc-dhcp-server en ambos servidores:

Modificamos en **ambos** para poner el nombre de la interfaz donde pondremos el servicio:

Servidor DHCP 1:

```
US24.04LTS-1 - PuTTY
nameservers:
addresses:
- 172.16.200.1
- 8.8.8.8
root@ubuntu-cloud:/home/ubuntu# cat /etc/default/isc-dhcp-server
# Defaults for isc-dhcp-server (sourced by /etc/init.d/isc-dhcp-server)

# Path to dhcpcd's config file (default: /etc/dhcp/dhcpcd.conf).
#DHCPDv4_CONF=/etc/dhcp/dhcpcd.conf
#DHCPDv6_CONF=/etc/dhcp/dhcpcd6.conf

# Path to dhcpcd's PID file (default: /var/run/dhcpcd.pid).
#DHCPDv4_PID=/var/run/dhcpcd.pid
#DHCPDv6_PID=/var/run/dhcpcd6.pid

# Additional options to start dhcpcd with.
#       Don't use options -cf or -pf here; use DHCPD_CONF/ DHCPD_PID instead
OPTIONS=""

# On what interfaces should the DHCP server (dhcpcd) serve DHCP requests?
#       Separate multiple interfaces with spaces, e.g. "eth0 eth1".
INTERFACESv4="ens3"
INTERFACESv6=""
root@ubuntu-cloud:/home/ubuntu#
```



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Servidor DHCP 2:

US24.04LTS-2 - PuTTY

```
root@ubuntu-cloud:/home/ubuntu# systemctl restart isc-dhcp-server
root@ubuntu-cloud:/home/ubuntu# cat /etc/default/isc-dhcp-server
# Defaults for isc-dhcp-server (sourced by /etc/init.d/isc-dhcp-server)

# Path to dhcpcd's config file (default: /etc/dhcp/dhcpcd.conf).
#DHCPDV4_CONF=/etc/dhcp/dhcpcd.conf
#DHCPDV6_CONF=/etc/dhcp/dhcpcd6.conf

# Path to dhcpcd's PID file (default: /var/run/dhcpcd.pid).
#DHCPDV4_PID=/var/run/dhcpcd.pid
#DHCPDV6_PID=/var/run/dhcpcd6.pid

# Additional options to start dhcpcd with.
#       Don't use options -cf or -pf here; use DHCPD_CONF/ DHCPD_PID instead
#OPTIONS=""

# On what interfaces should the DHCP server (dhcpcd) serve DHCP requests?
#           Separate multiple interfaces with spaces, e.g. "eth0 eth1".
INTERFACESV4="ens3"
INTERFACESV6=""
root@ubuntu-cloud:/home/ubuntu#
```

Ahora modificamos: **/etc/dhcp/dhcpcd.conf**

Debemos descomentar:

authoritative;

ddns-update-style none;

DHCP 1 y 2:

```
# have support for DDNS.)
ddns-update-style none;

# If this DHCP server is the official
# network, the authoritative directive
authoritative;
```

Ahora hay una parte que es individual para cada uno:

DHCP Server 1:

#CONFIGURACIÓN DE ((DHCP-PRIM))

```
failover peer "FAILOVER" {
    primary;
    address 192.168.1.3;
    port 647;
    peer address 192.168.1.4;
```



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```
peer port 647;  
max-unacked-updates 10;  
max-response-delay 30;  
load balance max seconds 3;  
mclt 1800;  
split 128;  
}
```

```
#CONFIGURACIÓN DE ((DHCP-PRIM))  
  
failover peer "FAILOVER" {  
    primary;  
    address 192.168.1.3;  
    port 647;  
    peer address 192.168.1.4;  
    peer port 647;  
    max-unacked-updates 10;  
    max-response-delay 30;  
    load balance max seconds 3;  
    mclt 1800;  
    split 128;  
}
```

SERVIDOR DHCP 2:

```
#CONFIGURACIÓN DE ((DHCP-SECOND))
```

```
failover peer "FAILOVER" {  
    secondary;  
    address 192.168.1.4;  
    port 647;  
    peer address 192.168.1.3;  
    peer port 647;  
    max-unacked-updates 10;  
    max-response-delay 30;  
    load balance max seconds 3;  
}
```



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```
#CONFIGURACIÓN DE ((DHCP-SECOND))

failover peer "FAILOVER" {
    secondary;
    address 192.168.1.4;
    port 647;
    peer address 192.168.1.3;
    peer port 647;
    max-unacked-updates 10;
    max-response-delay 30;
    load balance max seconds 3;
}
```

Y una parte que es común para ambos servidores:

##Configuración común

```
subnet 192.168.1.0 netmask 255.255.255.0 {
    not authoritative;
}
```

```
#LAN Switch1 10.10.14.0/23
#LAN Switch2 10.12.7.32/27
```

```
# SubNet 10.10.14.0/23
subnet 10.10.14.0 netmask 255.255.254.0 {
    option domain-name-servers 9.9.9.9, 7.7.5.5;
    option domain-name "make.it";
    option routers 10.10.14.1;
    pool {
        failover peer "FAILOVER";
        range 10.10.14.5 10.10.15.254;
        default-lease-time 64800;
        max-lease-time 86000;
        host megalol-01 {
            hardware ethernet 02:42:d2:70:03:00;
            fixed-address 10.10.14.4;
        }
    }
}
```



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}

```
# SubNet 10.12.7.32/27
subnet 10.12.7.32 netmask 255.255.255.224 {
    option domain-name-servers 9.9.9.9, 7.7.5.5;
    option domain-name "make.it";
    option routers 10.12.7.33;
    pool {
        failover peer "FAILOVER";
        range 10.12.7.39 10.12.7.62;
        default-lease-time 64800;
        max-lease-time 86000;
        host megalol-02 {
            hardware ethernet 02:42:97:2b:f7:00;
            fixed-address 10.12.7.40;
        }
    }
}
```

```
##Configuración común

subnet 192.168.1.0 netmask 255.255.255.0 {
    not authoritative;
}
```

```
# SubNet 10.10.14.0/23
subnet 10.10.14.0 netmask 255.255.254.0 {
    option domain-name-servers 9.9.9.9, 7.7.5.5;
    option domain-name "make.it";
    option routers 10.10.14.1;
    pool {
        failover peer "FAILOVER";
        range 10.10.14.5 10.10.15.254;
        default-lease-time 64800;
        max-lease-time 86000;
        host megalol-01 {
            hardware ethernet 02:42:d2:70:03:00;
            fixed-address 10.10.14.4;
        }
    }
}
```



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```
# SubNet 10.12.7.32/27
subnet 10.12.7.32 netmask 255.255.255.224 {
    option domain-name-servers 9.9.9.9, 7.7.5.5;
    option domain-name "make.it";
    option routers 10.12.7.33;
    pool {
        failover peer "FAILOVER";
        range 10.12.7.39 10.12.7.62;
        default-lease-time 64800;
        max-lease-time 86000;
        host megalol-02 {
            hardware ethernet 02:42:97:2b:f7:00;
            fixed-address 10.12.7.40;
        }
    }
}
```

Una vez terminada la configuración:

systemctl restart isc-dhcp-server

systemctl status isc-dhcp-server

```
root@ubuntu-cloud:/home/ubuntu# systemctl status isc-dhcp-server
● isc-dhcp-server.service - ISC DHCP IPv4 server
   Loaded: loaded (/usr/lib/systemd/system/isc-dhcp-server.service; enabled; ➤
   Active: active (running) since Wed 2025-11-19 19:08:13 UTC; 3min 26s ago
     Docs: man:dhcpd(8)
 Main PID: 2238 (dhcpd)
   Tasks: 1 (limit: 1112)
  Memory: 4.3M (peak: 4.8M)
    CPU: 184ms
   CGroup: /system.slice/isc-dhcp-server.service
           └─2238 dhcpd -user dhcpd -group dhcpd -f -4 -pf /run/dhcp-server/dhc

Nov 19 19:08:13 ubuntu-cloud dhcpcd[2238]: failover peer FAILOVER: Both servers ➤
Nov 19 19:08:15 ubuntu-cloud dhcpcd[2238]: peer FAILOVER: disconnected
Nov 19 19:08:15 ubuntu-cloud dhcpcd[2238]: failover peer FAILOVER: I move from n>
Nov 19 19:08:15 ubuntu-cloud dhcpcd[2238]: failover peer FAILOVER: peer moves fr>
Nov 19 19:08:15 ubuntu-cloud dhcpcd[2238]: failover peer FAILOVER: I move from c>
Nov 19 19:08:15 ubuntu-cloud dhcpcd[2238]: failover peer FAILOVER: Both servers >
Nov 19 19:08:15 ubuntu-cloud dhcpcd[2238]: balancing pool 5dd08ebbe65a0 10.12.7.3>
Nov 19 19:08:15 ubuntu-cloud dhcpcd[2238]: balanced pool 5dd08ebbe65a0 10.12.7.32>
Nov 19 19:08:15 ubuntu-cloud dhcpcd[2238]: balancing pool 5dd08ebelc10 10.10.14.0>
Nov 19 19:08:15 ubuntu-cloud dhcpcd[2238]: balanced pool 5dd08ebelc10 10.10.14.0>
lines 1-21/21 (END)
```



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En el Router Relay Mikrotik establecemos una regla NAT:

New NAT Rule

General	Advanced	Extra	Action	...	OK
Chain: <input type="text" value="srcnat"/>					Cancel
Src. Address: <input type="text"/>					Apply
Dst. Address: <input type="text"/>					Disable
Src. Address List: <input type="text"/>					Comment
Dst. Address List: <input type="text"/>					Copy
Protocol: <input type="text"/>					Remove
Src. Port: <input type="text"/>					Reset Counters
Dst. Port: <input type="text"/>					Reset All Counters
Any. Port: <input type="text"/>					
In. Interface: <input type="text"/>					
Out. Interface: <input checked="" type="checkbox"/> ether1					
In. Interface List: <input type="text"/>					

NAT Rule <>

Advanced	Extra	Action	Statistics	...	OK
Action: <input type="text" value="masquerade"/>					Cancel
<input type="checkbox"/> Log					Apply
Log Prefix: <input type="text"/>					Disable
To Ports: <input type="text"/>					Comment
					Copy
					Remove
					Reset Counters
					Reset All Counters

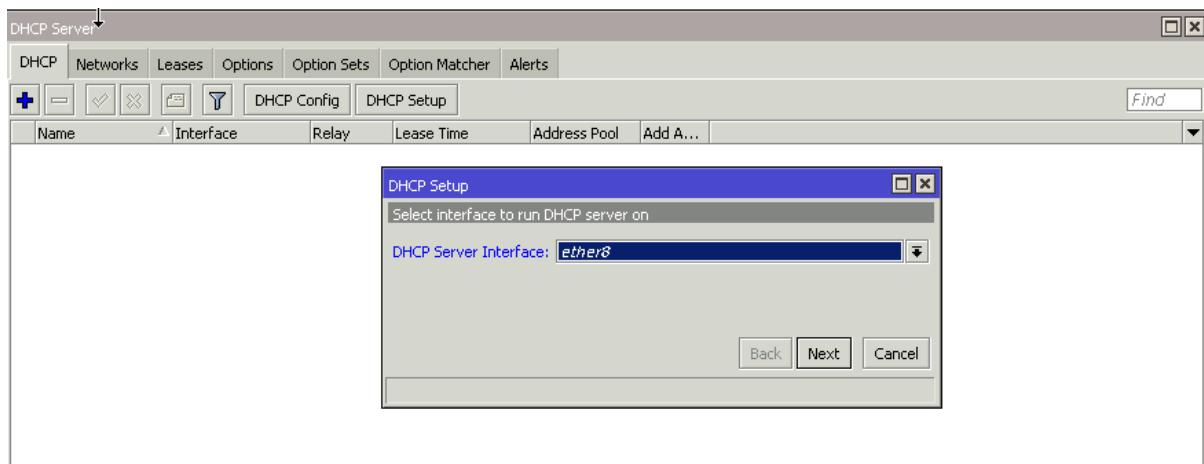


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4. (2 pts.) Configura lo necesario para que R1 sea el servidor DHCP de la LAN del SW3.

- i. Asignar un rango que deje 3 ips para uso como estáticas o reservas.
- ii. Duración de la concesión: 9 horas
- iii. Servidores DNS: 9.9.9.9 y 2.2.2.2
- iv. Asigna una puerta de enlace lógica válida
- v. Dominio “agar.io”





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DHCP Setup

Select network for DHCP addresses

DHCP Address Space: 10.8.7.96/28

Back Next Cancel

DHCP Setup

Select gateway for given network

Gateway for DHCP Network: 10.8.7.97

Back Next Cancel

DHCP Setup

Select pool of ip addresses given out by DHCP server

Addresses to Give Out: 10.8.7.100-10.8.7.110

Back Next Cancel



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EXAMEN PRÁCTICO - UT1 BIS

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DHCP Setup

Select DNS servers

DNS Servers: 9.9.9.9
2.2.2.2

Back Next Cancel

DHCP Setup

Select lease time

Lease Time: 09:00:00

Back Next Cancel

CREADO:

Relay Switch 1 ether2 192.168.1.3, 19...
Relay Switch 2 ether3 192.16

HCP Server

DHCP Networks Leases Options Option S

+ - ✓ ✘ DHCP Config

Name	Interface	Relay
dhcp1	ether8	

DHCP Server <dhcp1>

Generic Queues Script

Name: dhcp1
Interface: ether8
Relay:
Lease Time: 09:00:00
Bootp Lease Time: forever
Address Pool: dhcp_pool0
DHCP Option Set:
Server Address:
Delay Threshold:
Authoritative: yes
Bootp Support: static
Client MAC Limit:
Use RADIUS: no

OK Cancel Apply Disable Comment Copy Remove



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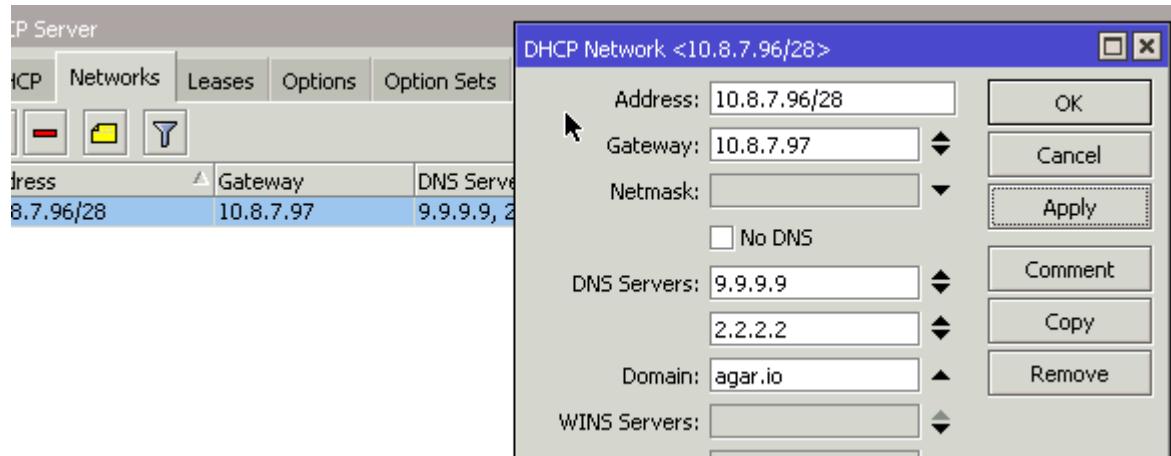


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Esto se hace una vez se ha terminado el asistente: **poner el nombre del dominio.**





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5. (1 pts.) Enciende los clientes y verifica en los servidores qué direcciones están asignadas dinámicamente en este instante. Usa busybox y muestra la configuración de red incluidos dns y sufijo de búsqueda. Comprueba que hay conectividad con los servidores DHCP.

SERVIDOR DHCP 1:

Usamos: **dhclient -l --parsable**

```
To get manufacturer names please download http://standards-oui.ieee.org/oui.txt to /usr/local/etc/oui.txt
MAC 02:42:49:f2:e6:00 IP 10.10.15.1 HOSTNAME UbuntuDockerGuest-1 BEGIN 2025-11-19 18:32:02 END 2025-11-20 12:32:02 MANUFACTURER -NA-
MAC 02:42:4b:ef:05:00 IP 10.12.7.51 HOSTNAME UbuntuDockerGuest-2 BEGIN 2025-11-19 18:32:13 END 2025-11-20 06:32:13 MANUFACTURER -NA-
root@ubuntu-cloud:/home/ubuntu#
```

SERVIDOR DHCP 2:

```
root@ubuntu-cloud:/home/ubuntu# dhclient -l --parsable
To get manufacturer names please download http://standards-oui.ieee.org/oui.txt to /usr/local/etc/oui.txt
MAC 02:42:49:f2:e6:00 IP 10.10.15.1 HOSTNAME UbuntuDockerGuest-1 BEGIN 2025-11-19 18:32:02 END 2025-11-20 12:32:02 MANUFACTURER -NA-
MAC 02:42:4b:ef:05:00 IP 10.12.7.51 HOSTNAME UbuntuDockerGuest-2 BEGIN 2025-11-19 18:32:13 END 2025-11-20 06:32:13 MANUFACTURER -NA-
root@ubuntu-cloud:/home/ubuntu#
```

Cliente Switch 1:

Al iniciar ya nos avisa que se nos concede una IP y el tiempo.

```
root@UbuntuDockerGuest-1: ~
UbuntuDockerGuest-1 console is now available... Press RETURN to get started.
udhcpc: started, v1.30.1
udhcpc: sending discover
udhcpc: sending select for 10.10.15.1
udhcpc: lease of 10.10.15.1 obtained, lease time 64232
root@UbuntuDockerGuest-1:~#
```

Resultado de "ip a".

```
root@UbuntuDockerGuest-1:~# hostname
UbuntuDockerGuest-1
root@UbuntuDockerGuest-1:~# ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
        inet 127.0.0.1/8 scope host lo
            valid_lft forever preferred_lft forever
        inet6 ::1/128 scope host
            valid_lft forever preferred_lft forever
1661: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel qlen 1000
    link/ether 02:42:49:f2:e6:00 brd ff:ff:ff:ff:ff:ff
        inet 10.10.15.1/23 scope global eth0
            valid_lft forever preferred_lft forever
root@UbuntuDockerGuest-1:~#
```

El gateway:



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```
valid_lif forever preferred_lif forever
root@UbuntuDockerGuest-1:~# b ip route
default via 10.10.14.1 dev eth0 metric 1861
10.10.14.0/23 dev eth0 scope link src 10.10.15.1
root@UbuntuDockerGuest-1:~# █
```

Servidor DNS:

```
10.10.14.0/23 dev eth0 scope link src 10.10.15.1
root@UbuntuDockerGuest-1:~# cat /etc/resolv.conf
search make.it
nameserver 9.9.9.9
nameserver 7.7.5.5
root@UbuntuDockerGuest-1:~# █
```

¿Tenemos Internet? Claro que si.

```
root@UbuntuDockerGuest-1:~# ping x.uk
PING x.uk (185.249.71.213) 56(84) bytes of data.
64 bytes from 185.249.71.213 (185.249.71.213): icmp_seq=1 ttl=45 time=39.2 ms
64 bytes from 185.249.71.213 (185.249.71.213): icmp_seq=2 ttl=45 time=38.7 ms
64 bytes from 185.249.71.213 (185.249.71.213): icmp_seq=3 ttl=45 time=38.8 ms
64 bytes from 185.249.71.213 (185.249.71.213): icmp_seq=4 ttl=45 time=38.8 ms
^C
--- x.uk ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3004ms
rtt min/avg/max/mdev = 38.696/38.876/39.222/0.205 ms
root@UbuntuDockerGuest-1:~# █
```

Conectividad con los servidores DHCP:

```
root@UbuntuDockerGuest-1:~# ping 192.168.1.3
PING 192.168.1.3 (192.168.1.3) 56(84) bytes of data.
64 bytes from 192.168.1.3: icmp_seq=1 ttl=63 time=5.63 ms
64 bytes from 192.168.1.3: icmp_seq=2 ttl=63 time=4.66 ms
^C
--- 192.168.1.3 ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1002ms
rtt min/avg/max/mdev = 4.656/5.141/5.627/0.485 ms
root@UbuntuDockerGuest-1:~# ping 192.168.1.4
PING 192.168.1.4 (192.168.1.4) 56(84) bytes of data.
64 bytes from 192.168.1.4: icmp_seq=1 ttl=63 time=4.96 ms
64 bytes from 192.168.1.4: icmp_seq=2 ttl=63 time=4.20 ms
^C
--- 192.168.1.4 ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1001ms
rtt min/avg/max/mdev = 4.201/4.579/4.958/0.378 ms
root@UbuntuDockerGuest-1:~# █
```



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EXAMEN PRÁCTICO - UT1 BIS

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Cliente Switch 2:

```
root@UbuntuDockerGuest-2: ~
UbuntuDockerGuest-2 console is now available... Press RETURN to get started.
udhcpc: started, v1.30.1
udhcpc: sending discover
udhcpc: sending select for 10.12.7.51
udhcpc: lease of 10.12.7.51 obtained, lease time 42637
root@UbuntuDockerGuest-2:~# [REDACTED]

root@UbuntuDockerGuest-2: ~
root@UbuntuDockerGuest-2:~# b ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
        inet 127.0.0.1/8 scope host lo
            valid_lft forever preferred_lft forever
        inet6 ::1/128 scope host
            valid_lft forever preferred_lft forever
1662: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel qlen 1000
    link/ether 02:42:4b:ef:05:00 brd ff:ff:ff:ff:ff:ff
        inet 10.12.7.51/27 scope global eth0
            valid_lft forever preferred_lft forever
root@UbuntuDockerGuest-2:~# [REDACTED]

root@UbuntuDockerGuest-2:~# b ip route
default via 10.12.7.33 dev eth0 metric 1862
10.12.7.32/27 dev eth0 scope link src 10.12.7.51
root@UbuntuDockerGuest-2:~# [REDACTED]

root@UbuntuDockerGuest-2: ~
root@UbuntuDockerGuest-2:~# cat /etc/resolv.conf
search make.it
nameserver 9.9.9.9
nameserver 7.7.5.5
root@UbuntuDockerGuest-2:~# [REDACTED]

root@UbuntuDockerGuest-2:~# ping x.uk
PING x.uk (185.249.71.213) 56(84) bytes of data.
64 bytes from 185.249.71.213 (185.249.71.213): icmp_seq=1 ttl=45 time=38.6 ms
64 bytes from 185.249.71.213 (185.249.71.213): icmp_seq=2 ttl=45 time=37.9 ms
64 bytes from 185.249.71.213 (185.249.71.213): icmp_seq=3 ttl=45 time=38.4 ms
^C
--- x.uk ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2003ms
rtt min/avg/max/mdev = 37.871/38.291/38.636/0.316 ms
root@UbuntuDockerGuest-2:~# [REDACTED]
```



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EXAMEN PRÁCTICO - UT1 BIS

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```
root@UbuntuDockerGuest-2: ~
root@UbuntuDockerGuest-2:~# ping 192.168.1.3
PING 192.168.1.3 (192.168.1.3) 56(84) bytes of data.
64 bytes from 192.168.1.3: icmp_seq=1 ttl=63 time=5.56 ms
^C
--- 192.168.1.3 ping statistics ---
1 packets transmitted, 1 received, 0% packet loss, time 0ms
rtt min/avg/max/mdev = 5.555/5.555/5.555/0.000 ms
root@UbuntuDockerGuest-2:~# ping 192.168.1.4
PING 192.168.1.4 (192.168.1.4) 56(84) bytes of data.
64 bytes from 192.168.1.4: icmp_seq=1 ttl=63 time=5.41 ms
^C
--- 192.168.1.4 ping statistics ---
1 packets transmitted, 1 received, 0% packet loss, time 0ms
rtt min/avg/max/mdev = 5.414/5.414/5.414/0.000 ms
root@UbuntuDockerGuest-2:~#
```

Cliente Switch 3:

```
root@UbuntuDockerGuest-3: ~
UbuntuDockerGuest-3 console is now available... Press RETURN to get started.
udhcpc: started, v1.30.1
udhcpc: sending discover
udhcpc: sending select for 10.8.7.110
udhcpc: lease of 10.8.7.110 obtained, lease time 32400
root@UbuntuDockerGuest-3:~#
```

```
UbuntuDockerGuest-3
root@UbuntuDockerGuest-3:~# b ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
1: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel qlen 1000
    link/ether 02:42:76:60:eb:00 brd ff:ff:ff:ff:ff:ff
    inet 10.8.7.110/28 scope global eth0
        valid_lft forever preferred_lft forever
root@UbuntuDockerGuest-3:~#
```



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EXAMEN PRÁCTICO - UT1 BIS

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```
root@UbuntuDockerGuest-3:~# b ip route
default via 10.8.7.97 dev eth0 metric 1866
10.8.7.96/28 dev eth0 scope link src 10.8.7.110
root@UbuntuDockerGuest-3:~#
```

```
root@UbuntuDockerGuest-3:~# cat /etc/resolv.conf
search agar.io
nameserver 9.9.9.9
nameserver 2.2.2.2
root@UbuntuDockerGuest-3:~#
```

```
root@UbuntuDockerGuest-3:~# ping x.uk
PING x.uk (185.249.71.213) 56(84) bytes of data.
64 bytes from 185.249.71.213 (185.249.71.213): icmp_seq=1 ttl=45 time=37.9 ms
64 bytes from 185.249.71.213 (185.249.71.213): icmp_seq=2 ttl=45 time=38.1 ms
^C
--- x.uk ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1002ms
rtt min/avg/max/mdev = 37.926/37.994/38.062/0.068 ms
root@UbuntuDockerGuest-3:~#
```

```
root@UbuntuDockerGuest-3:~# ping 192.168.1.3
PING 192.168.1.3 (192.168.1.3) 56(84) bytes of data.
64 bytes from 192.168.1.3: icmp_seq=1 ttl=63 time=4.37 ms
64 bytes from 192.168.1.3: icmp_seq=2 ttl=63 time=3.83 ms
^C
--- 192.168.1.3 ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1001ms
rtt min/avg/max/mdev = 3.833/4.102/4.372/0.269 ms
root@UbuntuDockerGuest-3:~# ping 192.168.1.4
PING 192.168.1.4 (192.168.1.4) 56(84) bytes of data.
64 bytes from 192.168.1.4: icmp_seq=1 ttl=63 time=6.46 ms
64 bytes from 192.168.1.4: icmp_seq=2 ttl=63 time=4.65 ms
64 bytes from 192.168.1.4: icmp_seq=3 ttl=63 time=4.37 ms
^C
--- 192.168.1.4 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2004ms
rtt min/avg/max/mdev = 4.374/5.162/6.461/0.925 ms
root@UbuntuDockerGuest-3:~#
```



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EXAMEN PRÁCTICO - UT1 BIS

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6. (1 pts.) Realiza una reserva para cada LAN bajo R1 y demuestra que los clientes las obtienen.

RESERVA EN LAN SWITCH 3:

New DHCP Lease

General Active

Address: 10.8.7.99

MAC Address: 02:42:3f:a9:18:00

Use Src. MAC Address

Client ID:

Server: dhcp1

Lease Time:

Block Access

Allow Dual Stack Queue

Always Broadcast

DHCP Options:

DHCP Option Set:

Rate Limit:

Routes:

Insert Queue Before: first

Address List:

OK Cancel Apply Disable Comment Copy Remove Check Status

enabled radius blocked waiting

```
root@UbuntuDockerGuest-4: ~
UbuntuDockerGuest-4 console is now available... Press RETURN to get started.
udhcpc: started, v1.30.1
udhcpc: sending discover
udhcpc: sending select for 10.8.7.99
udhcpc: lease of 10.8.7.99 obtained, lease time 32400
root@UbuntuDockerGuest-4:~#
```

Un equipo con Reserva y el otro por DHCP:

DHCP Server

DHCP Networks Leases Options Option Sets Option Matcher Alerts

+ - ✓ ✎ ⚡ Find

	Address	MAC Address	Client ID	Server	Active Address	Active MAC Addr...	Active Ho...	Bridge Port	Expires After	Status
	10.8.7.99	02:42:3F:A9:18:00		dhcp1	10.8.7.99	02:42:3F:A9:18:00	UbuntuDo...		08:59:40	bound
D	10.8.7.110	02:42:76:60:EB:00	1:2:42:76:60:eb:0	dhcp1	10.8.7.110	02:42:76:60:EB:00	UbuntuDo...		08:51:09	bound



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EXAMEN PRÁCTICO - UT1 BIS

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Reserva Switch 1:

Hostname: megalol-01

Mac: 02:42:d2:70:03:00

```
root@megalol-01: ~
megalol-01 console is now available... Press RETURN to get started.
udhcpc: started, v1.30.1
udhcpc: sending discover
udhcpc: sending select for 10.10.14.4
udhcpc: lease of 10.10.14.4 obtained, lease time 64800
root@megalol-01:~# alias b=/gns3/bin/busybox
root@megalol-01:~# b ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue qdisc qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
1668: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel qlen 1000
    link/ether 02:42:d2:70:03:00 brd ff:ff:ff:ff:ff:ff
    inet 10.10.14.4/23 scope global eth0
        valid_lft forever preferred_lft forever
root@megalol-01:~#
```



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EXAMEN PRÁCTICO - UT1 BIS

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Reserva Switch 2:

Hostname: megalol-02

Mac: 02:42:97:2b:f7:00

```
root@megalol-02: ~
megalol-02 console is now available... Press RETURN to get started.
udhcpc: started, v1.30.1
udhcpc: sending discover
udhcpc: sending select for 10.12.7.40
udhcpc: lease of 10.12.7.40 obtained, lease time 64800
root@megalol-02:~# alias b=/gns3/bin/busybox
root@megalol-02:~# b ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue qdisc qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
1669: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel qlen 1000
    link/ether 02:42:97:2b:f7:00 brd ff:ff:ff:ff:ff:ff
    inet 10.12.7.40/27 scope global eth0
        valid_lft forever preferred_lft forever
root@megalol-02:~#
```