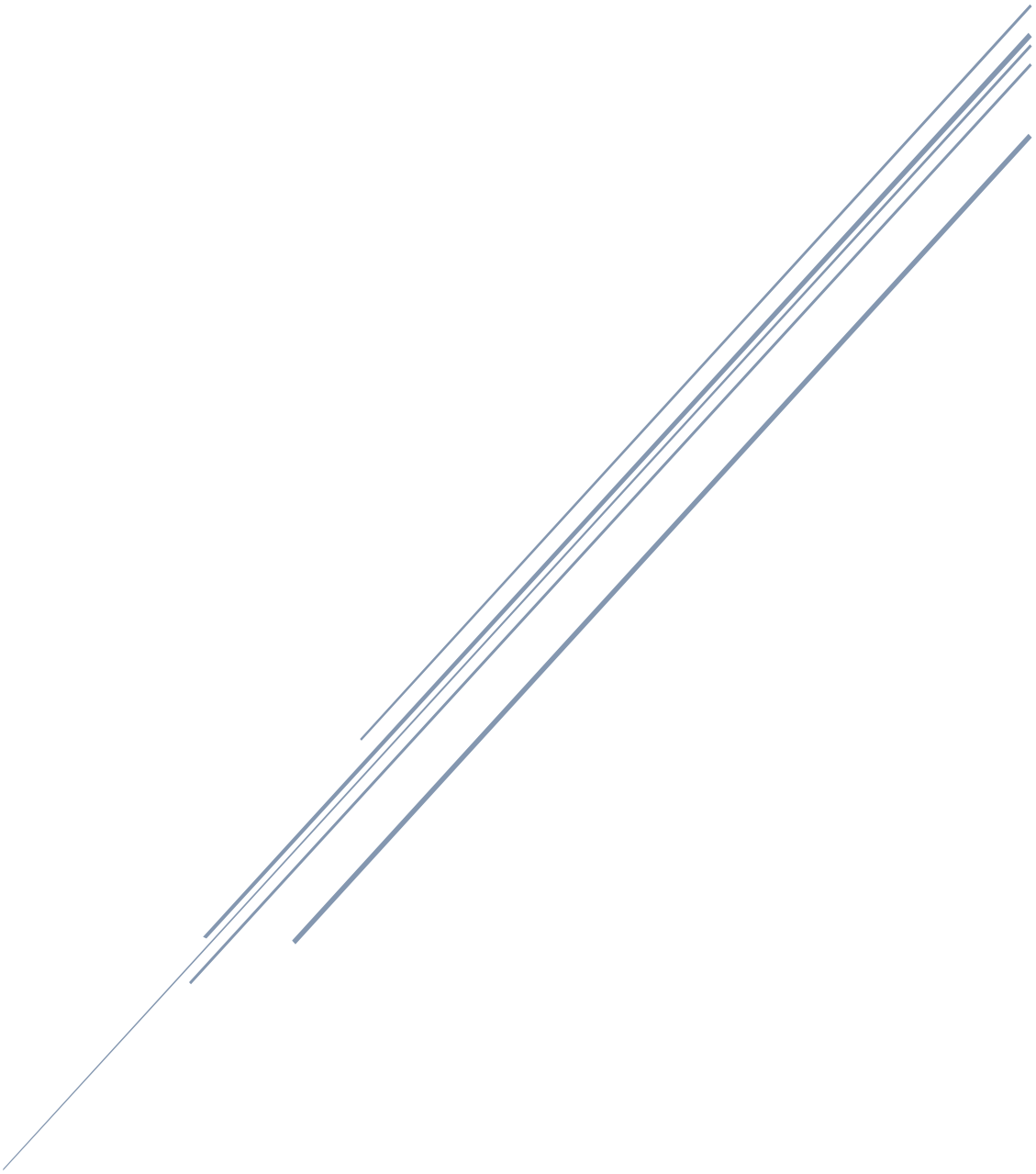
SERVIDOR DNS

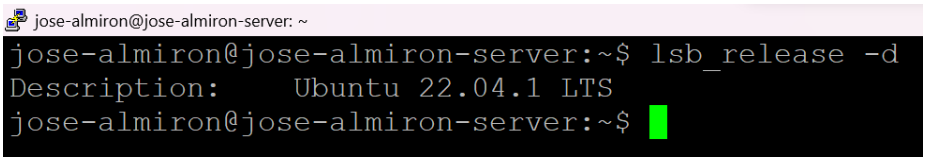


Jose Almiron Lopez

Tabla de contenido

Pasos previos

Antes de empezar con la instalación y la configuración del servidor DNS, realizamos unos pasos previos. Partimos de una máquina virtual de Ubuntu server 22.04 LTS

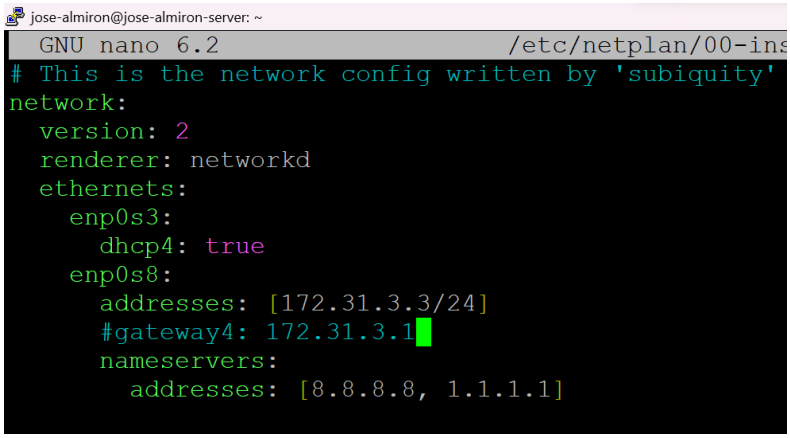


Modificamos el fichero **/etc/hostname** asignándole un nombre para distinguir el servidor maestro del secundario

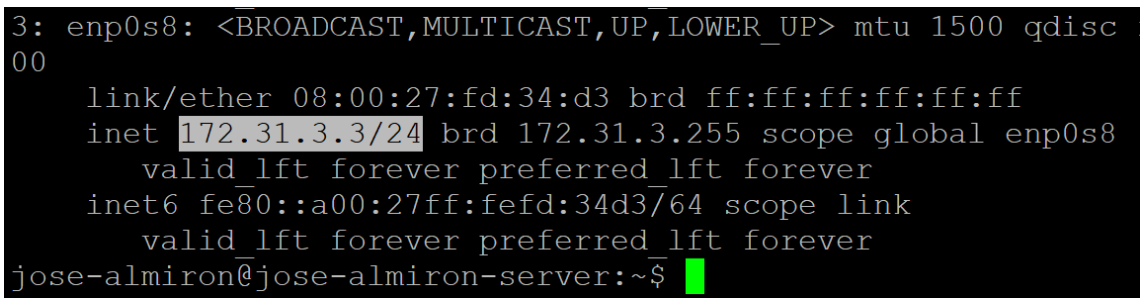
sudo nano /etc/hostname

Por último, configuramos la red, asignando la dirección de red correspondiente para el servidor primario que en este caso será 172.31.3.3

sudo nano /etc/netplan/00-installer-config.yaml
sudo netplan apply



Comprobamos que nos ha asignado la dirección de red correspondiente



Instalar y configurar servicio DNS en servidor Linux

Empezamos con la instalación del servicio bind9

```
jose-almiron@jose-almiron-server: ~
jose-almiron@jose-almiron-server:~$ sudo apt install bind9 bind9-utils
Leyendo lista de paquetes... Hecho
Creando árbol de dependencias... Hecho
Leyendo la información de estado... Hecho
Paquetes sugeridos:
  bind-doc resolvconf
Se instalarán los siguientes paquetes NUEVOS:
  bind9 bind9-utils
0 actualizados, 2 nuevos se instalarán, 0 para eliminar y 0 no actualiz
```

El primer fichero que vamos a editar será /etc/bind/named.conf.local. En él definiremos las zonas, directa e inversa, para el dominio

sudo nano /etc/bind/named.conf.local

```
jose-almiron@DNS-maestro: ~
  GNU nano 6.2                          /etc/bind/named.conf.local *
//
// Do any local configuration here
//

// Consider adding the 1918 zones here, if they are not used in your
// organization
//include "/etc/bind/zones.rfc1918";

zone "zoo.cnb-csic.es" IN {
        type master;
        file "/etc/bind/zones/db.zoo.cnb-csic.es.zone";
};

zone "3.31.172.in-addr.arpa" IN {
        type master;
        file "/etc/bind/zones/db.172.31.3.zone";
};
```

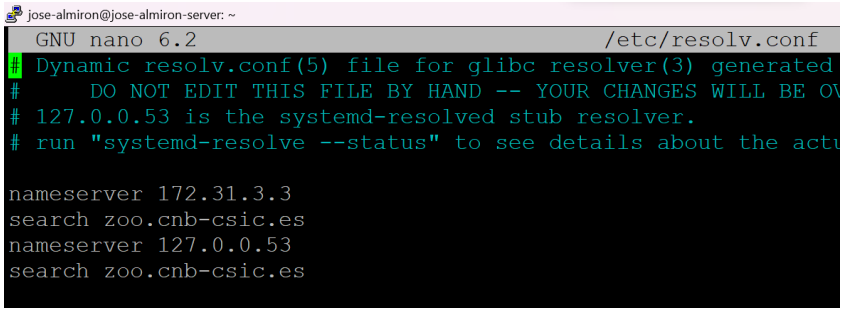
Configuramos de forma permanente el fichero resolv en el que pondremos namserver y ip del servidor, para configurarlo instalamos el paquete resolvconf

sudo apt install resolvconf
sudo systemctl start resolvconf.service
sudo systemctl enable resolvconf.service

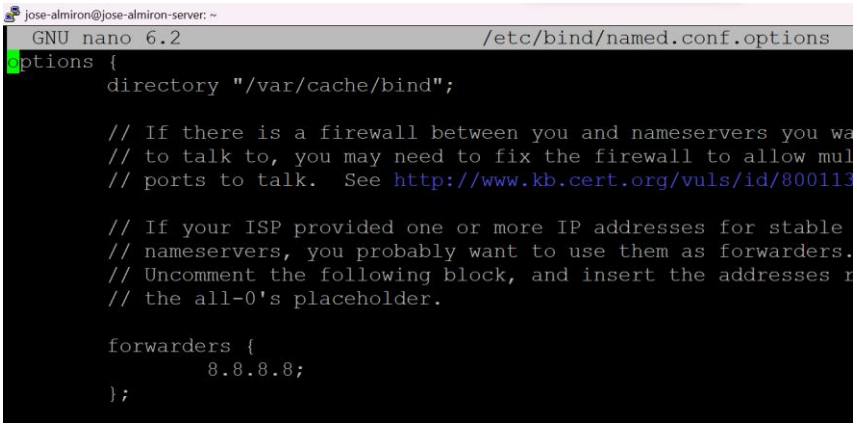
editamos el fichero de /etc/resolvconf/resolv.conf.d/head

```
jose-almiron@jose-almiron-server: ~
  GNU nano 6.2                        /etc/resolvconf/resolv.conf.d/head
# Dynamic resolv.conf(5) file for glibc resolver(3) generated by resolvconf(8)
#     DO NOT EDIT THIS FILE BY HAND -- YOUR CHANGES WILL BE OVERWRITTEN
# 127.0.0.53 is the systemd-resolved stub resolver.
# run "systemd-resolve --status" to see details about the actual nameservers.

nameserver 172.31.3.3
search zoo.cnb-csic.es
```

Comprobamos el fichero **/etc/resolv.conf** comprobando que se ha añadido la dirección de red del servidor DNS

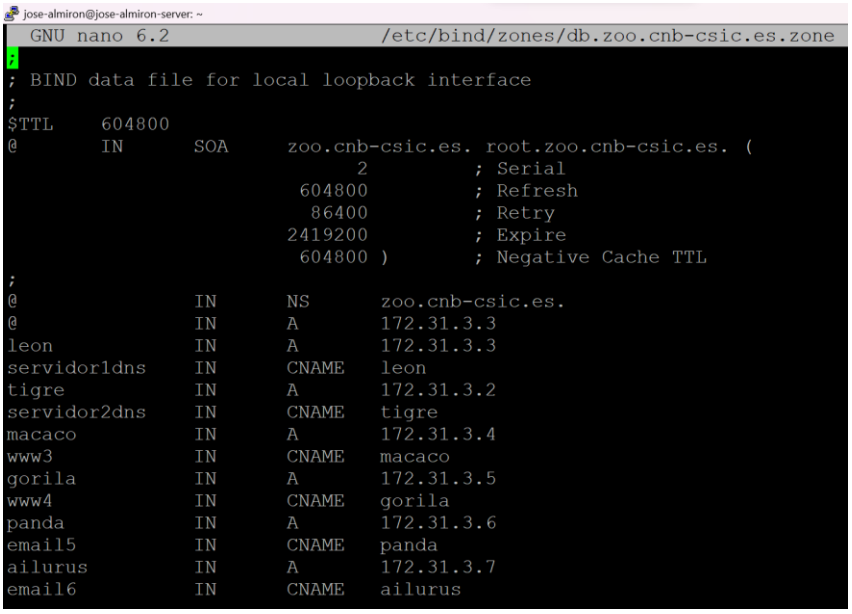


Modificamos el fichero named.conf.options para configurar los forwarders



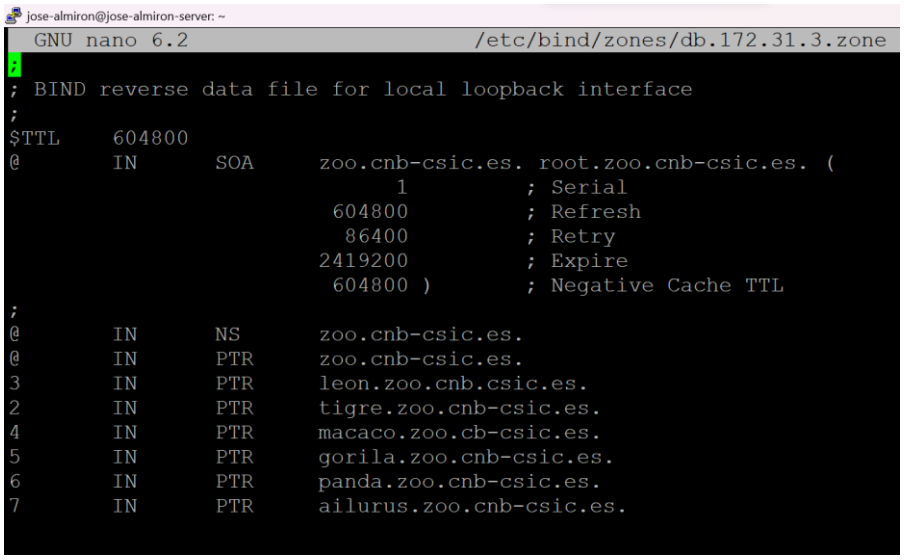
Creamos las zonas a través de las plantillas que nos ofrece bind9, las zonas se encuentran en la ruta **/etc/bind**. Para la zona directa creamos el siguiente fichero y procedemos a su configuración

mkdir /etc/bind/zones
sudo cp -r /etc/bind/db.local /etc/bind/zones/db.zoo.cnb.csic.es.zone
sudo nano /etc/bind/zones/db.zoo.cnb.csic.es.zone

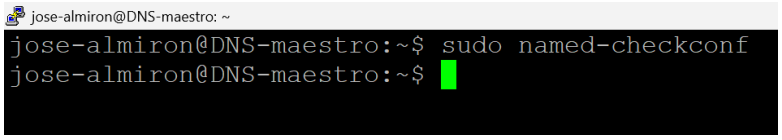


Generamos el fichero para la zona inversa y procedemos a configurarlo

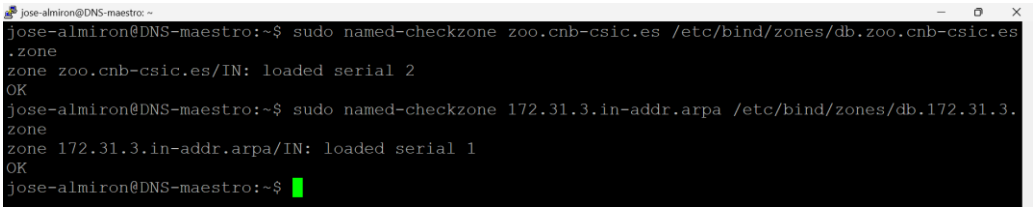
sudo cp -r /etc/bind/db.127 /etc/bind/zones/db.172.31.3.zone
sudo nano /etc/bind/zones/db.172.31.3.zone



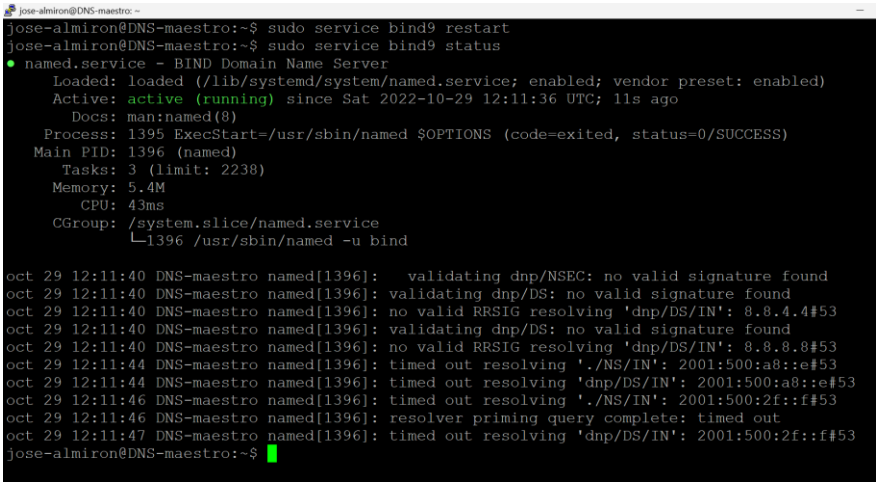
Comprobamos si tenemos algún fallo en la sintaxis de los ficheros que hemos modificado



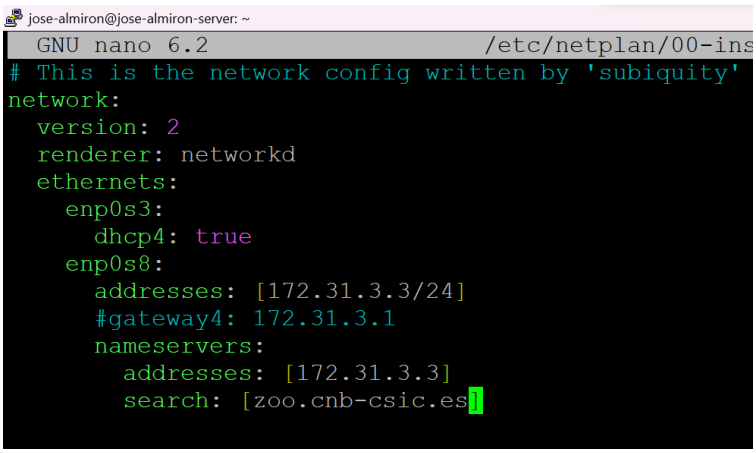
Lo siguiente que haremos será comprobar que la configuración de los ficheros de zonas la hemos realizado correctamente y no hayamos cometido errores en la sintaxis del fichero



Reinamos el servicio de bind9 comprobando su estado

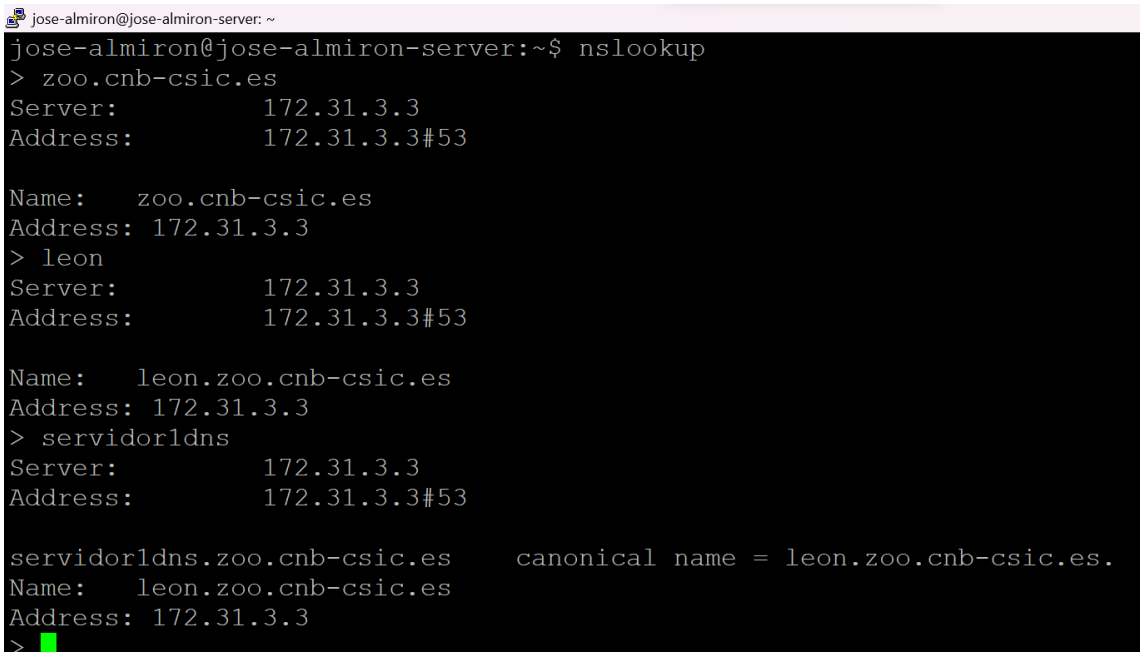


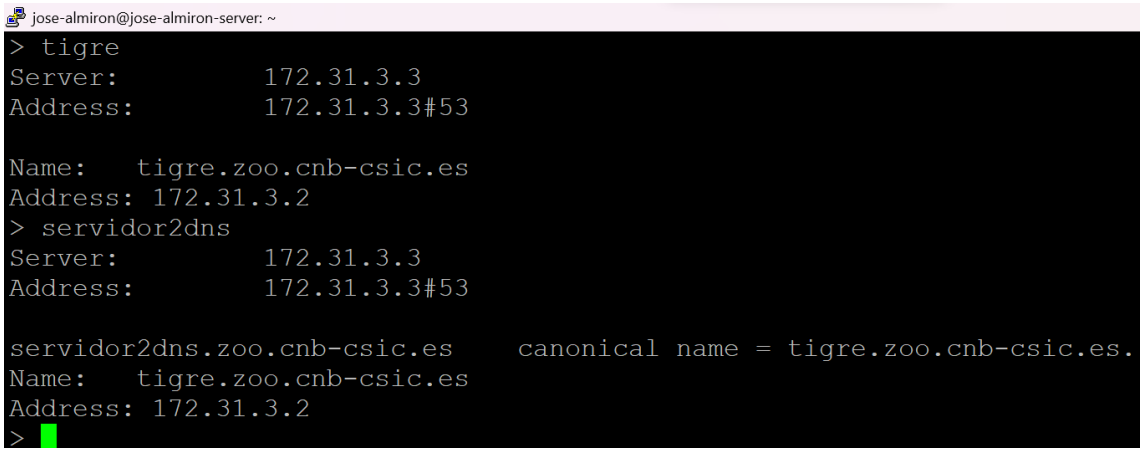
Editamos la configuración de red indicando que el mismo es el servidor DNS que tendrá que consultar para la resolución de nombres



Comprobación de zona directa e inversa en Ubuntu server

Comprobación de zona directa





jose-almiron@jose-almiron-server: ~

```
> macaco
Server:         172.31.3.3
Address:        172.31.3.3#53

Name:   macaco.zoo.cnb-csic.es
Address: 172.31.3.4
> www3
Server:         172.31.3.3
Address:        172.31.3.3#53

www3.zoo.cnb-csic.es    canonical name = macaco.zoo.cnb-csic.es.
Name:   macaco.zoo.cnb-csic.es
Address: 172.31.3.4
>
```

jose-almiron@jose-almiron-server: ~

```
> gorila
Server:         172.31.3.3
Address:        172.31.3.3#53

Name:   gorila.zoo.cnb-csic.es
Address: 172.31.3.5
> www4
Server:         172.31.3.3
Address:        172.31.3.3#53

www4.zoo.cnb-csic.es    canonical name = gorila.zoo.cnb-csic.es.
Name:   gorila.zoo.cnb-csic.es
Address: 172.31.3.5
>
```

jose-almiron@jose-almiron-server: ~

```
> panda
Server:         172.31.3.3
Address:        172.31.3.3#53

Name:   panda.zoo.cnb-csic.es
Address: 172.31.3.6
> email5
Server:         172.31.3.3
Address:        172.31.3.3#53

email5.zoo.cnb-csic.es  canonical name = panda.zoo.cnb-csic.es.
Name:   panda.zoo.cnb-csic.es
Address: 172.31.3.6
>
```

```
jose-almiron@jose-almiron-server: ~
> ailurus
Server:         172.31.3.3
Address:        172.31.3.3#53

Name:   ailurus.zoo.cnb-csic.es
Address: 172.31.3.7
> email6
Server:         172.31.3.3
Address:        172.31.3.3#53

email6.zoo.cnb-csic.es  canonical name = ailurus.zoo.cnb-csic.es.
Name:   ailurus.zoo.cnb-csic.es
Address: 172.31.3.7
>
```

Comprobación de zona inversa

```
jose-almiron@jose-almiron-server: ~
jose-almiron@jose-almiron-server:~$ nslookup
> 172.31.3.3
3.3.31.172.in-addr.arpa name = leon.zoo.cnb.csic.es.
> 172.31.3.2
2.3.31.172.in-addr.arpa name = tigre.zoo.cnb-csic.es.
> 172.31.3.4
4.3.31.172.in-addr.arpa name = macaco.zoo.cb-csic.es.
> 172.31.3.5
5.3.31.172.in-addr.arpa name = gorila.zoo.cnb-csic.es.
> 172.31.3.6
6.3.31.172.in-addr.arpa name = panda.zoo.cnb-csic.es.
> 172.31.3.7
7.3.31.172.in-addr.arpa name = ailurus.zoo.cnb-csic.es.
>
```

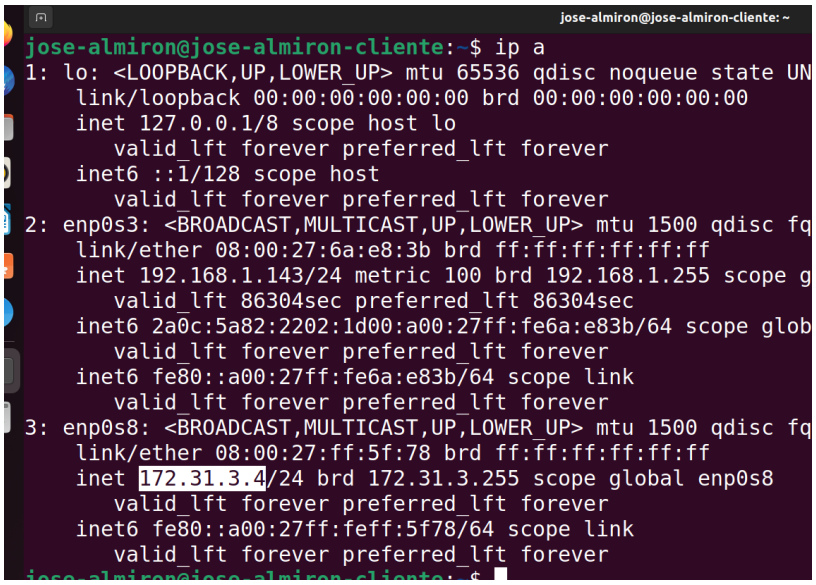
configurar y comprobar traducciones de clientes en el dominio

partimos de una maquina virtual corriendo la última versión de Ubuntu 22.04

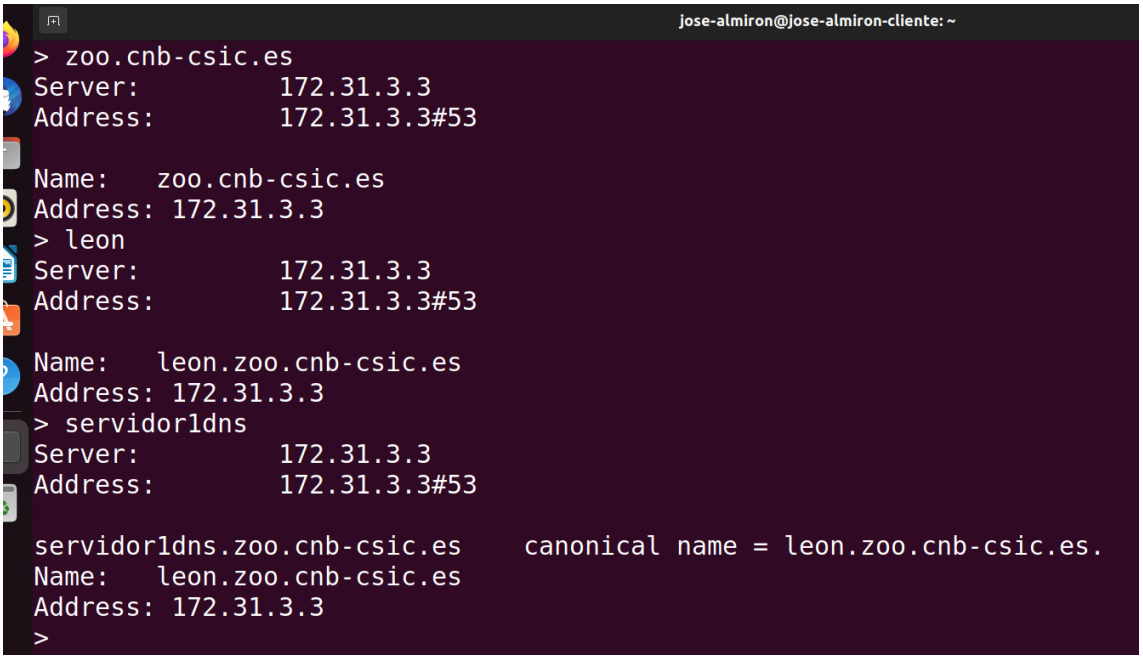
```
jose-almiron@jose-almiron-cliente: ~
jose-almiron@jose-almiron-cliente:~$ lsb_release -d
Description:    Ubuntu 22.04.1 LTS
jose-almiron@jose-almiron-cliente:~$
```

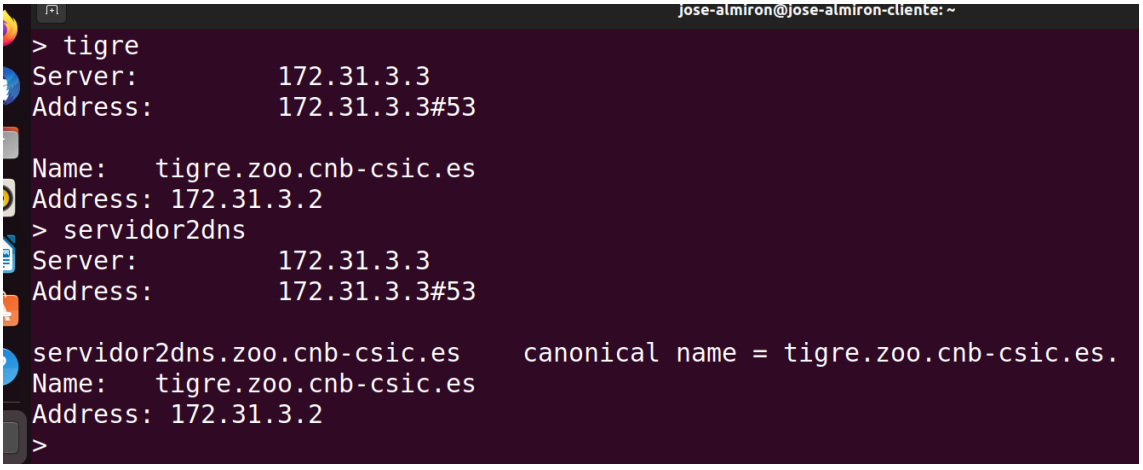
lo primero que haremos será modificar la configuración de red en Ubuntu cliente

```
Actividades  Terminal  14 de oct 00:55
jose-almiron@jose-almiro
 GNU nano 6.2                    /etc/netplan/01-networ
# Let NetworkManager manage all devices on this system
network:
  version: 2
  renderer: networkd
  ethernets:
    enp0s3:
      dhcp4: yes
    enp0s8:
      addresses: [172.31.3.4/24]
      #gateway: 172.31.3.1
      nameservers:
        addresses: [172.31.3.3]
        search: [zoo.cnb-csic.es]
```



Comprobando la zona directa

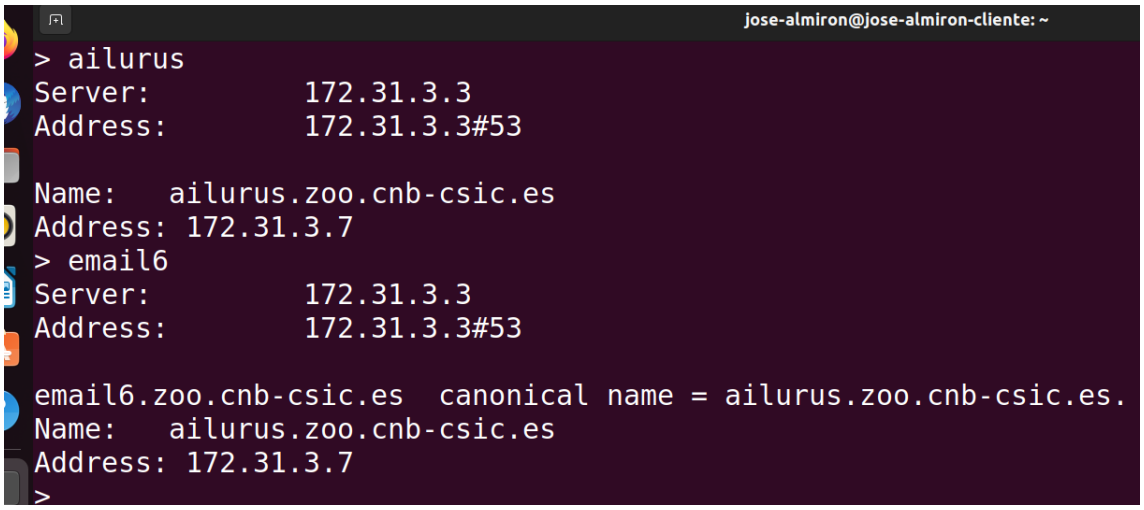




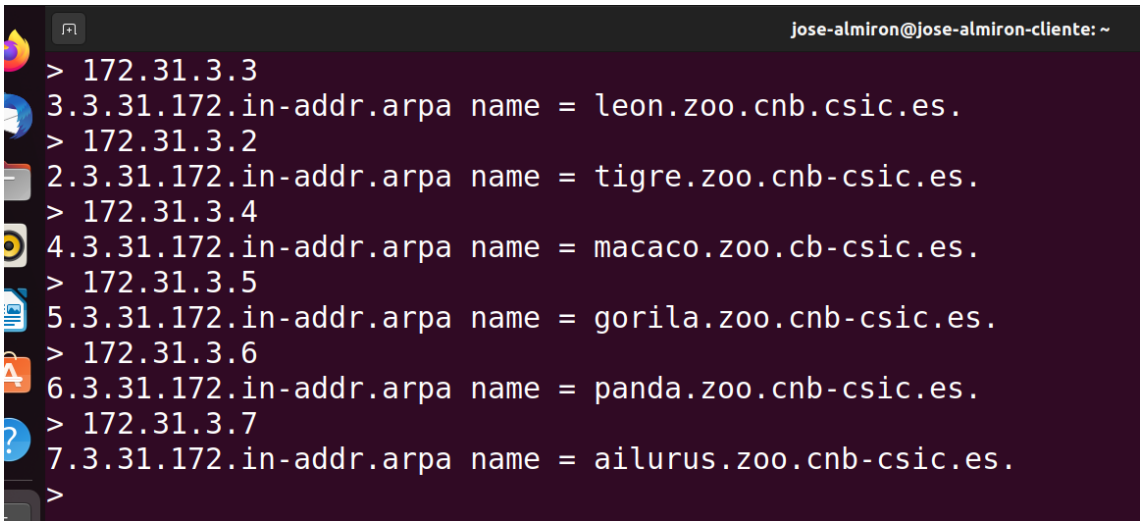
```
> macaco
Server:         172.31.3.3
Address:        172.31.3.3#53

Name:   macaco.zoo.cnb-csic.es
Address: 172.31.3.4
> www3
Server:         172.31.3.3
Address:        172.31.3.3#53

www3.zoo.cnb-csic.es    canonical name = macaco.zoo.cnb-csic.es.
Name:   macaco.zoo.cnb-csic.es
Address: 172.31.3.4
>
```

```
jose-almiron@jose-almiron-cliente: ~
> gorila
Server:         172.31.3.3
Address:        172.31.3.3#53

Name:   gorila.zoo.cnb-csic.es
Address: 172.31.3.5
> www4
Server:         172.31.3.3
Address:        172.31.3.3#53

www4.zoo.cnb-csic.es    canonical name = gorila.zoo.cnb-csic.es.
Name:   gorila.zoo.cnb-csic.es
Address: 172.31.3.5
>
```

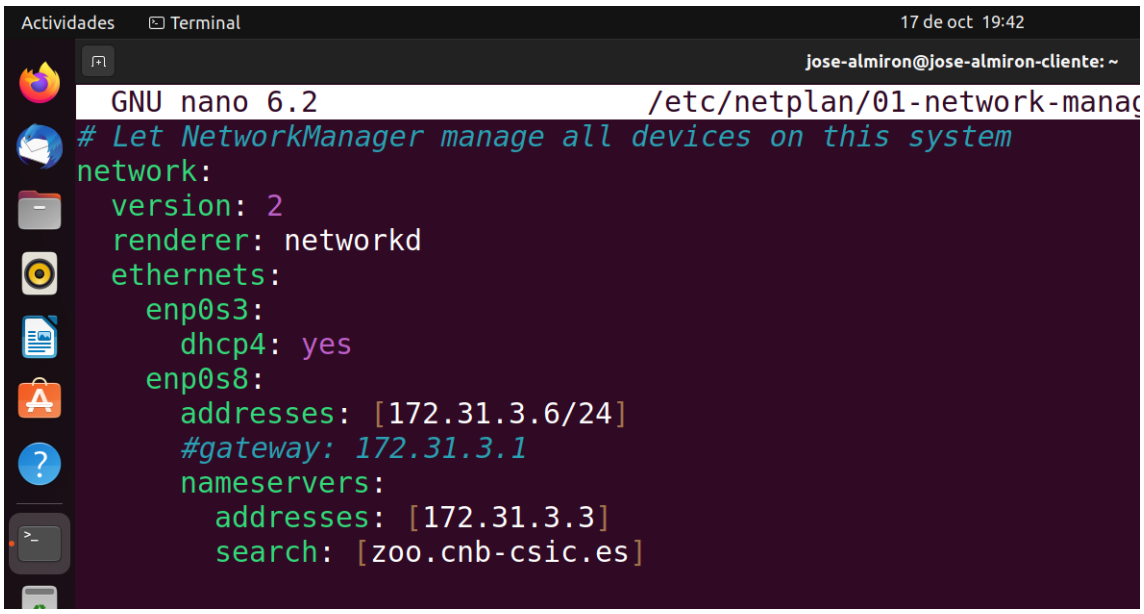
```
jose-almiron@jose-almiron-cliente: ~
> panda
Server:         172.31.3.3
Address:        172.31.3.3#53

Name:   panda.zoo.cnb-csic.es
Address: 172.31.3.6
> email5
Server:         172.31.3.3
Address:        172.31.3.3#53

email5.zoo.cnb-csic.es  canonical name = panda.zoo.cnb-csic.es.
Name:   panda.zoo.cnb-csic.es
Address: 172.31.3.6
```

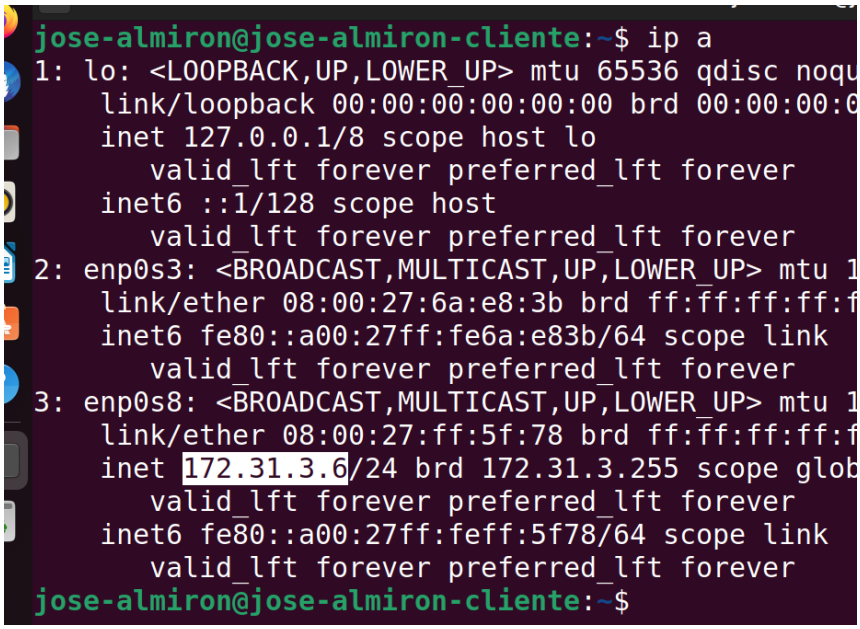


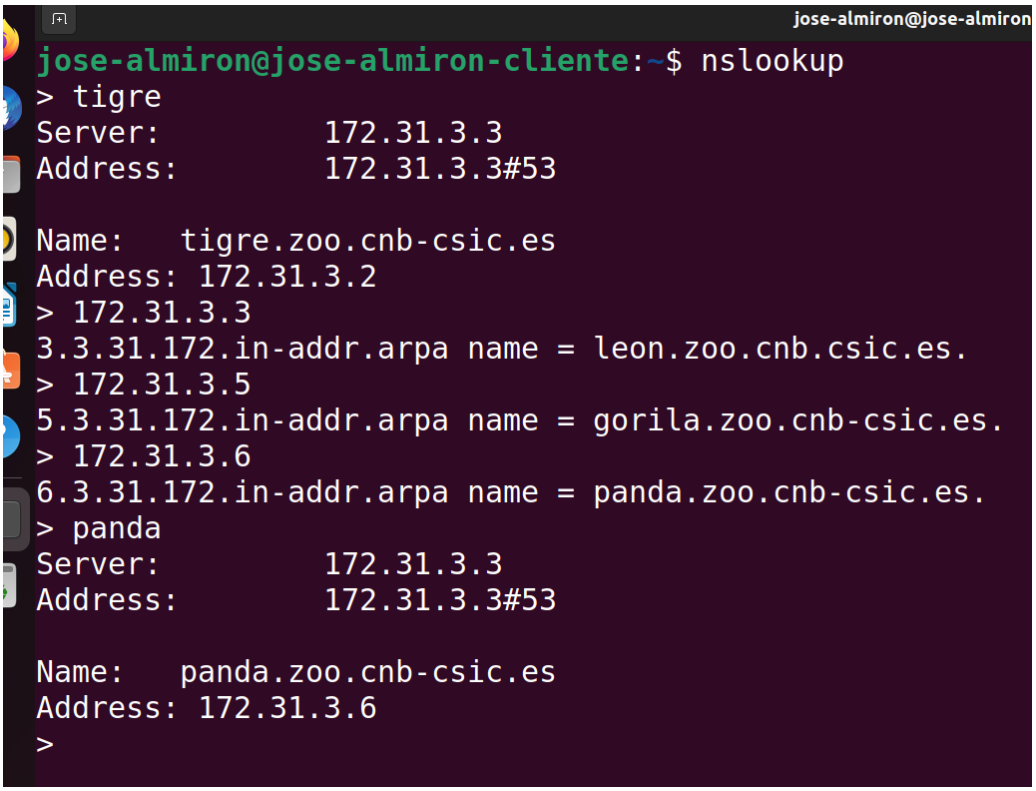
Comprobando la zona inversa



Probamos con otra dirección de red

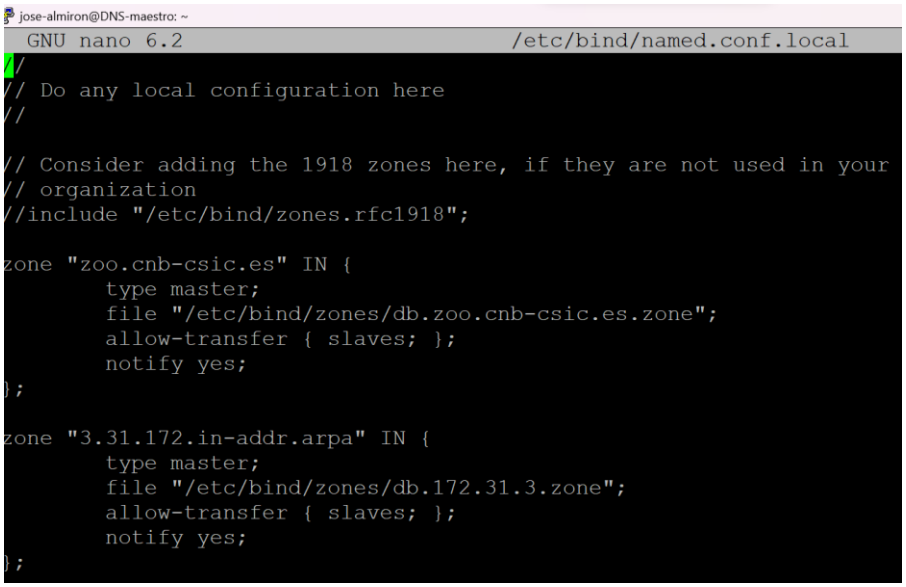



jose-almiron@jose-almiron-cliente:~$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqu
link/loopback 00:00:00:00:00:00 brd 00:00:00:0
inet 127.0.0.1/8 scope host lo
valid_lft forever preferred_lft forever
inet6 ::1/128 scope host
valid_lft forever preferred_lft forever
2: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1
link/ether 08:00:27:6a:e8:3b brd ff:ff:ff:ff:f
inet6 fe80::a00:27ff:fe6a:e83b/64 scope link
valid_lft forever preferred_lft forever
3: enp0s8: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1
link/ether 08:00:27:ff:5f:78 brd ff:ff:ff:ff:f
inet 172.31.3.6/24 brd 172.31.3.255 scope glob
valid_lft forever preferred_lft forever
inet6 fe80::a00:27ff:feff:5f78/64 scope link
valid_lft forever preferred_lft forever
jose-almiron@jose-almiron-cliente:~$

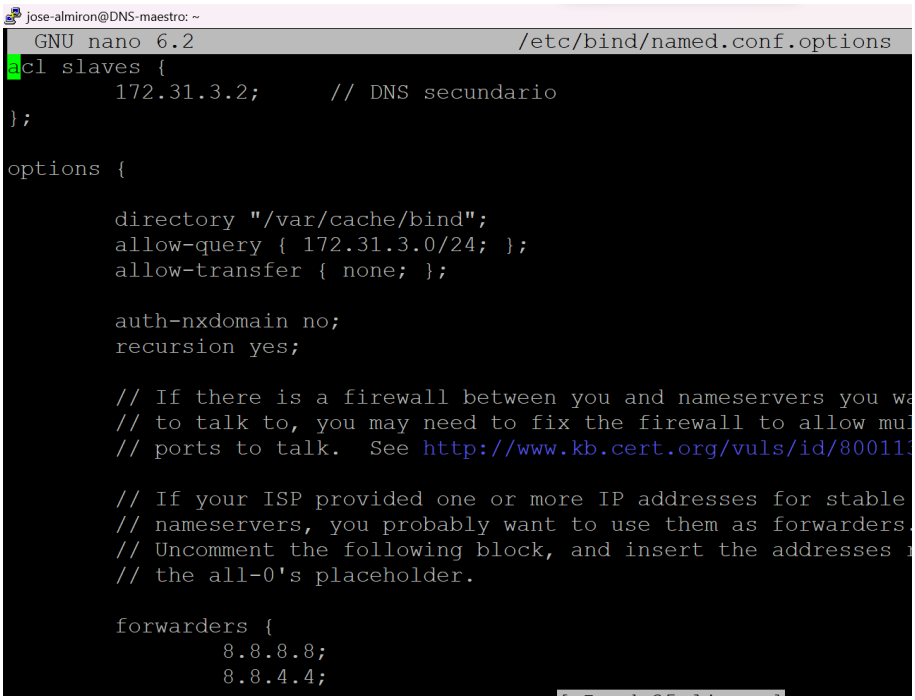

jose-almiron@jose-almiron
jose-almiron@jose-almiron-cliente:~$ nslookup
> tigre
Server: 172.31.3.3
Address: 172.31.3.3#53
Name: tigre.zoo.cnb-csic.es
Address: 172.31.3.2
> 172.31.3.3
3.3.31.172.in-addr.arpa name = leon.zoo.cnb.csic.es.
> 172.31.3.5
5.3.31.172.in-addr.arpa name = gorila.zoo.cnb-csic.es.
> 172.31.3.6
6.3.31.172.in-addr.arpa name = panda.zoo.cnb-csic.es.
> panda
Server: 172.31.3.3
Address: 172.31.3.3#53
Name: panda.zoo.cnb-csic.es
Address: 172.31.3.6
>

Configurar y probar Servidor DNS secundario

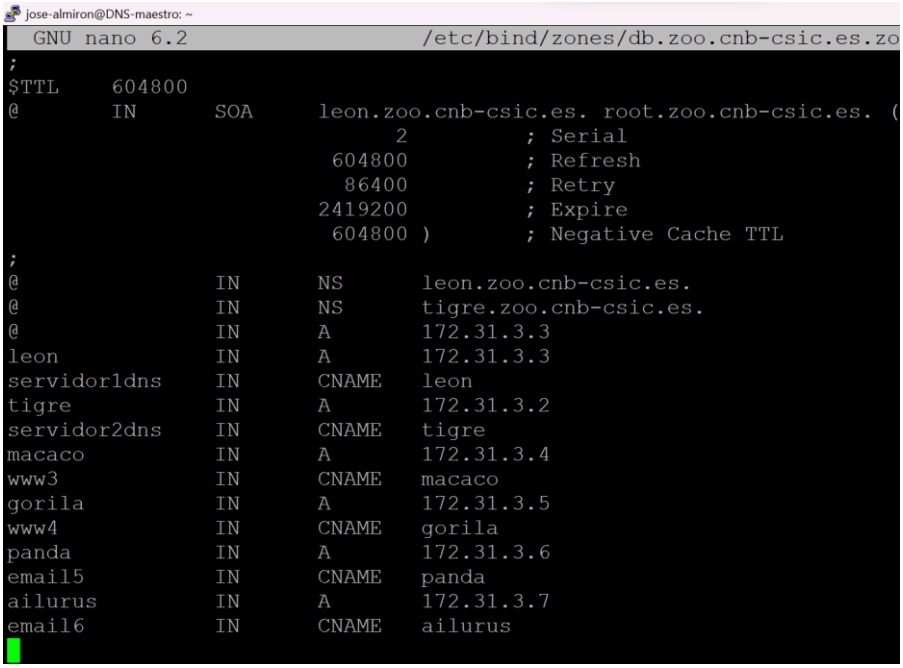
Para configurar el servidor secundario debemos modificar algunos ficheros del servidor primario, empezamos modificando el fichero principal de bind9



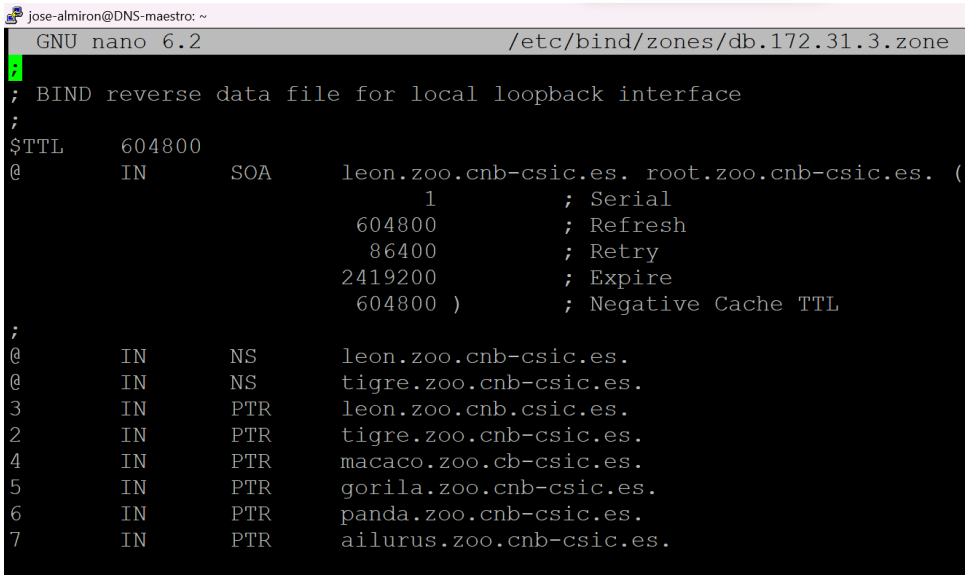
Configuramos la acl en el fichero named.conf.options



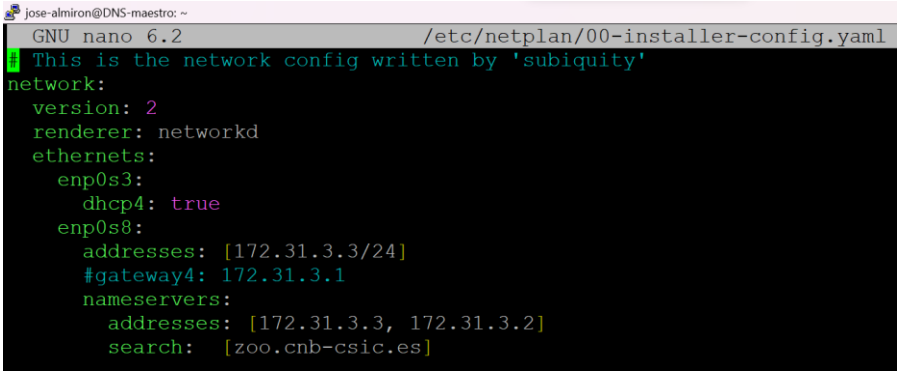
Configuramos la ozna directa añadiendo el servidor secundario



Configuramos la zona inversa añadiendo el servidor secundario



Configuramos la red añadiendo la dirección de red del secundario secundario



Para el servidor secundario, clonaremos la máquina virtual de Ubuntu server que actúa como DNS maestro. Realizamos algunas modificaciones en el Ubuntu server secundario, cambiamos la configuración de red

```
jose-almiron@DNS-exclavo: ~
  GNU nano 6.2                    /etc/netplan/00-installer-config.yaml
# This is the network config written by 'subiquity'
network:
  version: 2
  renderer: networkd
  ethernets:
    enp0s3:
      dhcp4: true
    enp0s8:
      addresses: [172.31.3.2/24]
      #gateway4: 172.31.3.1
      nameservers:
        addresses: [172.31.3.3, 172.31.3.2]
        search:  [zoo.cnb-csic.es]
```

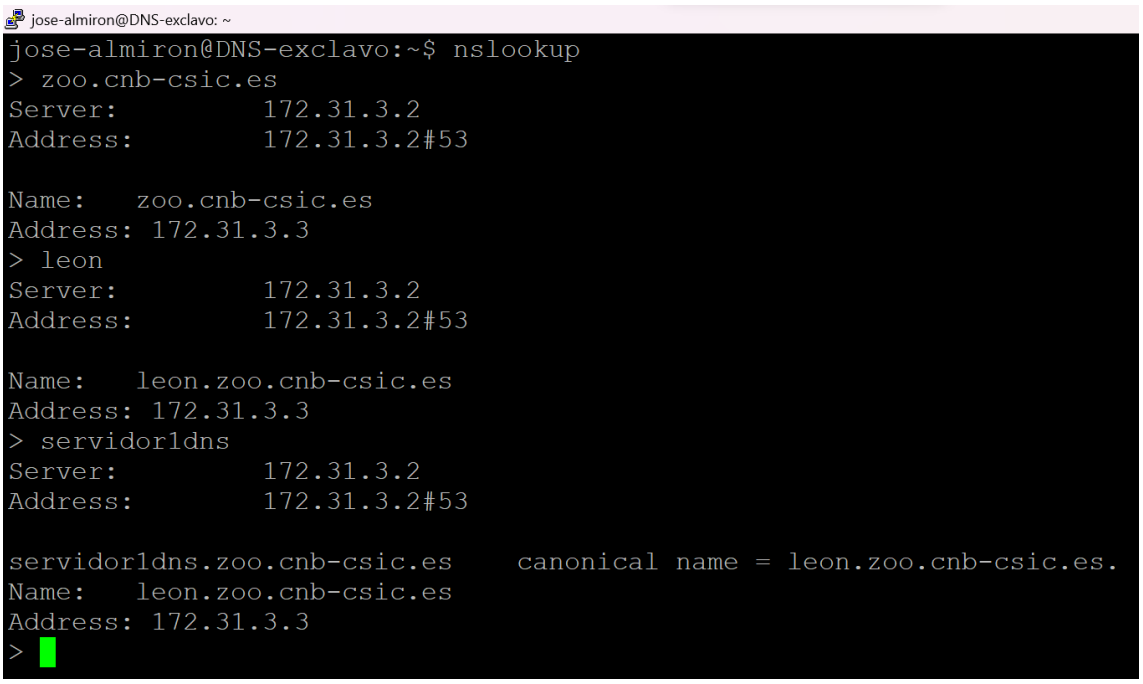
Configuramos el fichero principal de bind9 que apuntara a las zonas directas e inversas del DNS maestro, podemos eliminar los ficheros de zonas ya que el servidor secundario accedera a dichos ficheros a través del servidor maestro

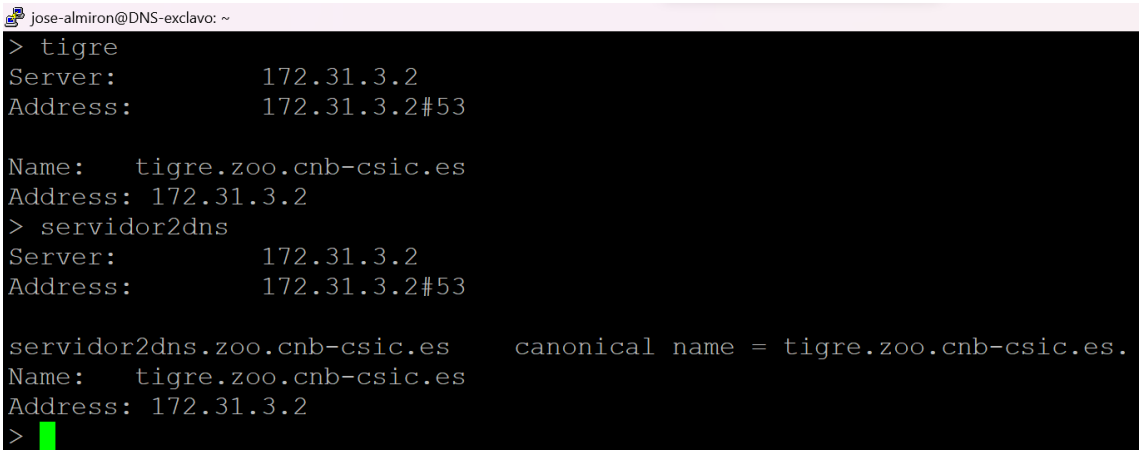
```
jose-almiron@DNS-exclavo: ~
  GNU nano 6.2                          /etc/bind/named.conf.local
//
// Do any local configuration here
//

// Consider adding the 1918 zones here, if they are not used in your
// organization
//include "/etc/bind/zones.rfc1918";

zone "zoo.cnb-csic.es" IN {
        type slave;
        masters { 172.31.3.3; };
        file "/etc/bind/zones/db.zoo.cnb-csic.es.zone";
};

zone "3.31.172.in-addr.arpa" IN {
        type slave;
        masters { 172.31.3.3; };
        file "/etc/bind/zones/db.172.31.3.zone";
};
```

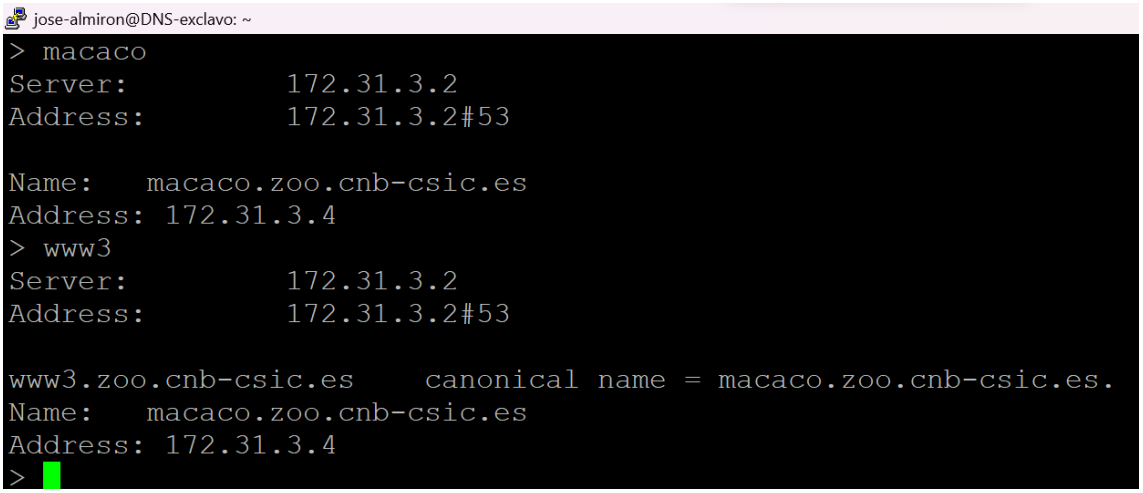
Añadimos la dirección de red del DNS secundario en /etc/resolv.conf en las dos maquinas

```
jose-almiron@DNS-exclavo: ~
  GNU nano 6.2                                  /etc/resolv.conf
# Dynamic resolv.conf(5) file for glibc resolver(3) generated
#     DO NOT EDIT THIS FILE BY HAND -- YOUR CHANGES WILL BE O
# 127.0.0.53 is the systemd-resolved stub resolver.
# run "systemd-resolve --status" to see details about the act

nameserver 172.31.3.3
nameserver 172.31.3.2
nameserver 127.0.0.53
search zoo.cnb-csic.es
```

Una vez realizadas las configuraciones reainiamos ambos servidores y paramos el servidor maestro para comprobar su funcionamiento







jose-almiron@DNS-exclavo: ~

```
> gorila
Server:         172.31.3.2
Address:        172.31.3.2#53

Name:   gorila.zoo.cnb-csic.es
Address: 172.31.3.5
> www4
Server:         172.31.3.2
Address:        172.31.3.2#53

www4.zoo.cnb-csic.es    canonical name = gorila.zoo.cnb-csic.es.
Name:   gorila.zoo.cnb-csic.es
Address: 172.31.3.5
>
```

jose-almiron@DNS-exclavo: ~

```
> panda
Server:         172.31.3.2
Address:        172.31.3.2#53

Name:   panda.zoo.cnb-csic.es
Address: 172.31.3.6
> email5
Server:         172.31.3.2
Address:        172.31.3.2#53

email5.zoo.cnb-csic.es  canonical name = panda.zoo.cnb-csic.es.
Name:   panda.zoo.cnb-csic.es
Address: 172.31.3.6
>
```

jose-almiron@DNS-exclavo: ~

```
> ailurus
Server:         172.31.3.2
Address:        172.31.3.2#53

Name:   ailurus.zoo.cnb-csic.es
Address: 172.31.3.7
> email6
Server:         172.31.3.2
Address:        172.31.3.2#53

email6.zoo.cnb-csic.es  canonical name = ailurus.zoo.cnb-csic.es.
Name:   ailurus.zoo.cnb-csic.es
Address: 172.31.3.7
>
```

Comprobamos la zona inversa

```
jose-almiron@DNS-exclavo: ~
> 172.31.3.3
3.3.31.172.in-addr.arpa name = leon.zoo.cnb.csic.es.
> 172.31.3.2
2.3.31.172.in-addr.arpa name = tigre.zoo.cnb-csic.es.
> 172.31.3.4
4.3.31.172.in-addr.arpa name = macaco.zoo.cb-csic.es.
> 172.31.3.5
5.3.31.172.in-addr.arpa name = gorila.zoo.cnb-csic.es.
> 172.31.3.6
6.3.31.172.in-addr.arpa name = panda.zoo.cnb-csic.es.
> 172.31.3.7
7.3.31.172.in-addr.arpa name = ailurus.zoo.cnb-csic.es.
>
```

Comprobando el servidor secundario en el cleinte

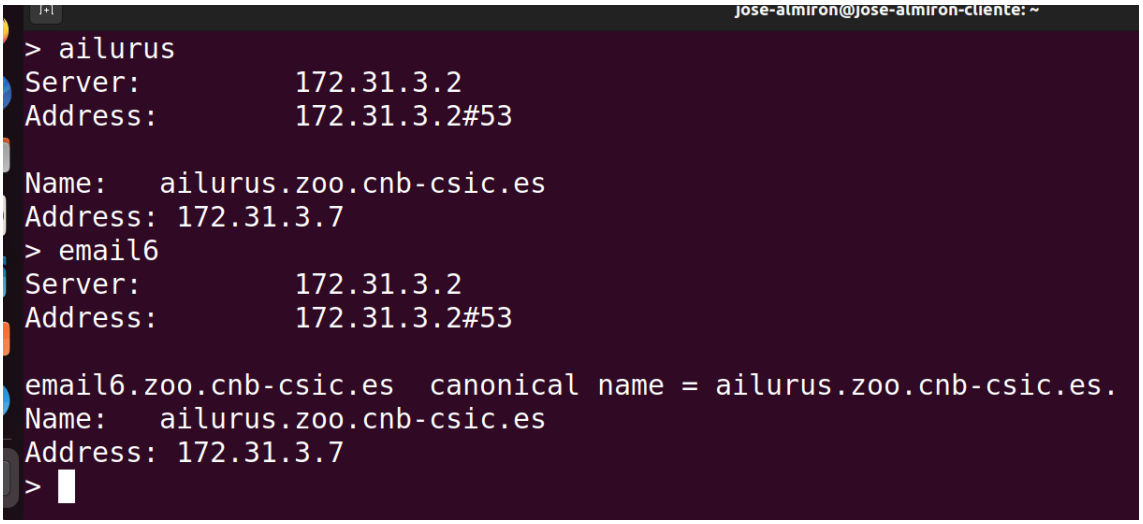
```
jose-almiron@jose-almiron-cliente: ~
> zoo.cnb-csic.es
Server:         172.31.3.2
Address:        172.31.3.2#53

Name:   zoo.cnb-csic.es
Address: 172.31.3.3
> leon
Server:         172.31.3.2
Address:        172.31.3.2#53

Name:   leon.zoo.cnb-csic.es
Address: 172.31.3.3
> servidor1dns
Server:         172.31.3.2
Address:        172.31.3.2#53

servidor1dns.zoo.cnb-csic.es    canonical name = leon.zoo.cnb-csic.es.
Name:   leon.zoo.cnb-csic.es
Address: 172.31.3.3
>
```

```
jose-almiron@jose-almiron-cliente: ~
> tigre
Server:         172.31.3.2
Address:        172.31.3.2#53

Name:   tigre.zoo.cnb-csic.es
Address: 172.31.3.2
> servidor2dns
Server:         172.31.3.2
Address:        172.31.3.2#53

servidor2dns.zoo.cnb-csic.es    canonical name = tigre.zoo.cnb-csic.es.
Name:   tigre.zoo.cnb-csic.es
Address: 172.31.3.2
>
```


jose-almiron@jose-almiron-cliente: ~
> macaco
Server: 172.31.3.2
Address: 172.31.3.2#53
Name: macaco.zoo.cnb-csic.es
Address: 172.31.3.4
> www3
Server: 172.31.3.2
Address: 172.31.3.2#53
www3.zoo.cnb-csic.es canonical name = macaco.zoo.cnb-csic.es.
Name: macaco.zoo.cnb-csic.es
Address: 172.31.3.4
>


jose-almiron@jose-almiron-cliente: ~
> gorila
Server: 172.31.3.2
Address: 172.31.3.2#53
Name: gorila.zoo.cnb-csic.es
Address: 172.31.3.5
> www4
Server: 172.31.3.2
Address: 172.31.3.2#53
www4.zoo.cnb-csic.es canonical name = gorila.zoo.cnb-csic.es.
Name: gorila.zoo.cnb-csic.es
Address: 172.31.3.5
>


> panda
Server: 172.31.3.2
Address: 172.31.3.2#53
Name: panda.zoo.cnb-csic.es
Address: 172.31.3.6
> email5
Server: 172.31.3.2
Address: 172.31.3.2#53
email5.zoo.cnb-csic.es canonical name = panda.zoo.cnb-csic.es.
Name: panda.zoo.cnb-csic.es
Address: 172.31.3.6
>


jose-almiron@jose-almiron-cliente: ~
> ailurus
Server: 172.31.3.2
Address: 172.31.3.2#53
Name: ailurus.zoo.cnb-csic.es
Address: 172.31.3.7
> email6
Server: 172.31.3.2
Address: 172.31.3.2#53
email6.zoo.cnb-csic.es canonical name = ailurus.zoo.cnb-csic.es.
Name: ailurus.zoo.cnb-csic.es
Address: 172.31.3.7
>


> 172.31.3.3
3.3.31.172.in-addr.arpa name = leon.zoo.cnb.csic.es.
> 172.31.3.2
2.3.31.172.in-addr.arpa name = tigre.zoo.cnb-csic.es.
> 172.31.3.4
4.3.31.172.in-addr.arpa name = macaco.zoo.cb-csic.es.
> 172.31.3.5
5.3.31.172.in-addr.arpa name = gorila.zoo.cnb-csic.es.
> 172.31.3.6
6.3.31.172.in-addr.arpa name = panda.zoo.cnb-csic.es.
> 172.31.3.7
7.3.31.172.in-addr.arpa name = ailurus.zoo.cnb-csic.es.
>