

SERVIDOR DNS



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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

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

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

sudo nano /etc/hostname

```
jose-almiron@DNS-maestro: ~
GNU nano 6.2 /etc/hostname
DNS-maestro
```

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

```
jose-almiron@jose-almiron-server: ~
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: [172.31.3.3/24]
      #gateway4: 172.31.3.1
      nameservers:
        addresses: [8.8.8.8, 1.1.1.1]
```

Comprobamos que nos ha asignado la dirección de red correspondiente

```
3: enp0s8: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc
00
    link/ether 08:00:27:fd:34:d3 brd ff:ff:ff:ff:ff:ff
    inet 172.31.3.3/24 brd 172.31.3.255 scope global enp0s8
        valid_lft forever preferred_lft forever
    inet6 fe80::a00:27ff:fefd:34d3/64 scope link
        valid_lft forever preferred_lft forever
jose-almiron@jose-almiron-server:~$
```

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

```
jose-almiron@jose-almiron-server: ~  
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 OV  
# 127.0.0.53 is the systemd-resolved stub resolver.  
# run "systemd-resolve --status" to see details about the acti  
  
nameserver 172.31.3.3  
search zoo.cnb-csic.es  
nameserver 127.0.0.53  
search zoo.cnb-csic.es
```

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

```
jose-almiron@jose-almiron-server: ~  
GNU nano 6.2 /etc/bind/named.conf.options  
options {  
    directory "/var/cache/bind";  
  
    // If there is a firewall between you and nameservers you wa  
    // to talk to, you may need to fix the firewall to allow mul  
    // ports to talk.  See http://www.kb.cert.org/vuls/id/800113  
  
    // If your ISP provided one or more IP addresses for stable  
    // nameservers, you probably want to use them as forwarders.  
    // Uncomment the following block, and insert the addresses r  
    // the all-0's placeholder.  
  
    forwarders {  
        8.8.8.8;  
    };  
};
```

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

```
jose-almiron@jose-almiron-server: ~  
GNU nano 6.2 /etc/bind/zones/db.zoo.cnb-csic.es.zone  
$  
; BIND data file for local loopback interface  
;  
$TTL      604800  
@         IN      SOA      zoo.cnb-csic.es. root.zoo.cnb-csic.es. (  
                2      ; Serial  
                604800 ; Refresh  
                86400  ; Retry  
                2419200; Expire  
                604800 )      ; Negative Cache TTL  
;  
@         IN      NS       zoo.cnb-csic.es.  
@         IN      A        172.31.3.3  
leon      IN      A        172.31.3.3  
servidor1dns IN      CNAME  leon  
tigre     IN      A        172.31.3.2  
servidor2dns IN      CNAME  tigre  
macaco    IN      A        172.31.3.4  
www3      IN      CNAME  macaco  
gorila    IN      A        172.31.3.5  
www4      IN      CNAME  gorila  
panda     IN      A        172.31.3.6  
email5    IN      CNAME  panda  
ailurus   IN      A        172.31.3.7  
email6    IN      CNAME  ailurus
```

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
```

```
jose-almiron@jose-almiron-server: ~  
GNU nano 6.2 /etc/bind/zones/db.172.31.3.zone  
; BIND reverse data file for local loopback interface  
;  
$TTL      604800  
@         IN      SOA      zoo.cnb-csic.es. root.zoo.cnb-csic.es. (  
          1          ; Serial  
          604800     ; Refresh  
          86400      ; Retry  
          2419200    ; Expire  
          604800 )    ; Negative Cache TTL  
;  
@         IN      NS       zoo.cnb-csic.es.  
@         IN      PTR      zoo.cnb-csic.es.  
3         IN      PTR      leon.zoo.cnb-csic.es.  
2         IN      PTR      tigre.zoo.cnb-csic.es.  
4         IN      PTR      macaco.zoo.cb-csic.es.  
5         IN      PTR      gorila.zoo.cnb-csic.es.  
6         IN      PTR      panda.zoo.cnb-csic.es.  
7         IN      PTR      ailurus.zoo.cnb-csic.es.
```

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

```
jose-almiron@DNS-maestro: ~  
jose-almiron@DNS-maestro:~$ sudo named-checkconf  
jose-almiron@DNS-maestro:~$
```

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

```
jose-almiron@DNS-maestro: ~  
jose-almiron@DNS-maestro:~$ sudo named-checkzone zoo.cnb-csic.es /etc/bind/zones/db.zoo.cnb-csic.es  
.zone  
zone zoo.cnb-csic.es/IN: loaded serial 2  
OK  
jose-almiron@DNS-maestro:~$ sudo named-checkzone 172.31.3.in-addr.arpa /etc/bind/zones/db.172.31.3.  
zone  
zone 172.31.3.in-addr.arpa/IN: loaded serial 1  
OK  
jose-almiron@DNS-maestro:~$
```

Reinamos el servicio de bind9 comprobando su estado

```
jose-almiron@DNS-maestro: ~  
jose-almiron@DNS-maestro:~$ sudo service bind9 restart  
jose-almiron@DNS-maestro:~$ sudo service bind9 status  
● named.service - BIND Domain Name Server  
   Loaded: loaded (/lib/systemd/system/named.service; enabled; vendor preset: enabled)  
   Active: active (running) since Sat 2022-10-29 12:11:36 UTC; 11s ago  
     Docs: man:named(8)  
   Process: 1395 ExecStart=/usr/sbin/named $OPTIONS (code=exited, status=0/SUCCESS)  
   Main PID: 1396 (named)  
     Tasks: 3 (limit: 2238)  
    Memory: 5.4M  
       CPU: 43ms  
    CGroup: /system.slice/named.service  
            └─1396 /usr/sbin/named -u bind  
  
oct 29 12:11:40 DNS-maestro named[1396]: validating dnp/NSEC: no valid signature found  
oct 29 12:11:40 DNS-maestro named[1396]: validating dnp/DS: no valid signature found  
oct 29 12:11:40 DNS-maestro named[1396]: no valid RRSIG resolving 'dnp/DS/IN': 8.8.4.4#53  
oct 29 12:11:40 DNS-maestro named[1396]: validating dnp/DS: no valid signature found  
oct 29 12:11:40 DNS-maestro named[1396]: no valid RRSIG resolving 'dnp/DS/IN': 8.8.8.8#53  
oct 29 12:11:44 DNS-maestro named[1396]: timed out resolving './NS/IN': 2001:500:a8::e#53  
oct 29 12:11:44 DNS-maestro named[1396]: timed out resolving 'dnp/DS/IN': 2001:500:a8::e#53  
oct 29 12:11:46 DNS-maestro named[1396]: timed out resolving './NS/IN': 2001:500:2f::f#53  
oct 29 12:11:46 DNS-maestro named[1396]: resolver priming query complete: timed out  
oct 29 12:11:47 DNS-maestro named[1396]: timed out resolving 'dnp/DS/IN': 2001:500:2f::f#53  
jose-almiron@DNS-maestro:~$
```

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

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

Comprobación de zona directa e inversa en Ubuntu server

Comprobación de zona directa

```
jose-almiron@jose-almiron-server: ~  
jose-almiron@jose-almiron-server:~$ nslookup  
> zoo.cnb-csic.es  
Server:      172.31.3.3  
Address:     172.31.3.3#53  
  
Name:   zoo.cnb-csic.es  
Address: 172.31.3.3  
> leon  
Server:      172.31.3.3  
Address:     172.31.3.3#53  
  
Name:   leon.zoo.cnb-csic.es  
Address: 172.31.3.3  
> servidor1dns  
Server:      172.31.3.3  
Address:     172.31.3.3#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-server: ~  
> tigre  
Server:      172.31.3.3  
Address:     172.31.3.3#53  
  
Name:   tigre.zoo.cnb-csic.es  
Address: 172.31.3.2  
> servidor2dns  
Server:      172.31.3.3  
Address:     172.31.3.3#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-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:~$ 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-almiron-cliente:~  
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]
```

```
jose-almiron@jose-almiron-cliente: ~
jose-almiron@jose-almiron-cliente:~$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UN
    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
2: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq
    link/ether 08:00:27:6a:e8:3b brd ff:ff:ff:ff:ff:ff
    inet 192.168.1.143/24 metric 100 brd 192.168.1.255 scope g
        valid_lft 86304sec preferred_lft 86304sec
    inet6 2a0c:5a82:2202:1d00:a00:27ff:fe6a:e83b/64 scope glob
        valid_lft forever preferred_lft forever
    inet6 fe80::a00:27ff:fe6a:e83b/64 scope link
        valid_lft forever preferred_lft forever
3: enp0s8: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq
    link/ether 08:00:27:ff:5f:78 brd ff:ff:ff:ff:ff:ff
    inet 172.31.3.4/24 brd 172.31.3.255 scope global enp0s8
        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:~$
```

Comprobando la zona directa

```
jose-almiron@jose-almiron-cliente: ~
> zoo.cnb-csic.es
Server:      172.31.3.3
Address:     172.31.3.3#53

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

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

Name:  tigre.zoo.cnb-csic.es
Address: 172.31.3.2
> servidor2dns
Server:      172.31.3.3
Address:     172.31.3.3#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:      172.31.3.3  
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  
>
```

```
jose-almiron@jose-almiron-cliente: ~
> 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
>
```

Comprobando la zona inversa

```
jose-almiron@jose-almiron-cliente: ~
> 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.
>
```

Probamos con otra dirección de red

```
Actividades Terminal 17 de oct 19:42
jose-almiron@jose-almiron-cliente: ~
GNU nano 6.2 /etc/netplan/01-network-manag
# Let NetworkManager manage all devices on this system
network:
  version: 2
  renderer: networkd
  ethernets:
    enp0s3:
      dhcp4: yes
    enp0s8:
      addresses: [172.31.3.6/24]
      #gateway: 172.31.3.1
      nameservers:
        addresses: [172.31.3.3]
        search: [zoo.cnb-csic.es]
```

```
jose-almiron@jose-almiron-cliente:~$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue
    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
2: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast
    link/ether 08:00:27:6a:e8:3b brd ff:ff:ff:ff:ff:ff
    inet6 fe80::a00:27ff:fe6a:e83b/64 scope link
        valid_lft forever preferred_lft forever
3: enp0s8: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast
    link/ether 08:00:27:ff:5f:78 brd ff:ff:ff:ff:ff:ff
    inet 172.31.3.6/24 brd 172.31.3.255 scope global
        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-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

```
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";
    allow-transfer { slaves; };
    notify yes;
};

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

Configuramos la acl en el fichero named.conf.options

```
jose-almiron@DNS-maestro: ~
GNU nano 6.2 /etc/bind/named.conf.options

acl slaves {
    172.31.3.2; // DNS secundario
};

options {
    directory "/var/cache/bind";
    allow-query { 172.31.3.0/24; };
    allow-transfer { none; };

    auth-nxdomain no;
    recursion yes;

    // If there is a firewall between you and nameservers you want
    // to talk to, you may need to fix the firewall to allow mul
    // ports to talk. See http://www.kb.cert.org/vuls/id/800113

    // If your ISP provided one or more IP addresses for stable
    // nameservers, you probably want to use them as forwarders.
    // Uncomment the following block, and insert the addresses
    // the all-0's placeholder.

    forwarders {
        8.8.8.8;
        8.8.4.4;
```

Configuramos la zona directa añadiendo el servidor secundario

```
jose-almiron@DNS-maestro: ~
GNU nano 6.2 /etc/bind/zones/db.zoo.cnb-csic.es.zo
;
$TTL      604800
@          IN      SOA      leon.zoo.cnb-csic.es. root.zoo.cnb-csic.es. (
                        2          ; Serial
                        604800     ; Refresh
                        86400      ; Retry
                        2419200    ; Expire
                        604800 )   ; Negative Cache TTL
;
@          IN      NS       leon.zoo.cnb-csic.es.
@          IN      NS       tigre.zoo.cnb-csic.es.
@          IN      A        172.31.3.3
leon       IN      A        172.31.3.3
servidor1dns IN      CNAME   leon
tigre      IN      A        172.31.3.2
servidor2dns IN      CNAME   tigre
macaco     IN      A        172.31.3.4
www3       IN      CNAME   macaco
gorila     IN      A        172.31.3.5
www4       IN      CNAME   gorila
panda     IN      A        172.31.3.6
email5     IN      CNAME   panda
ailurus    IN      A        172.31.3.7
email6     IN      CNAME   ailurus
```

Configuramos la zona inversa añadiendo el servidor secundario

```
jose-almiron@DNS-maestro: ~
GNU nano 6.2 /etc/bind/zones/db.172.31.3.zone
; BIND reverse data file for local loopback interface
;
$TTL      604800
@          IN      SOA      leon.zoo.cnb-csic.es. root.zoo.cnb-csic.es. (
                        1          ; Serial
                        604800     ; Refresh
                        86400      ; Retry
                        2419200    ; Expire
                        604800 )   ; Negative Cache TTL
;
@          IN      NS       leon.zoo.cnb-csic.es.
@          IN      NS       tigre.zoo.cnb-csic.es.
3          IN      PTR      leon.zoo.cnb-csic.es.
2          IN      PTR      tigre.zoo.cnb-csic.es.
4          IN      PTR      macaco.zoo.cb-csic.es.
5          IN      PTR      gorila.zoo.cnb-csic.es.
6          IN      PTR      panda.zoo.cnb-csic.es.
7          IN      PTR      ailurus.zoo.cnb-csic.es.
```

Configuramos la red añadiendo la dirección de red del secundario secundario

```
jose-almiron@DNS-maestro: ~
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: [172.31.3.3/24]
      #gateway4: 172.31.3.1
      nameservers:
        addresses: [172.31.3.3, 172.31.3.2]
        search: [zoo.cnb-csic.es]
```

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 C
# 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 reaniamos ambos servidores y paramos el servidor maestro para comprobar su funcionamiento

```
jose-almiron@DNS-exclavo: ~  
jose-almiron@DNS-exclavo:~$ nslookup  
> 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@DNS-exclavo: ~  
> 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@DNS-exclavo: ~  
> macaco  
Server:      172.31.3.2  
Address:     172.31.3.2#53  
  
Name:   macaco.zoo.cnb-csic.es  
Address: 172.31.3.4  
> ww3  
Server:      172.31.3.2  
Address:     172.31.3.2#53  
  
ww3.zoo.cnb-csic.es    canonical name = macaco.zoo.cnb-csic.es.  
Name:   macaco.zoo.cnb-csic.es  
Address: 172.31.3.4  
>
```

```
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 cliente

```
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
> 
```

```
jose-almiron@jose-almiron-cliente: ~
> 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
> 
```

```
jose-almiron@jose-almiron-cliente: ~
> 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.
> 
```