

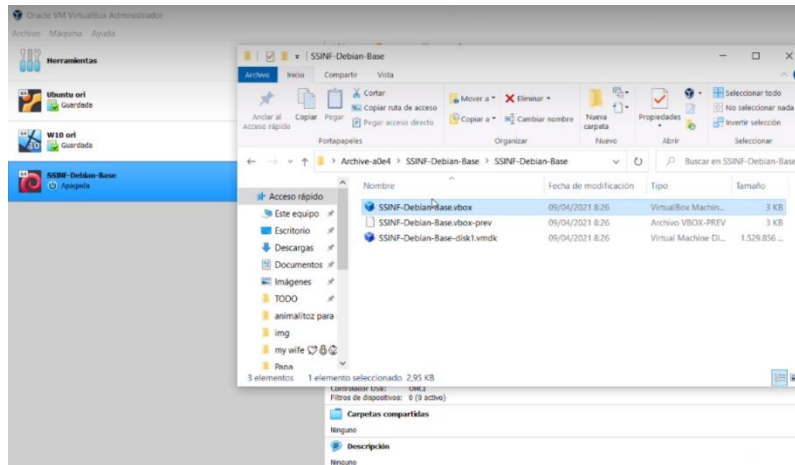
GUIA EXAMEN SSII - REDES DEBIAN – DHCP & DNS

Tabla de contenido

Añadir y Clonar Máquina Base - Servidor	2
Añadir redes NAT y Only Host.....	2
Configurar Adaptadores	3
Cambiar los nombres de las máquinas	5
Instalar Servicio DHCP	6
Añadir las interfaces por las que el servidor escucha	6
Configuración del archivo de reenvío	6
Configurar el archivo de las interfaces por las que se escucha (IP estáticas)	7
Configurar Subnet y Rango del DHCP para las redes	7
Activar y hacer funcionar el servicio DCHP	8
Liberar la IP en los Clientes y comprobar que todo funciona correctamente	8
Elegir qué direcciones se resuelven antes y añadir nuevas dirección – Configurar Resolución DNS.....	9
Añadir NameServers de Google para prueba	12
Instalar herramienta de DNS y hacer prueba de funcionamiento	13
Instalar servicio de Bind9 y comprobar que está activo y funciona	13
Descubrir los archivos que componen el servicio de Bind9	14
Creando una zona	15
Configurando la zona	15
Añadiendo más equipos a la zona.....	16
Nslookup modo interactivo – consultar información de dominios	18
Configurar redireccionamiento – resolver direcciones de internet.....	19
Cambiar la configuración del servidor DHCP para que actualice los nameservers.....	20
Prueba final de redireccionamiento en Cliente-1	20

Añadir y Clonar Máquina Base - Servidor

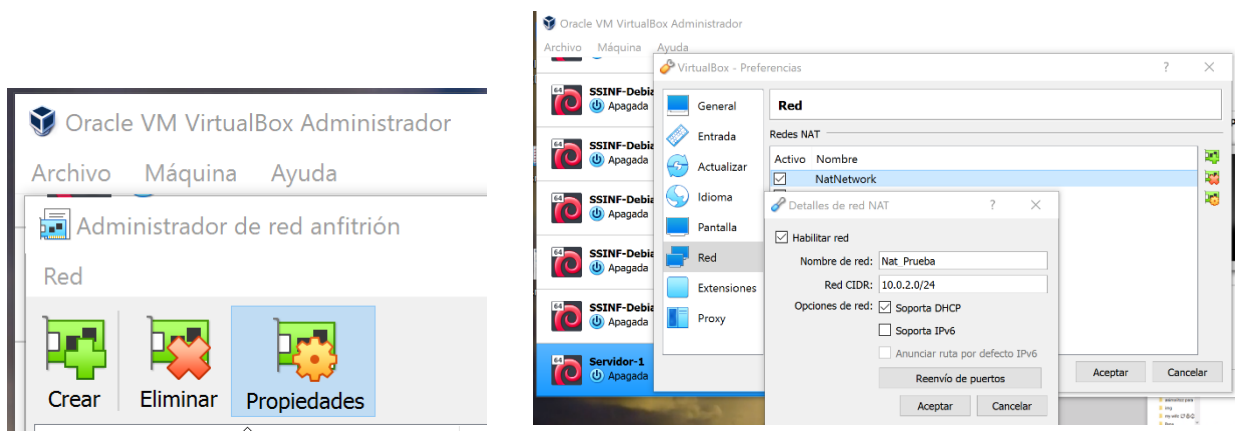
Añadir la máquina (base) que nos da el profesor, haciendo doble click sobre el archivo .vbox



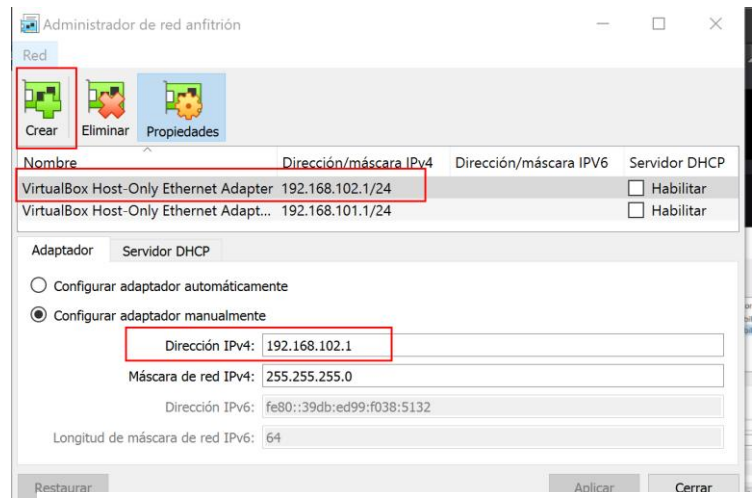
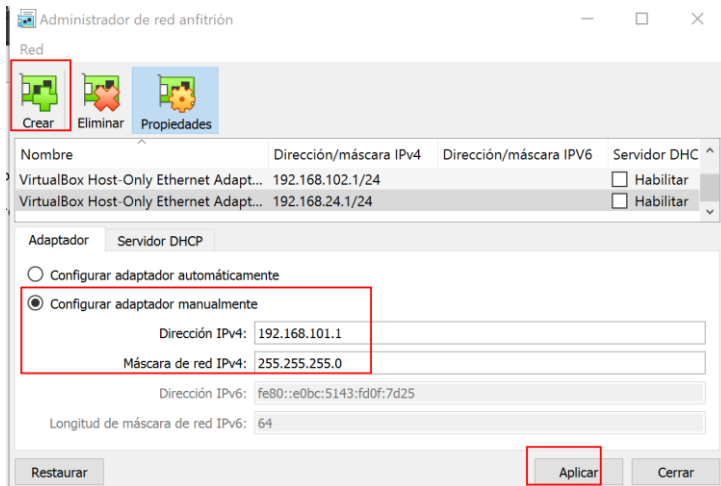
Una vez puesta la máquina de base, clonarla para tener la máquina que será el Servidor, y siempre que clonemos, con la opción de “generando nuevas direcciones mac”.

Añadir redes NAT y Only Host

Ahora vamos a ARCHIVO y en PREFERENCIAS en el apartado de RED, creamos una nueva tan sólo cambiando el nombre



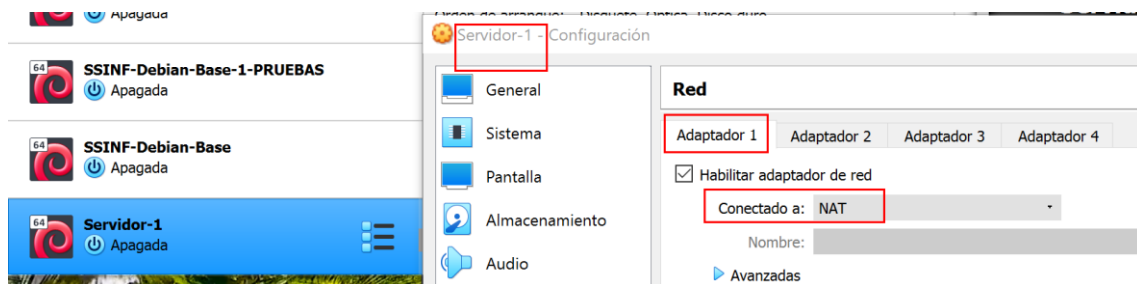
Ahora vamos a ARCHIVO y le damos a ADMINISTRADOR DE RED DE ANFITRIÓN, y pulsamos en CREAR, y creamos dos nuevas



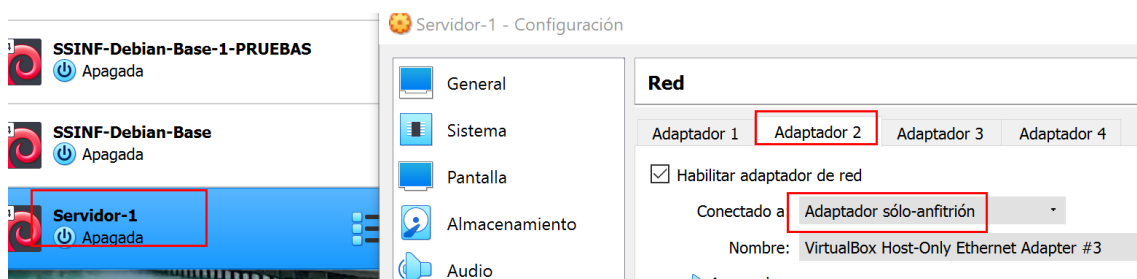
La 192.168.102.1

Configurar Adaptadores

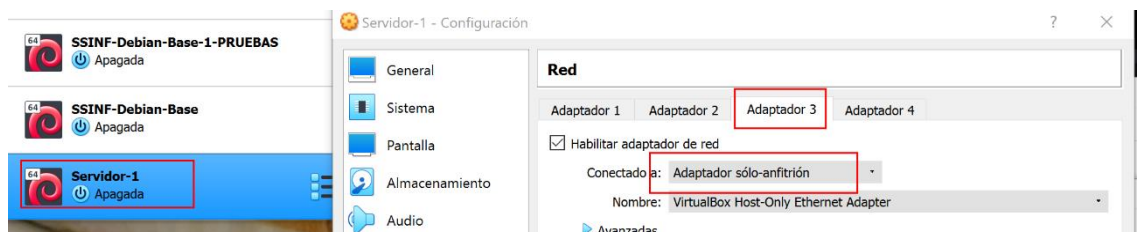
Ahora vamos a asignar la conexión correspondiente a cada adaptador de red del Servidor.



Adaptador 1 - NAT

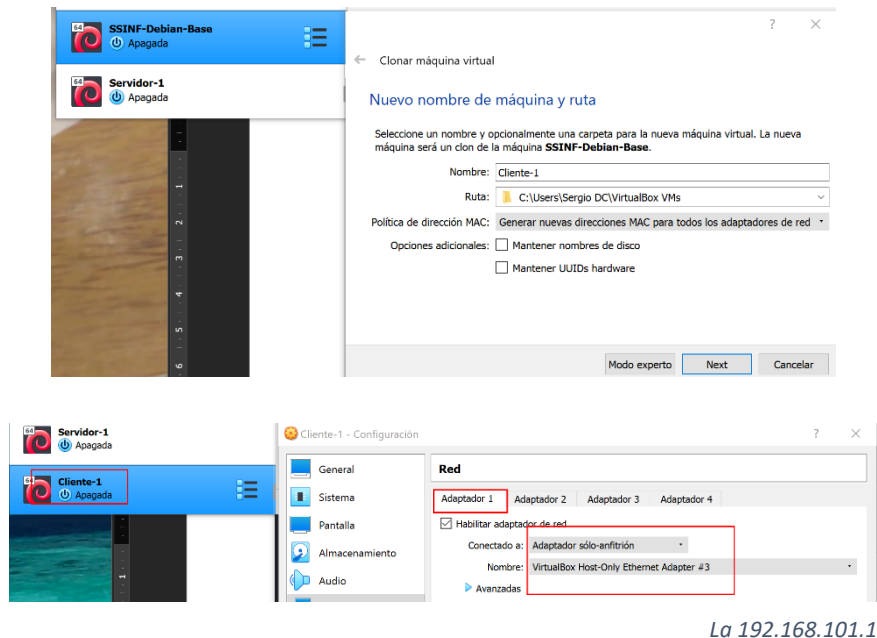


Adaptador 2 – Solo anfitrión ... y le ponemos la del 192.168.101.1

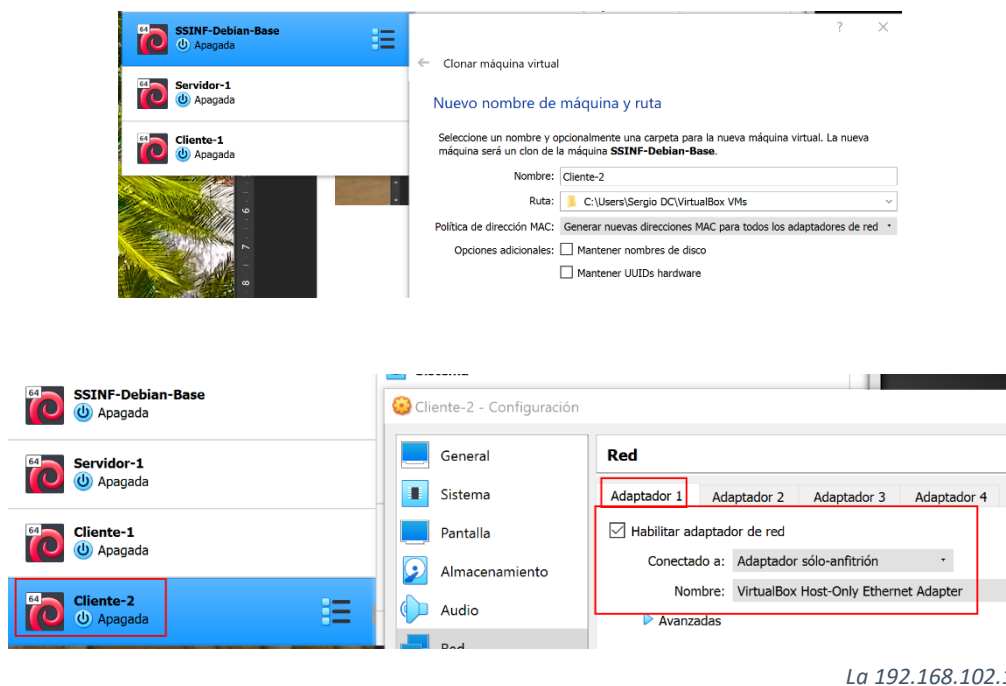


Adaptador 3 – Solo anfitrión ... y le ponemos la del 192.168.102.1

Clonamos la máquina base otra vez para tener al Cliente1 (no olvidar nunca hacerlo con la opción de “generar nuevas direcciones mac) y vamos a asignar la conexión correspondiente a cada adaptador de red del Cliente1



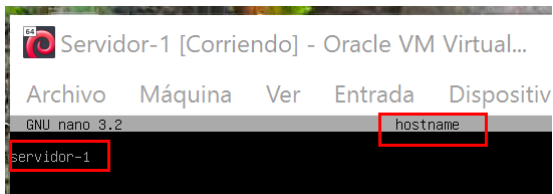
Clonamos la máquina base otra vez para tener al Cliente2 (no olvidar nunca hacerlo con la opción de “generar nuevas direcciones mac) y vamos a asignar la conexión correspondiente a cada adaptador de red del Cliente2



Cambiar los nombres de las máquinas

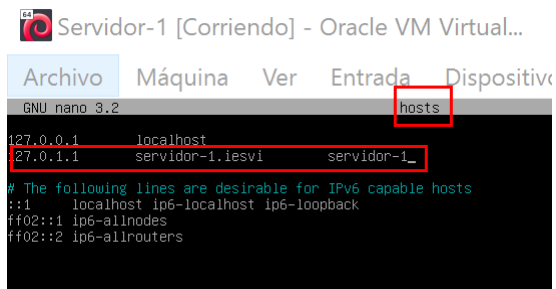
Ahora a cambiar el nombre de la máquina del Servidor y de la máquina de los clientes

Para ello accederemos a los archivos **hosts** y **hostname** que se encuentran directamente accesibles en el directorio *etc*



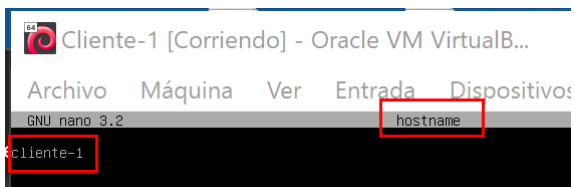
```

GNU nano 3.2 hostname
servidor-1
    
```



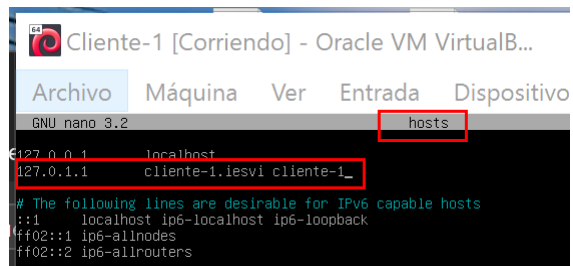
```

GNU nano 3.2 hosts
127.0.0.1 localhost
127.0.1.1 servidor-1.iesvi servidor-1_
# The following lines are desirable for IPv6 capable hosts
::1 localhost ip6-localhost ip6-loopback
ff02::1 ip6-allnodes
ff02::2 ip6-allrouters
    
```



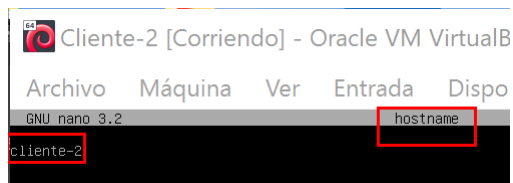
```

GNU nano 3.2 hostname
cliente-1
    
```



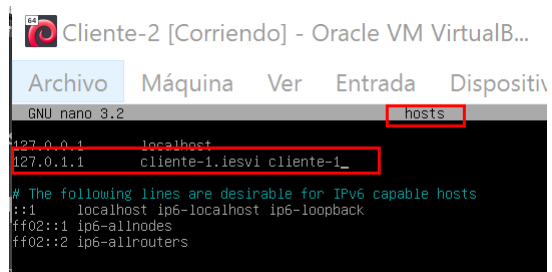
```

GNU nano 3.2 hosts
127.0.0.1 localhost
127.0.1.1 cliente-1.iesvi cliente-1_
# The following lines are desirable for IPv6 capable hosts
::1 localhost ip6-localhost ip6-loopback
ff02::1 ip6-allnodes
ff02::2 ip6-allrouters
    
```



```

GNU nano 3.2 hostname
cliente-2
    
```



```

GNU nano 3.2 hosts
127.0.0.1 localhost
127.0.1.1 cliente-1.iesvi cliente-1_
# The following lines are desirable for IPv6 capable hosts
::1 localhost ip6-localhost ip6-loopback
ff02::1 ip6-allnodes
ff02::2 ip6-allrouters
    
```

Instalar Servicio DHCP

Ahora hay que instalar el servicio DHCP en la máquina del Servidor

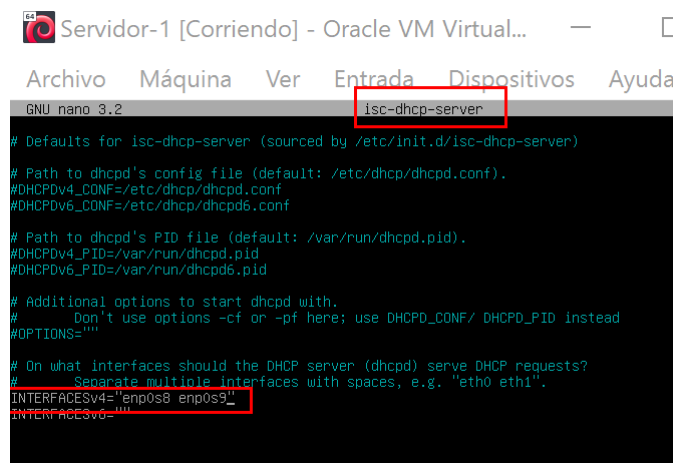
Ejecutaremos el comando `sudo apt install isc-dhcp-server`

(saldrá en rojo al principio... no preocuparse por esto, se acaba solucionando más adelante)

Añadir las interfaces por las que el servidor escucha

Ahora ir a `etc/default/`

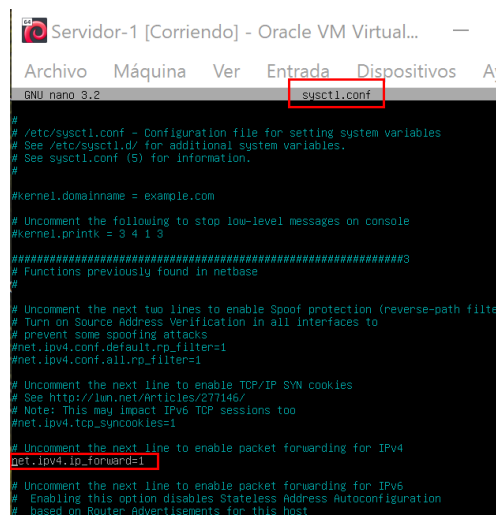
Y meterse en el archivo **isc-dhcp-server** y añadir lo siguiente entre las dobles comillas:



```
GNU nano 3.2 isc-dhcp-server
# Defaults for isc-dhcp-server (sourced by /etc/init.d/isc-dhcp-server)
# Path to dhcpd's config file (default: /etc/dhcp/dhcpd.conf).
#DHCPDv4_CONF=/etc/dhcp/dhcpd.conf
#DHCPDv6_CONF=/etc/dhcp/dhcpd6.conf
# Path to dhcpd's PID file (default: /var/run/dhcpd.pid).
#DHCPDv4_PID=/var/run/dhcpd.pid
#DHCPDv6_PID=/var/run/dhcpd6.pid
# Additional options to start dhcpd with.
# Don't use options -cf or -pf here; use DHCPD_CONF/ DHCPD_PID instead
#OPTIONS=""
# On what interfaces should the DHCP server (dhcpd) serve DHCP requests?
# Separate multiple interfaces with spaces, e.g. 'eth0 eth1'.
INTERFACESv4='enp0s8 enp0s9'
INTERFACESv6=""
```

Configuración del archivo de reenvío

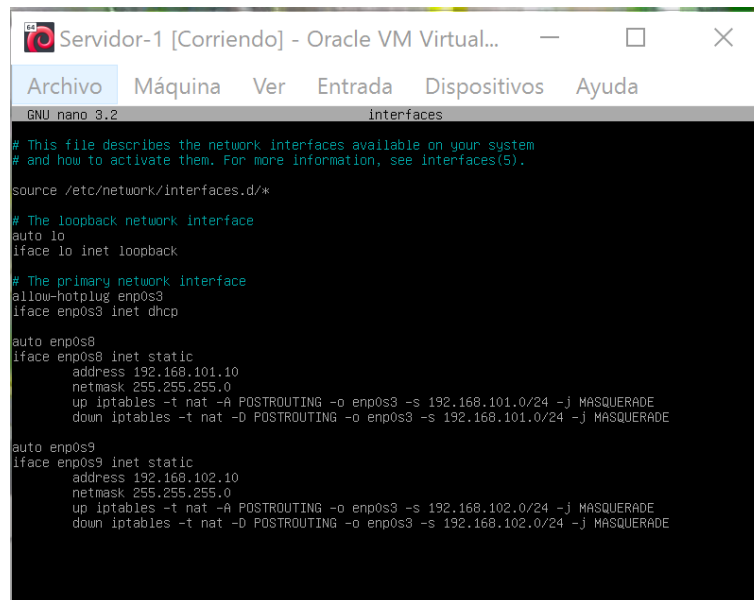
Ahora ir a `etc` y meterse en el archivo **sysctl.conf** y desmarcar esta línea de comentario:



```
GNU nano 3.2 sysctl.conf
#
# /etc/sysctl.conf - Configuration file for setting system variables
# See /etc/sysctl.d/ for additional system variables.
# See sysctl.conf (5) for information.
#kernel.domainname = example.com
# Uncomment the following to stop low-level messages on console
#kernel.printk = 3 4 1 3
#####
# Functions previously found in netbase
#
# Uncomment the next two lines to enable Spoof protection (reverse-path filter)
# Turn on Source Address Verification in all interfaces to
# prevent some spoofing attacks
#net.ipv4.conf.default.rp_filter=1
#net.ipv4.conf.all.rp_filter=1
# Uncomment the next line to enable TCP/IP SYN cookies
# See http://lwn.net/Articles/277146/
# Note: this may impact IPv6 TCP sessions too
#net.ipv4.tcp_syncookies=1
# Uncomment the next line to enable packet forwarding for IPv4
net.ipv4.ip_forward=1
# Uncomment the next line to enable packet forwarding for IPv6
# Enabling this option disables Stateless Address Autoconfiguration
# based on Router Advertisements for this host
```

Configurar el archivo de las interfaces por las que se escucha (IP estáticas)

Ahora vamos a *etc/network/* y ahora meterse en el archivo de **interfaces**, y escribir todo esto:



```

GNU nano 3.2 interfaces
# This file describes the network interfaces available on your system
# and how to activate them. For more information, see Interfaces(5).

source /etc/network/interfaces.d/*

# The loopback network interface
auto lo
iface lo inet loopback

# The primary network interface
allow-hotplug enp0s3
iface enp0s3 inet dhcp

auto enp0s8
iface enp0s8 inet static
    address 192.168.101.10
    netmask 255.255.255.0
    up iptables -t nat -A POSTROUTING -o enp0s3 -s 192.168.101.0/24 -j MASQUERADE
    down iptables -t nat -D POSTROUTING -o enp0s3 -s 192.168.101.0/24 -j MASQUERADE

auto enp0s9
iface enp0s9 inet static
    address 192.168.102.10
    netmask 255.255.255.0
    up iptables -t nat -A POSTROUTING -o enp0s3 -s 192.168.102.0/24 -j MASQUERADE
    down iptables -t nat -D POSTROUTING -o enp0s3 -s 192.168.102.0/24 -j MASQUERADE
  
```

Configurar Subnet y Rango del DHCP para las redes

Ahora vamos a *etc/dhcp/* y meternos en el archivo **dhcpd.conf**, y escribir lo siguiente:



```

GNU nano 3.2 dhcpd.conf
default-lease-time 600;
max-lease-time 7200;

subnet 192.168.101.0 netmask 255.255.255.0 {
    range 192.168.101.100 192.168.101.200;
    option domain-name-servers 8.8.8.8, 8.8.4.4;
    option routers 192.168.101.10;
}

subnet 192.168.102.0 netmask 255.255.255.0 {
    range 192.168.102.100 192.168.102.200;
    option domain-name-servers 8.8.8.8, 8.8.4.4;
    option routers 192.168.102.10;
}
  
```

Activar y hacer funcionar el servicio DCHP

Ahora reiniciamos la maquina del servidor con el comando `init 6` o `reboot`

Y al volver a encenderse e iniciar sesión ...

Ejecutamos el comando `sudo service networking restart`

Ejecutamos el comando `sudo isc-dhcp-server restart`

Ejecutamos el comando `sudo isc-dhcp-server status`

```

root@servidor-1:~# sudo service networking restart
root@servidor-1:~# sudo service isc-dhcp-server restart
root@servidor-1:~# sudo service isc-dhcp-server status
● isc-dhcp-server.service - LSB: DHCP server
   Loaded: loaded (/etc/init.d/isc-dhcp-server; generated)
   Active: active (running) since Sat 2021-05-01 12:38:09 CEST; 6s ago
     Docs: man:systemd-sysv-generator(8)
   Process: 570 ExecStart=/etc/init.d/isc-dhcp-server start (code=exited, status=0/SUCCESS)
    Tasks: 1 (limit: 1149)
   Memory: 4.6M
   CGroup: /system.slice/isc-dhcp-server.service
           └─583 /usr/sbin/dhcpd -4 -q -cf /etc/dhcp/dhcpd.conf enp0s8 enp0s9

May 01 12:38:07 servidor-1 systemd[1]: Starting LSB: DHCP server...
May 01 12:38:07 servidor-1 isc-dhcp-server[570]: Launching IPv4 server only.
May 01 12:38:07 servidor-1 dhcpd[583]: Wrote 1 leases to leases file.
May 01 12:38:07 servidor-1 dhcpd[583]: Server starting service.
May 01 12:38:09 servidor-1 isc-dhcp-server[570]: Starting ISC DHCPv4 server: dhcpd.
May 01 12:38:09 servidor-1 systemd[1]: Started LSB: DHCP server.
root@servidor-1:~# _

```

Debiendo quedar el status así
en verde **active (running)**

Liberar la IP en los Clientes y comprobar que todo funciona correctamente

Ahora vamos a la máquina del Cliente1 y ejecutamos el comando `dhclient`

Ahora reiniciamos la máquina del Servidor y del Cliente1 (encender siempre antes la del Servidor y después la del Cliente1)

Una vez encendidas las dos máquinas, en la del Cliente1 hacemos un `ping 8.8.8.8`

Y funciona!!

```

root@cliente-1:~# ping 8.8.8.8
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data:
64 bytes from 8.8.8.8: icmp_seq=1 ttl=114 time=16.2 ms
64 bytes from 8.8.8.8: icmp_seq=2 ttl=114 time=14.0 ms
64 bytes from 8.8.8.8: icmp_seq=3 ttl=114 time=13.4 ms
64 bytes from 8.8.8.8: icmp_seq=4 ttl=114 time=13.3 ms
^C
--- 8.8.8.8 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 8ms
rtt min/avg/max/mdev = 13.273/14.210/16.157/1.165 ms
root@cliente-1:~# _

```


Ahora vamos a iniciar la máquina del Cliente-2

Y ejecutamos también aquí el comando `dhclient` y también ejecutamos `ip a`

Y comprobamos que efectivamente el Cliente2 tiene IP

Y ejecutamos también aquí un `ping 8.8.8.8`

Y funciona ¡!

```

Cliente-2 [Corriendo] - Oracle VM VirtualB...
Archivo  Máquina  Ver  Entrada  Dispositivos  Ayuda
root@cliente-2:~# dhclient
root@cliente-2:~# ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default 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
2: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group default qlen 1000
    link/ether 08:00:27:f0:ce:e5 brd ff:ff:ff:ff:ff:ff
    inet 192.168.102.100/24 brd 192.168.102.255 scope global dynamic enp0s3
        valid_lft 578sec preferred_lft 578sec
    inet 192.168.102.101/24 brd 192.168.102.255 scope global secondary dynamic enp0s3
        valid_lft 592sec preferred_lft 592sec
    inet6 fe80::a00:27ff:fe0:cee5/64 scope link
        valid_lft forever preferred_lft forever
root@cliente-2:~# ping 8.8.8.8
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data.
64 bytes from 8.8.8.8: icmp_seq=1 ttl=114 time=13.6 ms
64 bytes from 8.8.8.8: icmp_seq=2 ttl=114 time=14.4 ms
64 bytes from 8.8.8.8: icmp_seq=3 ttl=114 time=13.1 ms
64 bytes from 8.8.8.8: icmp_seq=4 ttl=114 time=14.5 ms
^C
--- 8.8.8.8 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 8ms
rtt min/avg/max/mdev = 13.116/13.902/14.512/0.585 ms
root@cliente-2:~#

```

Elegir qué direcciones se resuelven antes y añadir nuevas dirección – Configurar Resolución DNS

```

SSINF-Debian-Base-1-PRUEBAS [Corriendo] ...
Archivo  Máquina  Ver  Entrada  Dispositivos  Ayuda
GNU nano 3.2      nsswitch.conf
# /etc/nsswitch.conf
#
# Example configuration of GNU Name Service Switch functionality.
# If you have the 'libc-dns-resolver' and 'info' packages installed, try:
# 'info libc "Name Service Switch"' for information about this file.

passwd:      files system
group:       files system
shadow:      files
gshadow:     files

networks:    files
hosts:       files dns

protocols:   db files
services:    db files
ethers:      db files
rpc:         db files

netgroup:    nis

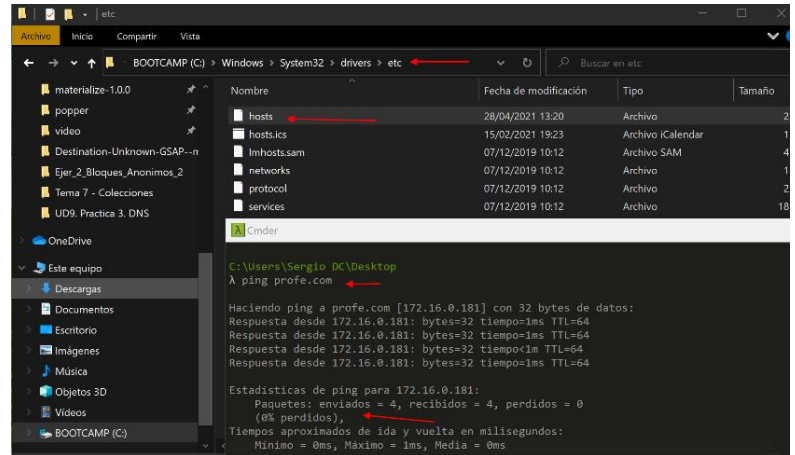
```

En etc/ abrir el archivo `nsswitch.conf`

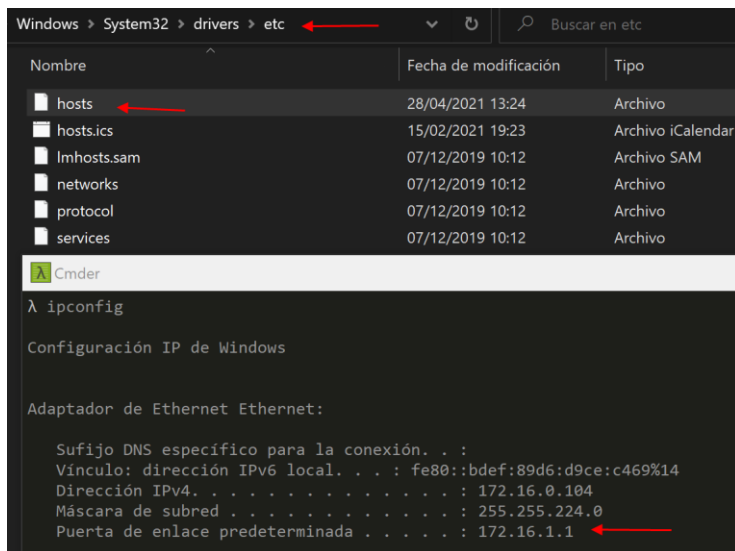
SSII – Guía Examen Redes Debian – DHCP & DNS

```
1 # Copyright (c) 1993-2009 Microsoft Corp.
2 #
3 # This is a sample HOSTS file used by Microsoft TCP/IP for Windows.
4 #
5 # This file contains the mappings of IP addresses to host names. Each
6 # entry should be kept on an individual line. The IP address should
7 # be placed in the first column followed by the corresponding host name.
8 # The IP address and the host name should be separated by at least one
9 # space.
10 #
11 # Additionally, comments (such as these) may be inserted on individual
12 # lines or following the machine name denoted by a '#' symbol.
13 #
14 # For example:
15 #
16 # 102.54.94.97 rhino.acme.com # source server
17 # 38.25.63.10 x.acme.com # x client host
18
19 # localhost name resolution is handled within DNS itself.
20 # 127.0.0.1 localhost
21 # ::1 localhost
22
23 172.16.0.181 profe.com
24 127.0.0.1 www.partitionwizard.com
25 127.0.0.1 www.minitool.com
26 127.0.0.1 www.powerdataarecovery.com
27 127.0.0.1 pas2.partitionwizard.com
28 127.0.0.1 pas2.minitool.com
29 127.0.0.1 pas2.eofsoft.com
30 127.0.0.1 tracking.minitool.com
31
32 127.0.0.1 localhost
33 127.0.0.1 localhost
34 127.0.0.1 localhost::1 localhost
35 ::1 localhost
36
```

Ejemplo añadir IP de dispositivo en Windows



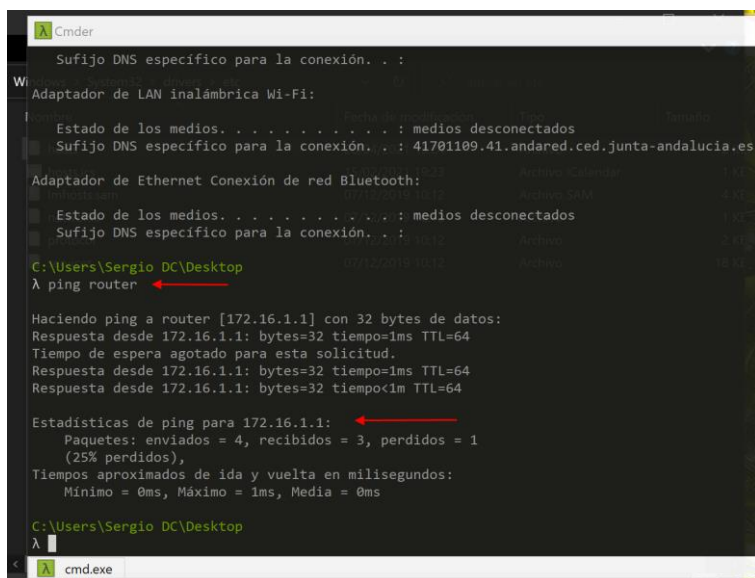
Hacer ping a la nueva IP y comprobar que hay respuesta



Descubrir la IP del Gateway de nuestra red actual

```
1 # Copyright (c) 1993-2009 Microsoft Corp.
2 #
3 # This is a sample HOSTS file used by Microsoft TCP/IP for Windows.
4 #
5 # This file contains the mappings of IP addresses to host names. Each
6 # entry should be kept on an individual line. The IP address should
7 # be placed in the first column followed by the corresponding host name.
8 # The IP address and the host name should be separated by at least one
9 # space.
10 #
11 # Additionally, comments (such as these) may be inserted on individual
12 # lines or following the machine name denoted by a '#' symbol.
13 #
14 # For example:
15 #
16 # 102.54.94.97 rhino.acme.com # source server
17 # 38.25.63.10 x.acme.com # x client host
18
19 # localhost name resolution is handled within DNS itself.
20 # 127.0.0.1 localhost
21 # ::1 localhost
22
23 172.16.0.181 profe.com
24 172.16.1.1 router
25 127.0.0.1 www.partitionwizard.com
26 127.0.0.1 www.minitool.com
27 127.0.0.1 www.powerdataarecovery.com
28 127.0.0.1 pas2.partitionwizard.com
29 127.0.0.1 pas2.minitool.com
30 127.0.0.1 pas2.eofsoft.com
31 127.0.0.1 tracking.minitool.com
32
33 127.0.0.1 localhost
34 127.0.0.1 localhost
35 127.0.0.1 localhost::1 localhost
36 ::1 localhost
37
```

Añadir la misma IP del Gateway con el nombre de "Router"



Hacer ping a Router y comprobar que hay respuesta

```

SSINF-Debian-Base-1-PRUEBAS [Corriend...
Archivo  Máquina  Ver  Entrada  Dispositivos  Ayuda
##### Actividad 1 - Ejercicio 3 #####
192.168.1.43  xiaomiSergio

# The following lines are desirable for IPv6 capable hosts
::1 localhost ip6-localhost ip6-loopback
ff02::1 ip6-allnodes
ff02::2 ip6-allrouters

root@debian1-Pruebas:/etc# ping xiaomiSergio
PING xiaomiSergio (192.168.1.43): 56(84) bytes of data:
64 bytes from xiaomiSergio (192.168.1.43): icmp_seq=13 ttl=63 time=48.4 ms
64 bytes from xiaomiSergio (192.168.1.43): icmp_seq=14 ttl=63 time=12.7 ms
64 bytes from xiaomiSergio (192.168.1.43): icmp_seq=15 ttl=63 time=10.9 ms

```

Ejemplo añadir IP de dispositivo en Linux

En etc/ abrir el archivo hosts

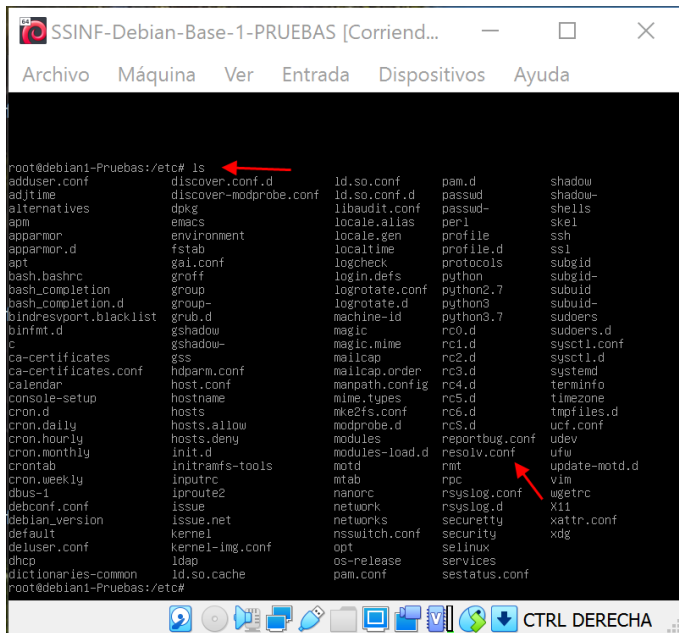
```

root@debian1-Pruebas:/etc# ping xiaomiSergio
PING xiaomiSergio (192.168.1.43): 56(84) bytes of data:
64 bytes from xiaomiSergio (192.168.1.43): icmp_seq=1 ttl=63 time=243 ms
64 bytes from xiaomiSergio (192.168.1.43): icmp_seq=2 ttl=63 time=265 ms
64 bytes from xiaomiSergio (192.168.1.43): icmp_seq=3 ttl=63 time=357 ms
64 bytes from xiaomiSergio (192.168.1.43): icmp_seq=4 ttl=63 time=106 ms
64 bytes from xiaomiSergio (192.168.1.43): icmp_seq=5 ttl=63 time=129 ms
64 bytes from xiaomiSergio (192.168.1.43): icmp_seq=6 ttl=63 time=151 ms
64 bytes from xiaomiSergio (192.168.1.43): icmp_seq=7 ttl=63 time=167 ms
64 bytes from xiaomiSergio (192.168.1.43): icmp_seq=8 ttl=63 time=195 ms
64 bytes from xiaomiSergio (192.168.1.43): icmp_seq=9 ttl=63 time=495 ms
64 bytes from xiaomiSergio (192.168.1.43): icmp_seq=10 ttl=63 time=271 ms
64 bytes from xiaomiSergio (192.168.1.43): icmp_seq=11 ttl=63 time=260 ms
64 bytes from xiaomiSergio (192.168.1.43): icmp_seq=12 ttl=63 time=286 ms
64 bytes from xiaomiSergio (192.168.1.43): icmp_seq=13 ttl=63 time=578 ms
64 bytes from xiaomiSergio (192.168.1.43): icmp_seq=14 ttl=63 time=1130 ms
64 bytes from xiaomiSergio (192.168.1.43): icmp_seq=15 ttl=63 time=114 ms
64 bytes from xiaomiSergio (192.168.1.43): icmp_seq=16 ttl=63 time=549 ms
64 bytes from xiaomiSergio (192.168.1.43): icmp_seq=17 ttl=63 time=1010 ms
64 bytes from xiaomiSergio (192.168.1.43): icmp_seq=18 ttl=63 time=199 ms
64 bytes from xiaomiSergio (192.168.1.43): icmp_seq=19 ttl=63 time=244 ms
64 bytes from xiaomiSergio (192.168.1.43): icmp_seq=20 ttl=63 time=245 ms
64 bytes from xiaomiSergio (192.168.1.43): icmp_seq=21 ttl=63 time=274 ms
64 bytes from xiaomiSergio (192.168.1.43): icmp_seq=22 ttl=63 time=289 ms
64 bytes from xiaomiSergio (192.168.1.43): icmp_seq=23 ttl=63 time=101 ms
64 bytes from xiaomiSergio (192.168.1.43): icmp_seq=24 ttl=63 time=128 ms
64 bytes from xiaomiSergio (192.168.1.43): icmp_seq=25 ttl=63 time=151 ms
^C
--- xiaomiSergio ping statistics ---
25 packets transmitted, 25 received, 0% packet loss, time 77ms
rtt min/avg/max/mdev = 101.117/317.847/1129.633/255.519 ms, pipe 2
root@debian1-Pruebas:/etc#

```

Hacer ping a la nueva IP y comprobar que hay respuesta

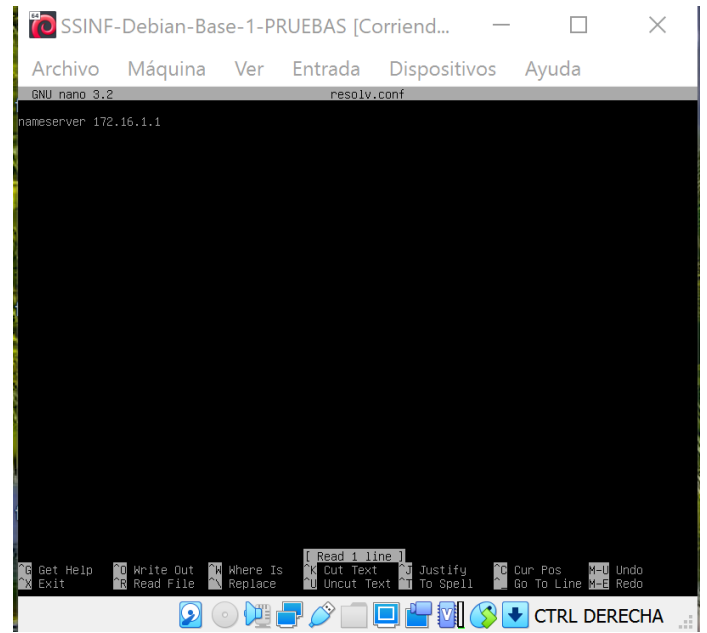
Añadir NameServers de Google para prueba



```

root@debian1-Pruebas:/etc# ls
adduser.conf      discover.conf.d    id.so.conf        pam.d             shadow
adjtime           discover-modprobe.conf  libaudit.conf     passud            shadow-
alternatives      dpkg              locale.alias      per1              skel
apm               environment       locale.gen        profile           ssh
apparmor          fstab             localtime         protocols         subgid
apt               gai.conf          logcheck          python            subuid
bash.bashrc       groff             login.defs        python2.7         subuid
bash_completion.d group             logrotate.conf    python3           subuid-
bindresvport.blacklist grub.d            logrotate.d       python3.7         sudoers
binfmt.d          gshadow           magic             rc0.d             sudoers.d
c                 gshadow-         magic.mime        rc1.d             sysct1.conf
ca-certificates  gss              mailcap           rc2.d             sysct1.d
ca-certificates.conf hdsadm.conf      mailcap.order     rc3.d             systemd
calendar          host.conf         manpath.config    rc4.d             terminfo
console-setup     hostname         mime.types        rc5.d             timezone
cron.d            hosts            mke2fs.conf       rc6.d             tmpfiles.d
cron.daily        hosts.allow      modprobe.d        rcS.d             ucf.conf
cron.hourly       hosts.deny       modules           reportbug.conf    udev
cron.monthly      init.d           modules-load.d    resolv.conf       ufw
crontab           initramfs-tools  motd              rmt               update-motd.d
cron.weekly       inotify          mtab              rpc               vim
dbus-1            iproute2         nanorc            rsyslog.conf      wgetrc
debconf.conf      issue            network           rsyslog.d         X11
debian_version    issue.net        networks          securetty         xattr.conf
default           kernel           nsswitch.conf     security          xdg
deluser.conf      kernel-img.conf  os-release        selinux
dhcp              ldap             ps-release        services
dictionaries-common id.so.cache      pam.conf          sestatus.conf

```

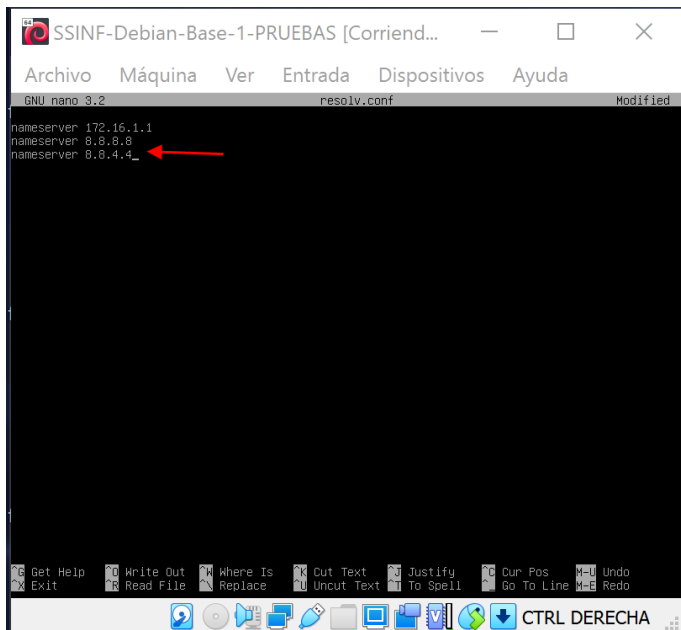


```

nameserver 172.16.1.1

```

Situación inicial del archivo resolv.conf



```

nameserver 172.16.1.1
nameserver 8.8.8.8
nameserver 8.8.4.4

```

Añadir nameserver de Google (2 ejemplos)

Instalar herramienta de DNS y hacer prueba de funcionamiento

```

root@debian1-Pruebas:/etc# sudo apt install dnstools
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  libnss3
Suggested packages:
  nss-certs
The following NEW packages will be installed:
  dnstools libnss3
0 upgraded, 2 newly installed, 0 to remove and 26 not upgraded.
Need to get 602 kB of archives.
After this operation, 1,027 kB of additional disk space will be used.
Do you want to continue? [Y/n] Y
Get:1 http://deb.debian.org/debian buster/main amd64 libnss3 amd64 1:3.44.1-1+b1 [337 kB]
Get:2 http://deb.debian.org/debian buster/main amd64 dnstools amd64 1:9.11.5.P4+dfsg-5.1+deb10u3 [365 kB]
Fetched 602 kB in 0s (3,667 kB/s)
Selecting previously unselected package libnss3:amd64.
(Reading database ... 28749 files and directories currently installed.)
Preparing to unpack .../libnss3_1:3.44.1-1+b1_amd64.deb ...
Unpacking libnss3:amd64 (1:3.44.1-1+b1) ...
Selecting previously unselected package dnstools.
Preparing to unpack .../dnstools_1:9.11.5.P4+dfsg-5.1+deb10u3_amd64.deb ...
Unpacking dnstools (1:9.11.5.P4+dfsg-5.1+deb10u3) ...
Setting up libnss3:amd64 (1:3.44.1-1+b1) ...
Setting up dnstools (1:9.11.5.P4+dfsg-5.1+deb10u3) ...
Processing triggers for libc-bin (2.28-10) ...
Processing triggers for man-db (2.8.5-2) ...
root@debian1-Pruebas:/etc#

```

`sudo apt install dnstools`

```

root@debian1-Pruebas:/etc# nslookup www.elpais.es
Server:
  172.16.1.1
Address:
  172.16.1.1#53

Non-authoritative answer:
www.elpais.es canonical name = lb-redireccionesweb-pro-407952733.eu-west-1.elb.amazonaws.com.
Name:   lb-redireccionesweb-pro-407952733.eu-west-1.elb.amazonaws.com
Address: 34.246.117.165
Name:   lb-redireccionesweb-pro-407952733.eu-west-1.elb.amazonaws.com
Address: 52.209.191.15
root@debian1-Pruebas:/etc#

```

Para hacer una prueba, ejecutar el comando `nslookup` y poner una dirección

Instalar servicio de Bind9 y comprobar que está activo y funciona

OJO! A partir de aquí usaremos la Debian-5

```

root@debian5-Pruebas:/# sudo apt install bind9
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  bind9-dbg bind9-doc bind9-host bind9-libs bind9-utils
Suggested packages:
  bind9-doc
The following NEW packages will be installed:
  bind9 bind9-dbg bind9-doc bind9-host bind9-libs bind9-utils
0 upgraded, 6 newly installed, 0 to remove and 26 not upgraded.
Need to get 11.5 MB of archives.
After this operation, 42.1 MB of additional disk space will be used.
Do you want to continue? [Y/n] Y
Get:1 http://deb.debian.org/debian buster/main amd64 bind9-host amd64 1:9.11.5.P4+dfsg-5.1+deb10u3 [337 kB]
Get:2 http://deb.debian.org/debian buster/main amd64 bind9-doc all 1:9.11.5.P4+dfsg-5.1+deb10u3 [11.5 MB]
Get:3 http://deb.debian.org/debian buster/main amd64 bind9-dbg amd64 1:9.11.5.P4+dfsg-5.1+deb10u3 [337 kB]
Get:4 http://deb.debian.org/debian buster/main amd64 bind9-libs amd64 1:9.11.5.P4+dfsg-5.1+deb10u3 [337 kB]
Get:5 http://deb.debian.org/debian buster/main amd64 bind9-utils amd64 1:9.11.5.P4+dfsg-5.1+deb10u3 [337 kB]
Fetched 11.5 MB in 0s (3,667 kB/s)
Selecting previously unselected package bind9-host.
(Reading database ... 28749 files and directories currently installed.)
Preparing to unpack .../bind9-host_1:9.11.5.P4+dfsg-5.1+deb10u3_amd64.deb ...
Unpacking bind9-host (1:9.11.5.P4+dfsg-5.1+deb10u3) ...
Selecting previously unselected package bind9-doc.
Preparing to unpack .../bind9-doc_1:9.11.5.P4+dfsg-5.1+deb10u3_all.deb ...
Unpacking bind9-doc (1:9.11.5.P4+dfsg-5.1+deb10u3) ...
Selecting previously unselected package bind9-dbg.
Preparing to unpack .../bind9-dbg_1:9.11.5.P4+dfsg-5.1+deb10u3_amd64.deb ...
Unpacking bind9-dbg (1:9.11.5.P4+dfsg-5.1+deb10u3) ...
Selecting previously unselected package bind9-libs.
Preparing to unpack .../bind9-libs_1:9.11.5.P4+dfsg-5.1+deb10u3_amd64.deb ...
Unpacking bind9-libs (1:9.11.5.P4+dfsg-5.1+deb10u3) ...
Selecting previously unselected package bind9-utils.
Preparing to unpack .../bind9-utils_1:9.11.5.P4+dfsg-5.1+deb10u3_amd64.deb ...
Unpacking bind9-utils (1:9.11.5.P4+dfsg-5.1+deb10u3) ...
Setting up bind9-host (1:9.11.5.P4+dfsg-5.1+deb10u3) ...
Setting up bind9-doc (1:9.11.5.P4+dfsg-5.1+deb10u3) ...
Setting up bind9-dbg (1:9.11.5.P4+dfsg-5.1+deb10u3) ...
Setting up bind9-libs (1:9.11.5.P4+dfsg-5.1+deb10u3) ...
Setting up bind9-utils (1:9.11.5.P4+dfsg-5.1+deb10u3) ...
Processing triggers for libc-bin (2.28-10) ...
Processing triggers for man-db (2.8.5-2) ...
root@debian5-Pruebas:/#

```

`sudo apt install bind9`

```

root@debian5-Pruebas:/# sudo service bind9 status
bind9.service - BIND Domain Name Server
Loaded: loaded (/lib/systemd/system/bind9.service; enabled; vendor preset: enabled)
Active: active (running) since Fri 2021-04-30 14:15:59 CEST; 1m1n 9s ago
Process: 660 (named)
Main PID: 660 (named)
Tasks: 4 (limit: 1149)
Memory: 13.9M
CGroup: /system.slice/bind9.service
└─660 /usr/sbin/named -u bind

Apr 30 14:15:59 debian5-Pruebas named[660]: network unreachable resolving './DNSKEY/IN': 2001:7fe::5
Apr 30 14:15:59 debian5-Pruebas named[660]: network unreachable resolving './DNSKEY/IN': 2001:7fe::53
Apr 30 14:15:59 debian5-Pruebas named[660]: network unreachable resolving './NS/IN': 2001:500:20::1b
Apr 30 14:15:59 debian5-Pruebas named[660]: network unreachable resolving './DNSKEY/IN': 2001:500:20::1b
Apr 30 14:15:59 debian5-Pruebas named[660]: network unreachable resolving './NS/IN': 2001:500:20::1b
Apr 30 14:15:59 debian5-Pruebas named[660]: network unreachable resolving './DNSKEY/IN': 2001:500:20::1b
Apr 30 14:15:59 debian5-Pruebas named[660]: network unreachable resolving './NS/IN': 2001:500:20::1b
Apr 30 14:15:59 debian5-Pruebas named[660]: managed-keys-zone: Key 20326 for zone ., acceptance timer
Apr 30 14:15:59 debian5-Pruebas named[660]: resolver priming query complete
root@debian5-Pruebas:/#

```

`sudo service bind9 status`

Descubrir los archivos que componen el servicio de Bind9

```

SSINF-Debian-Base-5-PRUEBA [Corriendo]...
Archivo  Máquina  Ver  Entrada  Dispositivos  Ayuda
root@debian5-Pruebas:/# named-checkconf
root@debian5-Pruebas:/#
  
```

Ejecutar el comando `named-checkconf`

```

SSINF-Debian-Base-5-PRUEBA [Corriendo]...
Archivo  Máquina  Ver  Entrada  Dispositivos  Ayuda
root@debian5-Pruebas:/etc/bind# ls -la
total 56
drwxr-sr-x  2 root bind 4096 Apr 30 14:15 .
drwxr-xr-x 74 root root 4096 Apr 30 14:15 ..
-rw-r--r--  1 root root 2761 Feb 15 08:51 bind.keys
-rw-r--r--  1 root root 237  Feb 15 08:51 db.0
-rw-r--r--  1 root root 271  Feb 15 08:51 db.127
-rw-r--r--  1 root root 237  Feb 15 08:51 db.255
-rw-r--r--  1 root root 353  Feb 15 08:51 db.empty
-rw-r--r--  1 root root 270  Feb 15 08:51 db.local
-rw-r--r--  1 root bind 463  Feb 15 08:51 named.conf
-rw-r--r--  1 root bind 498  Feb 15 08:51 named.conf.default-zones
-rw-r--r--  1 root bind 165  Feb 15 08:51 named.conf.local
-rw-r--r--  1 root bind 846  Feb 15 08:51 named.conf.options
-rw-r--r--  1 bind bind  77  Apr 30 14:15 rndc.key
-rw-r--r--  1 root root 1317 Feb 15 08:51 zones.rfc1918
root@debian5-Pruebas:/etc/bind#
  
```

Hacer un `ls -la` para ver todos los archivos que componen el directorio de bind9

```

SSINF-Debian-Base-5-PRUEBA [Corriendo]...
Archivo  Máquina  Ver  Entrada  Dispositivos  Ayuda
-rw-r--r--  1 root bind 498 Feb 15 08:51 named.conf.default-zones
-rw-r--r--  1 root bind 165 Feb 15 08:51 named.conf.local
-rw-r--r--  1 root bind 846 Feb 15 08:51 named.conf.options
-rw-r--r--  1 bind bind  77 Apr 30 14:15 rndc.key
-rw-r--r--  1 root root 1317 Feb 15 08:51 zones.rfc1918
root@debian5-Pruebas:/etc/bind# cat named.conf.default-zones
// prime the server with knowledge of the root servers
zone "." {
    type hint;
    file "/usr/share/dns/root.hints";
};

// be authoritative for the localhost forward and reverse zones, and for
// broadcast zones as per RFC 1912
zone "localhost" {
    type master;
    file "/etc/bind/db.localhost";
};

zone "127.in-addr.arpa" {
    type master;
    file "/etc/bind/db.127";
};

zone "0.in-addr.arpa" {
    type master;
    file "/etc/bind/db.0";
};

zone "255.in-addr.arpa" {
    type master;
    file "/etc/bind/db.255";
};

root@debian5-Pruebas:/etc/bind#
  
```

Vemos el contenido del archivo `named.conf.default-zones`

```

SSINF-Debian-Base-5-PRUEBA [Corriendo]...
Archivo  Máquina  Ver  Entrada  Dispositivos  Ayuda
root@debian5-Pruebas:/etc/bind# ls -la
total 56
drwxr-sr-x  2 root bind 4096 Apr 30 14:15 .
drwxr-xr-x 74 root root 4096 Apr 30 14:15 ..
-rw-r--r--  1 root root 2761 Feb 15 08:51 bind.keys
-rw-r--r--  1 root root 237  Feb 15 08:51 db.0
-rw-r--r--  1 root root 271  Feb 15 08:51 db.127
-rw-r--r--  1 root root 237  Feb 15 08:51 db.255
-rw-r--r--  1 root root 353  Feb 15 08:51 db.empty
-rw-r--r--  1 root root 270  Feb 15 08:51 db.local
-rw-r--r--  1 root bind 463  Feb 15 08:51 named.conf
-rw-r--r--  1 root bind 498  Feb 15 08:51 named.conf.default-zones
-rw-r--r--  1 root bind 165  Feb 15 08:51 named.conf.local
-rw-r--r--  1 root bind 846  Feb 15 08:51 named.conf.options
-rw-r--r--  1 bind bind  77  Apr 30 14:15 rndc.key
-rw-r--r--  1 root root 1317 Feb 15 08:51 zones.rfc1918
root@debian5-Pruebas:/etc/bind# cat 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";

root@debian5-Pruebas:/etc/bind#
  
```

Vemos el contenido del archivo `named.conf.local`

Creando una zona

```

GNU nano 3.2 named.conf.local Modified
//
// 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 "ejemplo.com" {
    type master;
    file "/var/lib/bind/db.ejemplo.com";
};
  
```

Accedemos al archivo de **named.conf.local** y escribimos esto

```

root@debian5-Pruebas:/# cd /var
root@debian5-Pruebas:/var# ls
backups cache lib local lock log mail opt run spool tmp
root@debian5-Pruebas:/var# cd lib
root@debian5-Pruebas:/var/lib# ls
apt dhcp git logrotate pam sudo vim
aspell dictionaries-common grub man-db polkit-1 systemd
bind dpkg initramfs-tools misc private ucf
dbus emacs-common ispell os-prober python usbutils
root@debian5-Pruebas:/var/lib# cd bind
root@debian5-Pruebas:/var/lib/bind# ls
bind9-default.md5sum
root@debian5-Pruebas:/var/lib/bind# sudo nano db.ejemplo.com
  
```

Ahora tenemos que ir al subdirectorio de **var/lib/bind/**, y crear el archivo de la zona que hemos especificado antes, llamado **db.ejemplo.com**

Configurando la zona

```

GNU nano 3.2 db.ejemplo.com Modified
$TTL 604800
ejemplo.com. IN SOA ns1 admin(
                2      ;Serial
                604800 ;Refresh
                86400  ;Retry
                2419200;Expire
                604800);Negative Cache TTL

;Servidores de nombre
@ IN NS ns1.ejemplo.com.

ns1.ejemplo.com. IN A 127.0.0.1

pc1 IN A 192.168.3.11
  
```

En ese archivo que hemos creado, escribir todo esto

```

root@debian5-Pruebas:/var/lib/bind# service bind9 restart
root@debian5-Pruebas:/var/lib/bind# service bind9 status
● bind9.service - BIND Domain Name Server
Loaded: loaded (/lib/systemd/system/bind9.service; enabled; vendor preset: enabled)
Active: active (running) since Tue 2021-05-04 13:31:15 CEST; 8s ago
Docs: man:named(8)
Process: 501 ExecStart=/usr/sbin/named $OPTIONS (code=exited, status=0/SUCCESS)
Main PID: 502 (named)
Tasks: 4 (limit: 1149)
Memory: 11.0M
CGroup: /system.slice/bind9.service
└─502 /usr/sbin/named -u bind

May 04 13:31:15 debian5-Pruebas named[502]: network unreachable resolving './DNSKEY/IN': 2001:500:13:2::353
May 04 13:31:15 debian5-Pruebas named[502]: network unreachable resolving './NS/IN': 2001:500:13:2::353
May 04 13:31:15 debian5-Pruebas named[502]: network unreachable resolving './DNSKEY/IN': 2001:500:13:2::353
May 04 13:31:15 debian5-Pruebas named[502]: network unreachable resolving './NS/IN': 2001:500:13:2::353
May 04 13:31:15 debian5-Pruebas named[502]: network unreachable resolving './DNSKEY/IN': 2001:500:13:2::353
May 04 13:31:15 debian5-Pruebas named[502]: network unreachable resolving './NS/IN': 2001:500:13:2::353
May 04 13:31:15 debian5-Pruebas named[502]: network unreachable resolving './DNSKEY/IN': 2001:500:13:2::353
May 04 13:31:15 debian5-Pruebas named[502]: network unreachable resolving './NS/IN': 2001:500:13:2::353
lines 1-21/21 (END)
  
```

Ejecutar los comandos **service bind9 restart** y **service bind9 status** para comprobar que todo está yendo bien

```

GNU nano 3.2 db.ejemplo.com Modified
$TTL 604800
ejemplo.com. IN SOA ns1 admin(
                2      ;Serial
                604800 ;Refresh
                86400  ;Retry
                2419200;Expire
                604800);Negative Cache TTL

;Servidores de nombre
@ IN NS ns1.ejemplo.com.

ns1.ejemplo.com. IN A 127.0.0.1

pc1 IN A 192.168.101.10
  
```

Volvemos al archivo **db.ejemplo.com** y modificamos la IP del **pc1**

```

root@debian5-Pruebas:/var/lib/bind# service bind9 restart
root@debian5-Pruebas:/var/lib/bind#
  
```

Ejecutamos el **service bind9 restart**


```

GNU nano 3.2 resolv.conf Modified
#nameserver 8.8.8.8
#nameserver 8.8.4.4
nameserver 127.0.0.1

```

Volvemos a pasar por el archivo **resolv.conf** dentro del directorio **etc/** vamos a comentar las líneas de salida a Google, y ponemos la IP nuestra para probar

```

root@debian5-Pruebas:/# ping pc1.ejemplo.com
PING pc1.ejemplo.com (64.190.62.111) 56(84) bytes of data:
64 bytes from 64.190.62.111 (64.190.62.111): icmp_seq=1 ttl=48 time=69.9 ms
64 bytes from 64.190.62.111 (64.190.62.111): icmp_seq=2 ttl=48 time=72.4 ms
64 bytes from 64.190.62.111 (64.190.62.111): icmp_seq=30 ttl=48 time=62.8 ms
64 bytes from 64.190.62.111 (64.190.62.111): icmp_seq=31 ttl=48 time=62.1 ms
64 bytes from 64.190.62.111 (64.190.62.111): icmp_seq=32 ttl=48 time=62.4 ms
64 bytes from 64.190.62.111 (64.190.62.111): icmp_seq=33 ttl=48 time=62.4 ms
64 bytes from 64.190.62.111 (64.190.62.111): icmp_seq=34 ttl=48 time=62.9 ms
64 bytes from 64.190.62.111 (64.190.62.111): icmp_seq=35 ttl=48 time=61.10 ms
^C
--- pc1.ejemplo.com ping statistics ---
35 packets transmitted, 8 received, 77.1429% packet loss, time 669ms
rtt min/avg/max/mdev = 61.995/63.811/72.449/3.293 ms
root@debian5-Pruebas:/#

```

Probamos hacer ping **pc1.ejemplo.com**

```

root@debian5-Pruebas:/etc# host pc1.ejemplo.com
pc1.ejemplo.com has address 192.168.101.10
root@debian5-Pruebas:/etc#

```

Lo realmente importante es ver que se resuelve el DNS y nos da la IP
Para ello ejecutamos el comando **host pc1.ejemplo.com**

```

root@debian5-Pruebas:/etc# ping pc1.ejemplo.com
PING pc1.ejemplo.com (192.168.101.10) 56(84) bytes of data:
64 bytes from 192.168.101.10 (192.168.101.10): icmp_seq=1 ttl=64 time=0.502 ms
64 bytes from 192.168.101.10 (192.168.101.10): icmp_seq=2 ttl=64 time=0.305 ms
64 bytes from 192.168.101.10 (192.168.101.10): icmp_seq=3 ttl=64 time=1.29 ms
64 bytes from 192.168.101.10 (192.168.101.10): icmp_seq=4 ttl=64 time=0.554 ms
64 bytes from 192.168.101.10 (192.168.101.10): icmp_seq=5 ttl=64 time=1.84 ms
64 bytes from 192.168.101.10 (192.168.101.10): icmp_seq=6 ttl=64 time=1.30 ms
64 bytes from 192.168.101.10 (192.168.101.10): icmp_seq=7 ttl=64 time=1.48 ms
^C
--- pc1.ejemplo.com ping statistics ---
7 packets transmitted, 7 received, 0% packet loss, time 33ms
rtt min/avg/max/mdev = 0.502/1.123/1.842/0.457 ms
root@debian5-Pruebas:/etc#

```

Añadiendo más equipos a la zona

```

GNU nano 3.2 db.ejemplo.com Modified
$TTL 604800
ejemplo.com. IN SOA ns1 admin(
2 :Serial
604800 :Refresh
86400 :Retry
2419200 :Expire
604800) :Negative Cache TTL

;Servidores de nombre
ejemplo.com. IN NS ns1.ejemplo.com.

ns1.ejemplo.com. IN A 127.0.0.1

;Equipos de prueba
pc1 IN A 192.168.101.1

;Debian-1-Prueba
pc10 IN A 192.168.101.10

;Servidores DNS
pc11 IN A 192.168.101.11

```

Añadimos las siguientes líneas al archivo de **db.ejemplo.com**

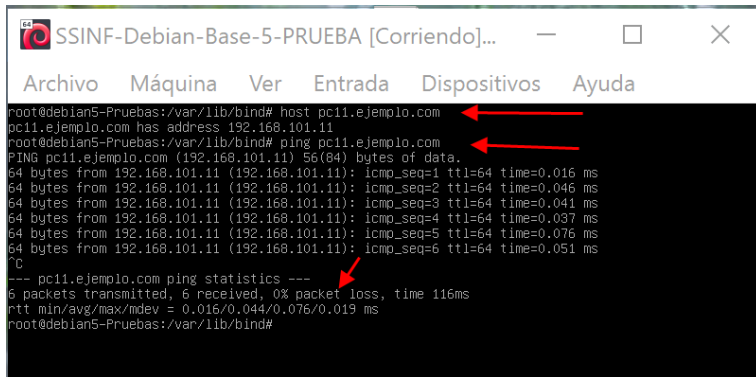
```

root@debian5-Pruebas:/var/lib/bind# service bind9 restart
Restarting bind9: [OK]

```

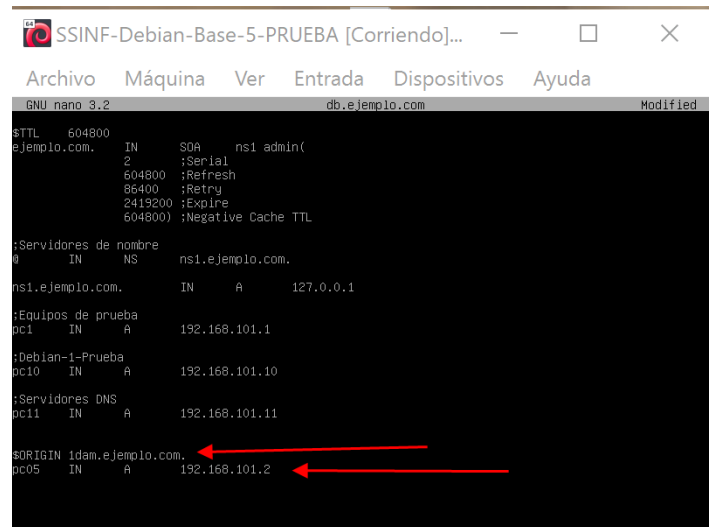
Ejecutamos un **service bind9 restart**

SSII – Guía Examen Redes Debian – DHCP & DNS



```
root@debian5-Pruebas:/var/lib/bind# host pc11.ejemplo.com
pc11.ejemplo.com has address 192.168.101.11
root@debian5-Pruebas:/var/lib/bind# ping pc11.ejemplo.com
PING pc11.ejemplo.com (192.168.101.11) 56(84) bytes of data:
64 bytes from 192.168.101.11 (192.168.101.11): icmp_seq=1 ttl=64 time=0.016 ms
64 bytes from 192.168.101.11 (192.168.101.11): icmp_seq=2 ttl=64 time=0.046 ms
64 bytes from 192.168.101.11 (192.168.101.11): icmp_seq=3 ttl=64 time=0.041 ms
64 bytes from 192.168.101.11 (192.168.101.11): icmp_seq=4 ttl=64 time=0.037 ms
64 bytes from 192.168.101.11 (192.168.101.11): icmp_seq=5 ttl=64 time=0.076 ms
64 bytes from 192.168.101.11 (192.168.101.11): icmp_seq=6 ttl=64 time=0.051 ms
^C
--- pc11.ejemplo.com ping statistics ---
6 packets transmitted, 6 received, 0% packet loss, time 116ms
rtt min/avg/max/mdev = 0.016/0.044/0.076/0.019 ms
root@debian5-Pruebas:/var/lib/bind#
```

Probamos a resolver el DNS del pc11, ejecutando un host `pc11.ejemplo.com`



```
GNU nano 3.2 db.ejemplo.com Modified
$TTL 604800
ejemplo.com. IN SOA ns1.admin(
2 :Serial
604800 :Refresh
86400 :Retry
2419200 :Expire
604800) :Negative Cache TTL

;Servidores de nombre
@ IN NS ns1.ejemplo.com.

ns1.ejemplo.com. IN A 127.0.0.1

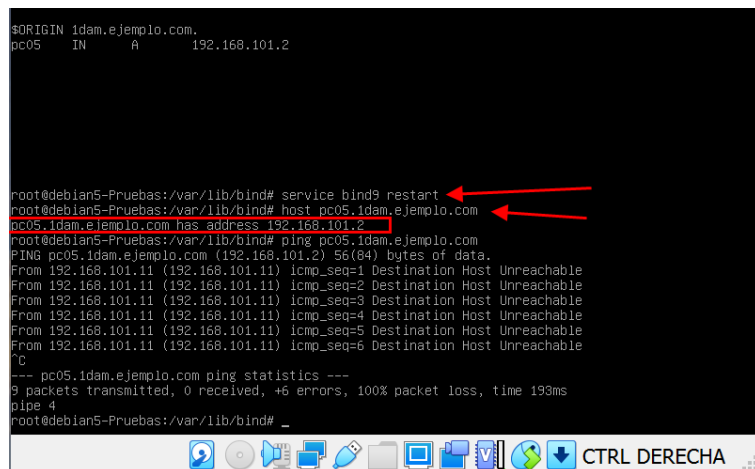
;Equipos de prueba
pc1 IN A 192.168.101.1

;Debian-1-Prueba
pc10 IN A 192.168.101.10

;Servidores DNS
pc11 IN A 192.168.101.11

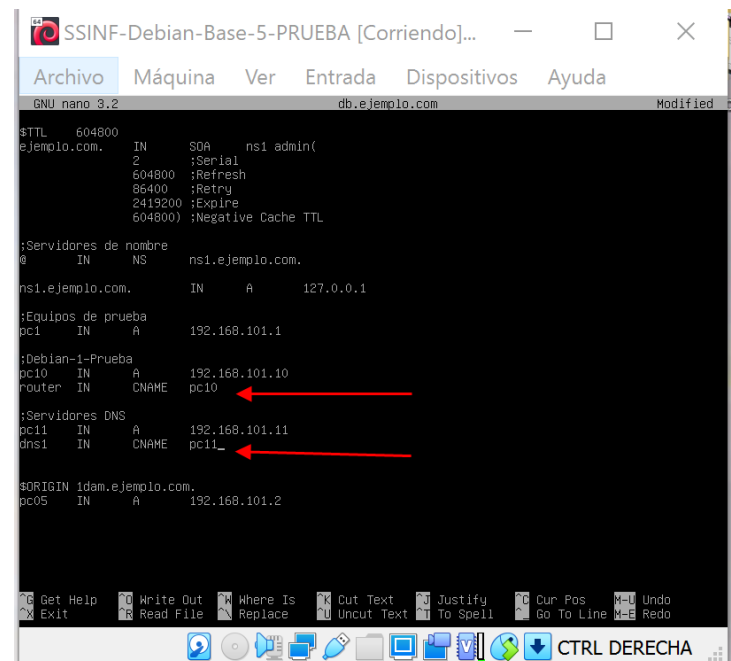
$ORIGIN idam.ejemplo.com.
pc05 IN A 192.168.101.2
```

Asignar un valor a la nueva directiva `ORIGIN`



```
$ORIGIN idam.ejemplo.com.
pc05 IN A 192.168.101.2

root@debian5-Pruebas:/var/lib/bind# service bind9 restart
root@debian5-Pruebas:/var/lib/bind# host pc05.idam.ejemplo.com
pc05.idam.ejemplo.com has address 192.168.101.2
root@debian5-Pruebas:/var/lib/bind# ping pc05.idam.ejemplo.com
PING pc05.idam.ejemplo.com (192.168.101.2) 56(84) bytes of data:
From 192.168.101.11 (192.168.101.11) icmp_seq=1 Destination Host Unreachable
From 192.168.101.11 (192.168.101.11) icmp_seq=2 Destination Host Unreachable
From 192.168.101.11 (192.168.101.11) icmp_seq=3 Destination Host Unreachable
From 192.168.101.11 (192.168.101.11) icmp_seq=4 Destination Host Unreachable
From 192.168.101.11 (192.168.101.11) icmp_seq=5 Destination Host Unreachable
From 192.168.101.11 (192.168.101.11) icmp_seq=6 Destination Host Unreachable
^C
--- pc05.idam.ejemplo.com ping statistics ---
9 packets transmitted, 0 received, 100% packet loss, time 193ms
pipe 4
root@debian5-Pruebas:/var/lib/bind#
```



```
GNU nano 3.2 db.ejemplo.com Modified
$TTL 604800
ejemplo.com. IN SOA ns1.admin(
2 :Serial
604800 :Refresh
86400 :Retry
2419200 :Expire
604800) :Negative Cache TTL

;Servidores de nombre
@ IN NS ns1.ejemplo.com.

ns1.ejemplo.com. IN A 127.0.0.1

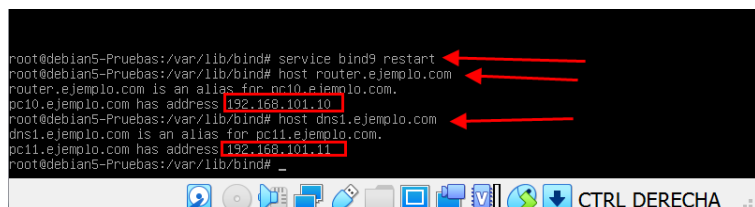
;Equipos de prueba
pc1 IN A 192.168.101.1

;Debian-1-Prueba
pc10 IN A 192.168.101.10
router IN CNAME pc10

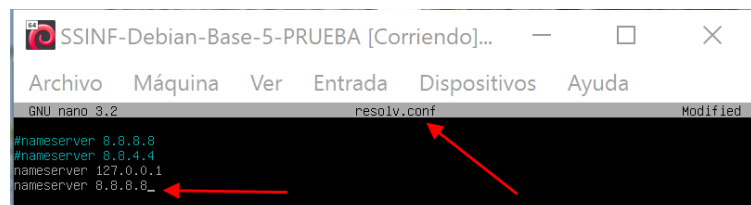
;Servidores DNS
pc11 IN A 192.168.101.11
dns1 IN CNAME pc11_

$ORIGIN idam.ejemplo.com.
pc05 IN A 192.168.101.2
```

Poner un alias (renombrar) a un dispositivo



```
root@debian5-Pruebas:/var/lib/bind# service bind9 restart
root@debian5-Pruebas:/var/lib/bind# host router.ejemplo.com
router.ejemplo.com is an alias for pc10.ejemplo.com.
pc10.ejemplo.com has address 192.168.101.10
root@debian5-Pruebas:/var/lib/bind# host dns1.ejemplo.com
dns1.ejemplo.com is an alias for pc11.ejemplo.com.
pc11.ejemplo.com has address 192.168.101.11
root@debian5-Pruebas:/var/lib/bind#
```



```
GNU nano 3.2 resolv.conf Modified
#nameserver 8.8.8.8
#nameserver 8.8.4.4
nameserver 127.0.0.1
nameserver 8.8.8.8_
```

Volvemos a poner el nameserver de Google en el fichero `resolv.conf` para la salida a internet

Nslookup modo interactivo – consultar información de dominios

```

root@debian5-Pruebas:/etc# sudo apt install dnstools
sudo: unable to resolve host debian5-Pruebas: Name or service not known
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  libnss3
Suggested packages:
  rblcheck
The following NEW packages will be installed:
  dnstools libnss3
0 upgraded, 2 newly installed, 0 to remove and 0 not upgraded.
Need to get 602 kB of archives.
After this operation, 1,027 kB of additional disk space will be used.
Do you want to continue? [Y/n] Y
Get:1 http://security.debian.org/debian-security buster/updates/main amd64 libnss3 amd64 1:9.11.5-4+dfsg-5.1+deb10u3 [287 kB]
Get:2 http://security.debian.org/debian-security buster/updates/main amd64 dnstools amd64 1:9.11.5-4+dfsg-5.1+deb10u3 [365 kB]
Fetched 602 kB in 5s (122 kB/s)
Selecting previously unselected package libnss3:amd64.
(Reading database ... 28689 files and directories currently installed.)
Preparing to unpack .../libnss3_1:9.11.5-4+dfsg-5.1+deb10u3_amd64.deb ...
Unpacking libnss3:amd64 (1:9.11.5-4+dfsg-5.1+deb10u3) ...
Selecting previously unselected package dnstools.
Preparing to unpack .../dnstools_1:9.11.5-4+dfsg-5.1+deb10u3_amd64.deb ...
Unpacking dnstools (1:9.11.5-4+dfsg-5.1+deb10u3) ...
Setting up libnss3:amd64 (1:9.11.5-4+dfsg-5.1+deb10u3) ...
Setting up dnstools (1:9.11.5-4+dfsg-5.1+deb10u3) ...
Processing triggers for libc-bin (2.28-10) ...
Processing triggers for man-db (2.8.5-2) ...
root@debian5-Pruebas:/etc#

```

```

root@debian5-Pruebas:/etc# nslookup
> set type = SOA
*** Invalid option: type
> set type=SOA
> facebook.com
Server:      127.0.0.1
Address:     127.0.0.1#53

Non-authoritative answer:
facebook.com
  origin = a.ns.facebook.com
  mail addr = dns.facebook.com
  serial = 1620141254
  refresh = 14400
  retry = 1800
  expire = 604800
  minimum = 300

Authoritative answers can be found from:
facebook.com  nameserver = c.ns.facebook.com.
facebook.com  nameserver = d.ns.facebook.com.
facebook.com  nameserver = b.ns.facebook.com.
facebook.com  nameserver = a.ns.facebook.com.
a.ns.facebook.com  internet address = 129.134.30.12
b.ns.facebook.com  internet address = 129.134.31.12
c.ns.facebook.com  internet address = 185.89.218.12
d.ns.facebook.com  internet address = 185.89.219.12
b.ns.facebook.com  has AAAA address 2a03:2880:f0fc:c:face:b00c:0:35
b.ns.facebook.com  has AAAA address 2a03:2880:f0fc:c:face:b00c:0:35
c.ns.facebook.com  has AAAA address 2a03:2880:f1fc:c:face:b00c:0:35
d.ns.facebook.com  has AAAA address 2a03:2880:f1fc:c:face:b00c:0:35

```

Probando el “modo interactivo” de nslookup

```

C:\Users\Sergio DC\Tools\cmd.exe
λ nslookup
Servidor predeterminado: f0.41701109.41.andared.ced.junta-andalucia.es
Address: 192.168.8.1

> set type=SOA
> www.elpais.es
Servidor: f0.41701109.41.andared.ced.junta-andalucia.es
Address: 192.168.8.1

Respuesta no autoritativa:
www.elpais.es canonical name = lb-redireccionesweb-pro-407952733.eu-west-1.elb.amazonaws.com
eu-west-1.elb.amazonaws.com
  primary name server = ns-1053.awsdns-03.org
  responsible mail addr = awsdns-hostmaster.amazon.com
  serial = 1
  refresh = 7200 (2 hours)
  retry = 900 (15 mins)
  expire = 1209600 (14 days)
  default TTL = 60 (1 min)

```

Probando el “modo interactivo” de nslookup en Windows

```

C:\Users\Sergio DC\Tools\cmd.exe
λ nslookup
Servidor predeterminado: f0.41701109.41.andared.ced.junta-andalucia.es
Address: 192.168.8.1

> set type=CNAME
> host www.instagram.com
Servidor: z-p42-instagram.c10r.facebook.com
Addresses: 2a03:2880:f204:e5:face:b00c:0:4420
           31.13.83.174
Aliases: www.instagram.com

*** www.instagram.com no encuentra host: No response from server

```

Para ver el alias

```

> set type=SOA
> elpais.es
Servidor: f0.41701109.41.andared.ced.junta-andalucia.es
Address: 192.168.8.1

Respuesta no autoritativa:
elpais.es
  primary name server = ns1.p04.dyndect.net
  responsible mail addr = prisatecDNSMaster.t-prisa.com
  serial = 15
  refresh = 3600 (1 hour)
  retry = 600 (10 mins)
  expire = 604800 (7 days)
  default TTL = 1800 (30 mins)

es nameserver = h.nic.es
es nameserver = a.nic.es
es nameserver = c.nic.es
es nameserver = ns1.cesca.es
es nameserver = g.nic.es
es nameserver = f.nic.es
es nameserver = ns-es.nic.fr
a.nic.es internet address = 194.69.254.1
c.nic.es internet address = 194.0.34.53
f.nic.es internet address = 130.206.1.7
g.nic.es internet address = 204.61.217.1
h.nic.es internet address = 194.0.33.53
ns1.cesca.es internet address = 84.88.0.3
ns-es.nic.fr internet address = 194.0.9.1
a.nic.es AAAA IPv6 address = 2001:67c:21cc:2000::64:41
c.nic.es AAAA IPv6 address = 2001:678:44::53
f.nic.es AAAA IPv6 address = 2001:720:418:caf1::7
g.nic.es AAAA IPv6 address = 2001:500:14:7001:ad::1
h.nic.es AAAA IPv6 address = 2001:678:40::53

```

Si no ponemos [www](http://www.elpais.es). Al principio, se despliega más información

Configurar redireccionamiento – resolver direcciones de internet

```

SSINF-Debian-Base-5-PRUEBA [Corriendo]...
Archivo  Máquina  Ver  Entrada  Dispositivos

root@debian5-Pruebas:/# cd etc
root@debian5-Pruebas:/etc# cd bind
root@debian5-Pruebas:/etc/bind# ls -la
total 60
drwxr-sr-x  3 root bind 4096 May  4 13:29 .
drwxr-xr-x 74 root root 4096 May  5 13:36 ..
-rw-r--r--  1 root root 2761 Feb 15 08:51 bind.keys
-rw-r--r--  1 root root 237 Feb 15 08:51 db.0
-rw-r--r--  1 root root 271 Feb 15 08:51 db.127
-rw-r--r--  1 root root 237 Feb 15 08:51 db.255
-rw-r--r--  1 root root 353 Feb 15 08:51 db.empty
-rw-r--r--  1 root root 270 Feb 15 08:51 db.local
drwxr-sr-x  7 root bind 4096 Apr 30 14:36 .git
-rw-r--r--  1 root bind 463 Feb 15 08:51 named.conf
-rw-r--r--  1 root bind 498 Feb 15 08:51 named.conf.default-zones
-rw-r--r--  1 root bind 241 May  4 13:28 named.conf.local
-rw-r--r--  1 root bind 846 Feb 15 08:51 named.conf.options
-rw-r--r--  1 bind bind  77 Apr 30 14:15 rndc.key
-rw-r--r--  1 root root 1317 Feb 15 08:51 zones.rfc1918
root@debian5-Pruebas:/etc/bind# sudo nano named.conf.options

```

Desde etc/bind/ accedemos esta vez al archivo **named.conf.options**

```

SSINF-Debian-Base-5-PRUEBA [Corriendo]...
Archivo  Máquina  Ver  Entrada  Dispositivos  Ayuda

GNU nano 3.2  named.conf.options  Modified

options {
    directory "/var/cache/bind";

    // If there is a firewall between you and nameservers you want
    // to talk to, you may need to fix the firewall to allow multiple
    // 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 replacing
    // the all-0's placeholder.

    recursion yes;
    //forward first
    forward only;
    # allows recursive queries from Networks permitidas
    allow-recursion { 192.168.101.0/24; 192.168.102.0/24; 127.0.0.1; };
    allow-query { 192.168.101.0/24; 192.168.102.0/24; 127.0.0.1; };

    forwarders {
        8.8.8.8;
        8.8.4.4;
    };

    //=====
    // If BIND logs error messages about the root key being expired,
    // you will need to update your keys.  See https://www.isc.org/bind-keys
    //=====
    dnssec-validation auto;

    listen-on-v6 { any; };
};

Get Help  Write Out  Where Is  Cut Text  Justify  Cur Pos  M-U Undo
Exit      Read File  Replace  Uncut Text  To Spell  Go To Line  M-E Redo

CTRL DERECHA

```

Escribir esto en el archivo

```

SSINF-Debian-Base-5-PRUEBA [Corriendo]...
Archivo  Máquina  Ver  Entrada  Dispositivos

root@debian5-Pruebas:/# host www.elpais.com
www.elpais.com is an alias for prisa-us-eu.map.fastly.net.
prisa-us-eu.map.fastly.net has address 199.232.194.133
prisa-us-eu.map.fastly.net has address 199.232.198.133
root@debian5-Pruebas:/# host elpais.com
elpais.com has address 2.22.127.73
elpais.com has address 104.113.250.200
elpais.com has address 2.22.127.81
elpais.com has address 2.22.127.88
elpais.com has address 104.113.250.248
elpais.com has IPv6 address 2a02:26f0:13c::6871:faf8
elpais.com has IPv6 address 2a02:26f0:13c::216:7f49
elpais.com has IPv6 address 2a02:26f0:13c::216:7f58
elpais.com has IPv6 address 2a02:26f0:13c::6871:fac8
elpais.com has IPv6 address 2a02:26f0:13c::216:7f51
elpais.com mail is handled by 20 mail02.edicioneselpais.net.
elpais.com mail is handled by 10 mail01.edicioneselpais.net.
root@debian5-Pruebas:/# _

```

Probamos a resolver una dirección de internet ... y funciona!!

Cambiar la configuración del servidor DHCP para que actualice los nameservers

```

root@servidor-1:~# cd etc
root@servidor-1:/etc# ls
adduser.conf  discover-modprobe.conf  ld.so.conf.d  passwd  shadow-
adjtime      dkg  libaudit.conf  locale.alias  perl  skel
alternatives  emacs  environment  locale.gen  profile  ssh
apm  fstab  localtime  logcheck  protocols  subgid
apparmor.d  gail.conf  logrotate.conf  python  subuid
apt  groff  login.defs  python2.7  sudoers
bash.bashrc  group  logrotate.d  python3  sudoers.d
bash_completion  grub.d  machine-id  python3.7  sysctl.conf
bindresvport.blacklist  gshadow  magic  rc0.d  sysctl.d
binfmt.d  gshadow-  magic.mime  rc1.d  systemd
ca-certificates  hdparm.conf  mailcap  rc2.d  terminfo
calendar  host.conf  mailcap.order  rc3.d  timezone
console-setup  hostname  mime.types  rc4.d  tmpfiles.d
cron.d  hosts  nke2fs.conf  rc5.d  ucf.conf
cron.daily  hosts.allow  modprobe.d  rc6.d  udev
cron.hourly  hosts.deny  modules  reportbug.conf  ufw
cron.monthly  init.d  modules-load.d  resolv.conf  update-motd.d
crontab  initramfs-tools  motd  rmt  vim
cron.weekly  inputrc  mtab  rpc  wgetrc
dbus-1  iproute2  nanorc  rsyslog.conf  x11
debconf.conf  issue  network  rsyslog.d  xattr.conf
debian_version  issue.net  nsswitch.conf  security  xdg
default  kernel  os-release  selinux
deluser.conf  kernel-img.conf  opt  services
dhcp  ld.so.cache  pam.conf  sestatus.conf
dictionaries-common  discover.conf.d  ld.so.conf  pam.d  shadow
root@servidor-1:/etc# cd dhcp
root@servidor-1:/etc/dhcp# ls
dhclient.conf  dhclient-enter-hooks.d  dhclient-exit-hooks.d  dhcpd.conf  dhcpd.conf_
root@servidor-1:/etc/dhcp# nano dhcpd.conf

```

En el servidor, volvemos a `etc/dhcp/` y accedemos al archivo `dhcpd.conf`

```

GNU nano 3.2 /etc/dhcp/dhcpd.conf

default-lease-time 600;
max-lease-time 7200;
option domain-name-servers 192.168.101.11;

subnet 192.168.101.0 netmask 255.255.255.0 {
    range 192.168.101.100 192.168.101.200;
    option routers 192.168.101.10;
}

subnet 192.168.102.0 netmask 255.255.255.0 {
    range 192.168.102.100 192.168.102.200;
    option routers 192.168.102.10;
}

```

Eliminamos las dos líneas de `domain-name-server`, y colocamos una de ellas arriba, antes de las `subnet`, con la IP de la máquina `debian-5`, del servidor DNS

```

root@servidor-1:~# service isc-dhcp-server restart
root@servidor-1:~#

```

Reseteamos el servicio con el comando `service isc-dhcp-server restart`

Prueba final de redireccionamiento en Cliente-1

```

root@cliente-1:/etc# host pc10.ejemplo.com
pc10.ejemplo.com has address 64.190.62.111
pc10.ejemplo.com mail is handled by 0 localhost.
root@cliente-1:/etc#

```

```

root@cliente-1:/etc# host pc10.ejemplo.com
pc10.ejemplo.com has address 64.190.62.111
pc10.ejemplo.com mail is handled by 0 localhost.
root@cliente-1:/etc# dhclient -r
root@cliente-1:/etc# dhclient
root@cliente-1:/etc#

```

Probamos a resolver una dirección local, pero nos da una IP extraña... para empezar a solucionarlo, ejecutamos 1º el comando `dhclient -r` y después el `dhclient` a secas

```

root@cliente-1:~# dhclient -r
root@cliente-1:~# dhclient
root@cliente-1:~# cat /etc/resolv.conf
nameserver 192.168.101.11
root@cliente-1:~# host pc10.ejemplo.com
pc10.ejemplo.com has address 192.168.101.10
root@cliente-1:~#

```

Si ahora abrimos y vemos el contenido del archivo **resolv.conf** en **/etc/** podemos comprobar que, efectivamente, ha añadido automáticamente sólo la IP de la máquina Debian-5, del servidor DNS

```

root@cliente-1:~# sudo apt update
Get:1 http://security.debian.org/debian-security buster/updates InRelease [65.4 kB]
Get:2 http://deb.debian.org/debian buster InRelease [121 kB]
Get:3 http://deb.debian.org/debian buster-updates InRelease [51.9 kB]
Get:4 http://security.debian.org/debian-security buster/updates/main Sources [183 kB]
Get:5 http://security.debian.org/debian-security buster/updates/main amd64 Packages [285 kB]
Get:6 http://security.debian.org/debian-security buster/updates/main Translation-en [148 kB]
Get:7 http://deb.debian.org/debian buster/main Sources [7,841 kB]
0% [7 Sources 6,118 kB/7,841 kB 78%]

```

Vamos a probar que todo ha salido bien ejecutando el comando
`sudo apt update`

```

root@cliente-1:~# sudo apt update
Get:1 http://security.debian.org/debian-security buster/updates InRelease [65.4 kB]
Get:2 http://deb.debian.org/debian buster InRelease [121 kB]
Get:3 http://deb.debian.org/debian buster-updates InRelease [51.9 kB]
Get:4 http://security.debian.org/debian-security buster/updates/main Sources [183 kB]
Get:5 http://security.debian.org/debian-security buster/updates/main amd64 Packages [285 kB]
Get:6 http://security.debian.org/debian-security buster/updates/main Translation-en [148 kB]
Get:7 http://deb.debian.org/debian buster/main Sources [7,841 kB]
Get:8 http://deb.debian.org/debian buster-updates/main Sources.diff/Index [6,640 B]
Get:9 http://deb.debian.org/debian buster-updates/main amd64 Packages.diff/Index [6,640 B]
Get:10 http://deb.debian.org/debian buster-updates/main Translation-en.diff/Index [4,180 B]
Get:11 http://deb.debian.org/debian buster-updates/main Sources 2021-04-22-1401.14.pdiff [985 B]
Get:12 http://deb.debian.org/debian buster-updates/main Sources 2021-04-23-1401.02.pdiff [238 B]
Get:13 http://deb.debian.org/debian buster-updates/main amd64 Packages 2021-04-22-1401.14.pdiff [1,496 B]
Get:14 http://deb.debian.org/debian buster-updates/main amd64 Packages 2021-04-23-1401.02.pdiff [1,496 B]
Get:15 http://deb.debian.org/debian buster-updates/main Sources 2021-04-23-1401.02.pdiff [238 B]
Get:16 http://deb.debian.org/debian buster-updates/main amd64 Packages 2021-04-23-1401.02.pdiff [1,496 B]
Get:17 http://deb.debian.org/debian buster-updates/main Translation-en 2021-04-22-1401.14.pdiff [1,496 B]
Get:18 http://deb.debian.org/debian buster-updates/main Translation-en 2021-04-23-1401.02.pdiff [1,496 B]
Get:19 http://deb.debian.org/debian buster/main amd64 Packages [7,907 kB]
Get:20 http://deb.debian.org/debian buster/main Translation-en [5,969 kB]
Fetched 17.6 MB in 48s (368 kB/s)
Reading package lists... Done
Building dependency tree
Reading state information... Done
39 packages can be upgraded. Run 'apt list --upgradable' to see them.
N: Repository 'http://deb.debian.org/debian buster InRelease' changed its 'Version' value from '10.8' to '10.9'
root@cliente-1:~#

```

Efectivamente funciona!! Redirecciona en internet y puede actualizarse con el comando que hemos hecho, llegando de este modo al final de esta practica con éxito