CONFIGURACIÓN DE UN SERVIDOR DNS CON ACTUALIZACIÓN DINÁMICA POR DHCP
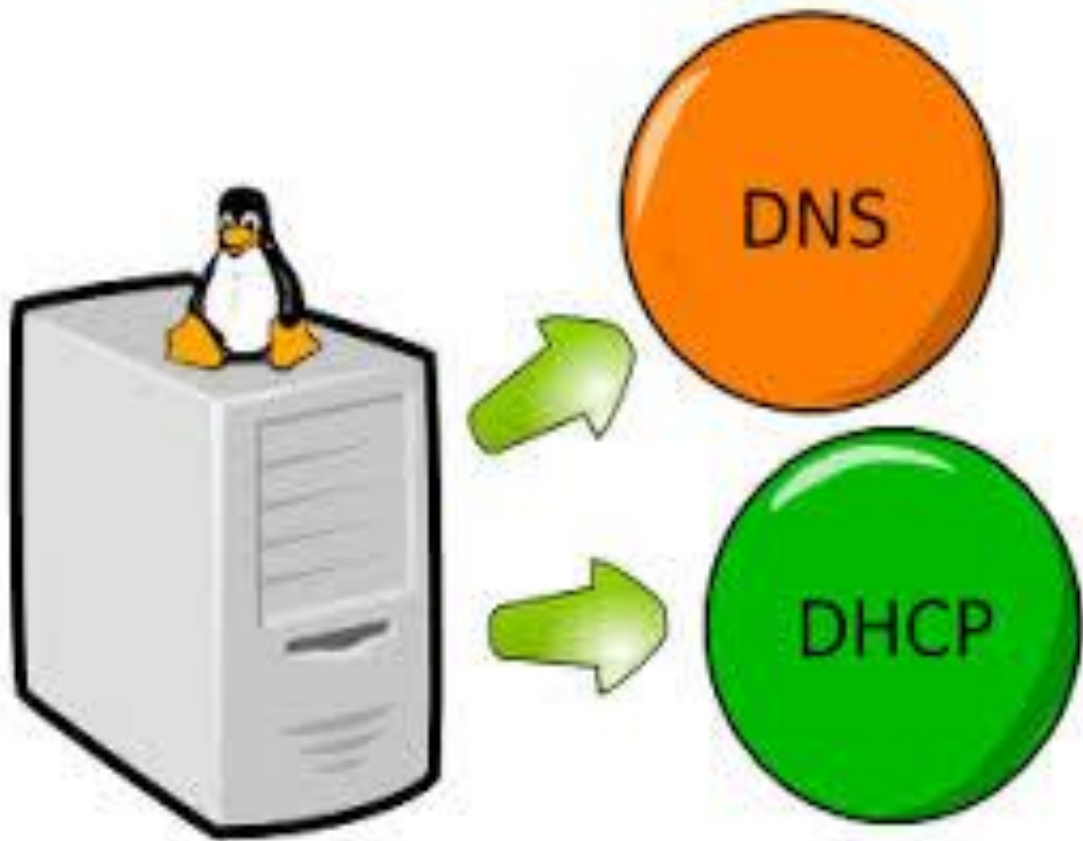

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Contenido

1.- Introducción

En esta tarea vamos a configurar un servidor DNS con actualización dinámica por DHCP, algo esencial para las redes modernas, ya que proporciona eficiencia, escalabilidad y facilidad de uso en la administración de direcciones IPs y nombres de host. Esto mejora la experiencia del usuario y optimiza la gestión de la infraestructura de red.

2.- Modificación fichero dhcpd.conf

Modificaremos el fichero de configuración dhcpd.conf del servicio DHCP para que permita la actualización dinámica del servidor DNS. Comenzaremos editando el fichero con ***sudo nano /etc/default/dhcpd.conf*** .

Una vez editado, modificaremos el dns por defecto y el rango de ips dinámicas.

```
  GNU nano 7.2                                    /etc/dhcp/dhcpd.conf *
# dhcpd.conf
#
# Sample configuration file for ISC dhcpd
#
# Attention: If /etc/ltsp/dhcpd.conf exists, that will be used as
# configuration file instead of this file.
#

# option definitions common to all supported networks...
option domain-name "isanchez.com";
option domain-name-servers 192.168.0.3;

default-lease-time 600;
max-lease-time 7200;

# The ddns-updates-style parameter controls whether or not the server will
# attempt to do a DNS update when a lease is confirmed. We default to the
# behavior of the version 2 packages ('none', since DHCP v2 didn't
# have support for DDNS.)
ddns-update-style none;

# If this DHCP server is the official DHCP server for the local
# network, the authoritative directive should be uncommented.
#authoritative;

# Use this to send dhcp log messages to a different log file (you also
# have to hack syslog.conf to complete the redirection).
#log-facility local7;

# No service will be given on this subnet, but declaring it helps the
# DHCP server to understand the network topology.

#subnet 10.152.187.0 netmask 255.255.255.0 {
#}

# This is a very basic subnet declaration.

subnet 192.168.0.0 netmask 255.255.255.0 {
  range 192.168.0.10 192.168.0.50;
  option routers 192.168.0.1;
  option subnet-mask 255.255.255.0;
  option domain-name-servers 192.168.0.3;
}

# This declaration allows BOOTP clients to get dynamic addresses,
# which we don't really recommend.
^G Help        ^O Write Out   ^W Where Is    ^K Cut         ^T Execute     ^C Location    M-U Undo    M-A Set
^X Exit        ^R Read File   ^\ Replace     ^U Paste       ^J Justify     ^/ Go To Line  M-E Redo    M-6 Copy
```

También modificaremos el archivo **/etc/default/isc-dhcp-server** para especificar que el servidor DHCP escuche en la interfaz **enp0s3.**


```
  GNU nano 7.2                                 /etc/default/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="enp0s3"
INTERFACESv6=""
```

3.- Reiniciar el servicio DHCP

Reiniciamos el servicio DHCP ejecutando el comando **systemctl restart isc-dhcp-server**

```
root@ivana:/home/ivana# systemctl restart isc-dhcp-server
root@ivana:/home/ivana# _
```

4.- Modificación fichero named.conf

Esta modificación del fichero de configuración DNS **named.conf.local** , la realizaremos para que permita actualizaciones desde el servicio DHCP.

```
  GNU nano 7.2                                    /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 "isanchez.com" {
      type master;
      file "/var/lib/bind/db.isanchez.com.";
      allow-update { key "dhcp-update"; };
      };
```

5.- Clave de actualización

Creamos una clave de actualización para DHCP. Para ello generamos una clave con el comando rndc-**confgen -a** y hacemos un sudo **cat /etc/bind/rndc.key** para ver la clave que nos ha generado.

```
Ubuntu Server (Instantánea 1antesWebmin) [Corriendo] - Oracle VM VirtualBo

Archivo    Máquina    Ver    Entrada    Dispositivos    Ayuda

root@ivana:/home/ivana# rndc-confgen -a
wrote key file "/etc/bind/rndc.key"
root@ivana:/home/ivana# cat /etc/bind/rndc.key
key "rndc-key" {
      algorithm hmac-sha256;
      secret "mcdm/i7u/PKWO1s5zPqjddnANEfPo5anmez1MWHxGew=";
};
root@ivana:/home/ivana# _
```

Ahora vamos a integrar la clave generada en **dhcpd.conf**. Para ello abrimos el archivo y le añadimos la definición de la clave.

Y también nos aseguraremos de que la sección de actualización en el archivo de configuración del DNS, **named.conf.local** , hace referencia a la clave.

6.- Comprobación sintaxis de los ficheros de configuración

Para DHCP *sudo dhcp -t*

Para DNS *sudo named-checkconf*

Sudo name-checkzone isanchez.com /etc/bind/db.isanchez.com

7.- Configuración cliente

Configuramos nuestro cliente con DHCP dinámica en el archivo interfaces:

Reiniciamos el servicio con *sudo systemctl restart networking*

8.- Comprobación del servicio DNS desde el servidor

El servidor DHCP, revisa las concesiones en sudo *cat /var/lib/dhcp/dhcpd.leases*

```
root@ivana:/home/ivana# cat /var/lib/dhcp/dhcpd.leases
# The format of this file is documented in the dhcpd.leases(5) manual page.
# This lease file was written by isc-dhcp-4.4.3-P1

# authoring-byte-order entry is generated, DO NOT DELETE
authoring-byte-order little-endian;

server-duid "\000\001\000\001.\317\334{\010\000'\240I\024";

lease 192.168.0.24 {
  starts 4 2024/11/21 08:14:11;
  ends 4 2024/11/21 08:24:11;
  cltt 4 2024/11/21 08:14:11;
  binding state active;
  next binding state free;
  rewind binding state free;
  hardware ethernet 08:00:27:ee:70:4d;
  uid "\377'\356pM\000\001\000\001.\317\361\306\010\000'\356pM";
  client-hostname "debian";
}
lease 192.168.0.24 {
  starts 4 2024/11/21 08:14:11;
  ends 4 2024/11/21 08:15:05;
  tstp 4 2024/11/21 08:15:05;
  cltt 4 2024/11/21 08:14:11;
  binding state free;
  hardware ethernet 08:00:27:ee:70:4d;
  uid "\377'\356pM\000\001\000\001.\317\361\306\010\000'\356pM";
}
lease 192.168.0.24 {
  starts 4 2024/11/21 08:15:09;
  ends 4 2024/11/21 08:25:09;
  cltt 4 2024/11/21 08:15:09;
  binding state active;
  next binding state free;
  rewind binding state free;
  hardware ethernet 08:00:27:ee:70:4d;
  uid "\377'\356pM\000\001\000\001.\317\361\306\010\000'\356pM";
  client-hostname "debian";
}
root@ivana:/home/ivana# _
```

Ejecutamos el comando **sudo nslookup** www.isanchez.com **127.0.0.1,** para consultar DNS
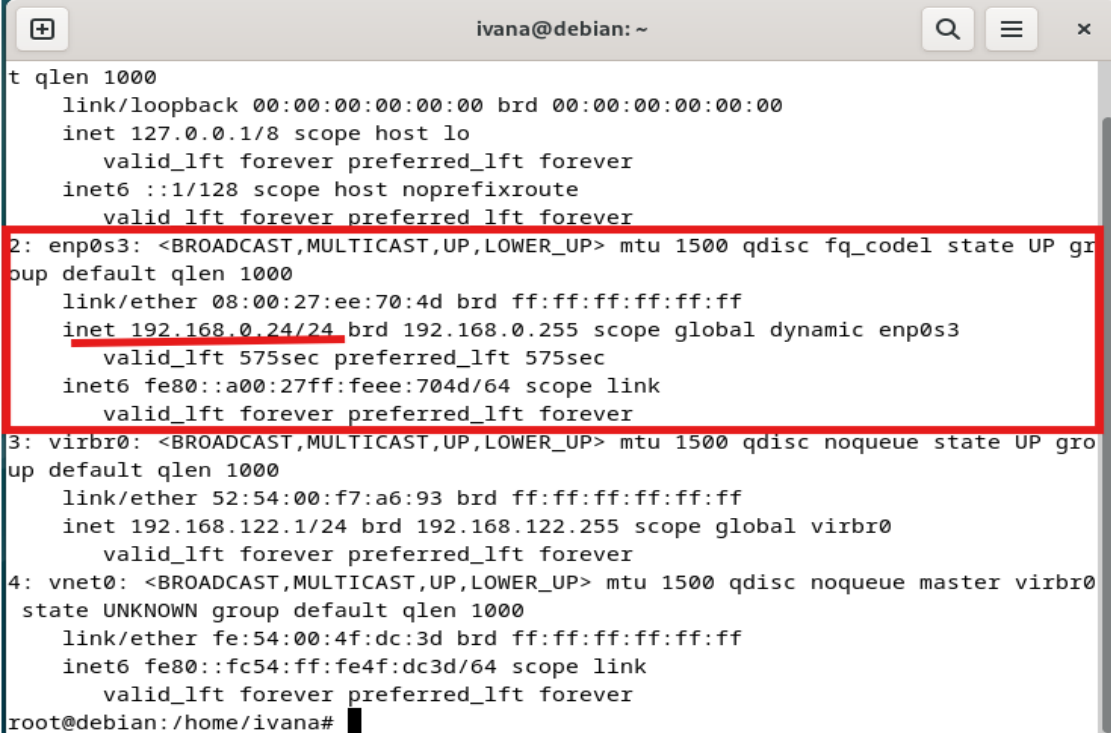
```
root@ivana:/home/ivana# nslookup www.isanchez.com 127.0.0.1
Server:         127.0.0.1
Address:        127.0.0.1#53

Name:   www.isanchez.com
Address: 192.168.0.37

root@ivana:/home/ivana#
```

9.- Comprobación del servicio DNS desde el cliente

Hacemos un ip addr show para verificar si el cliente ha recibido correctamente la dirección ip.

```
ivana@debian: ~

t 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 noprefixroute
       valid_lft forever preferred_lft forever
2: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP gr
oup default qlen 1000
    link/ether 08:00:27:ee:70:4d brd ff:ff:ff:ff:ff:ff
    inet 192.168.0.24/24 brd 192.168.0.255 scope global dynamic enp0s3
       valid_lft 575sec preferred_lft 575sec
    inet6 fe80::a00:27ff:feee:704d/64 scope link
       valid_lft forever preferred_lft forever
3: virbr0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc noqueue state UP gro
up default qlen 1000
    link/ether 52:54:00:f7:a6:93 brd ff:ff:ff:ff:ff:ff
    inet 192.168.122.1/24 brd 192.168.122.255 scope global virbr0
       valid_lft forever preferred_lft forever
4: vnet0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc noqueue master virbr0
 state UNKNOWN group default qlen 1000
    link/ether fe:54:00:4f:dc:3d brd ff:ff:ff:ff:ff:ff
    inet6 fe80::fc54:ff:fe4f:dc3d/64 scope link
       valid_lft forever preferred_lft forever
root@debian:/home/ivana#
```

Para comprobar la conexión, hacemos un ***ping www.isanchez.com***

```
root@debian:/home/ivana# ping www.isanchez.com
PING hdr-nlb5-4e815dd67a14bf7f.elb.us-east-2.amazonaws.com (3.130.253.23) 56(84)
 bytes of data.

^C
--- hdr-nlb5-4e815dd67a14bf7f.elb.us-east-2.amazonaws.com ping statistics ---
136 packets transmitted, 0 received, 100% packet loss, time 138631ms

root@debian:/home/ivana#
```

O también podemos hacer un ping al servidor

```
root@debian:/home/ivana# ping 192.168.0.22
PING 192.168.0.22 (192.168.0.22) 56(84) bytes of data.
64 bytes from 192.168.0.22: icmp_seq=1 ttl=64 time=0.536 ms
64 bytes from 192.168.0.22: icmp_seq=2 ttl=64 time=0.285 ms
64 bytes from 192.168.0.22: icmp_seq=3 ttl=64 time=0.405 ms
64 bytes from 192.168.0.22: icmp_seq=4 ttl=64 time=0.273 ms
^C
--- 192.168.0.22 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3018ms
rtt min/avg/max/mdev = 0.273/0.374/0.536/0.106 ms
root@debian:/home/ivana#
```

```
root@debian:/home/ivana# nslookup ivana.isanchez.com
;; communications error to 212.166.132.110#53: timed out
Server:         212.166.132.110
Address:        212.166.132.110#53

Non-authoritative answer:
ivana.isanchez.com      canonical name = traff-6.hugedomains.com.
traff-6.hugedomains.com canonical name = hdr-nlb10-d66bbad0736f8259.elb.us-east-
2.amazonaws.com.
Name:   hdr-nlb10-d66bbad0736f8259.elb.us-east-2.amazonaws.com
Address: 3.140.13.188
Name:   hdr-nlb10-d66bbad0736f8259.elb.us-east-2.amazonaws.com
Address: 18.119.154.66

root@debian:/home/ivana#
```