

GESTIÓ DE SISTEMES I XARXES

Part Gestió de Xarxes 2 (X2)

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Grup: 37

Data: 20-5-17

Scripts

confDNS.sh

Descripció: Configura el router per a que actui com a servidor DNS

```
#!/bin/bash
#Made by Sergi Cugat, Mihai Copil and Jordi Borrell
#25/02/17
    • Primer hem de asegurarnos que el script es executat com a root

#Comprovem si es executa com a root
ROOT_UID="0"

if [ "$UID" -ne "$ROOT_UID" ] ; then
    echo -e "Has de ser ROOT per fer això!"
    exit 1
fi

    • Tot seguit ens asegurem d'activar el forwarding dels paquets ficant un 1 al fitxer
      /proc/sys/net/ipv4/ip_forward

#Activem el forwarding
sudo echo "1" > /proc/sys/net/ipv4/ip_forward

    • Seguidament incloem l'instalació dels paquets necessaris per a configurar el servei
      DNS

#Instalació de paquets per al dns
echo "Vols instalar els següents paquets: bind9, bind9-doc i dnsutils? (escriu si en cas
afirmatiu)"

read -r instalar

if [ $instalar == "si" ];then
    sudo apt-get install bind9
    sudo apt-get install bind9-doc
    sudo apt-get install dnsutils
    echo "Paquets instalats"
fi
```

- A continuació eliminem l'arxiu /etc/bind/named.conf.local per a posteriorment crear el nostre propi amb nova informació respecte les zones que volem incluir dins el nostre servei DNS; 5 zones diferents, de les quals 3 son inverses (posteriorment crearem els arxius). Per tal d'aconseguir tenir visions diferents per a l'exterior i l'interior, afegirem tres vistes: la de la intranet per als nostres clients, la de la dmz i la de maquines externes (public).

```
sudo rm /etc/bind/named.conf.local
```

```
#Generem 3 vistes diferents, la intranet, la dmz i la publica restringint el accés a cada una d'elles segons la ip
```

```
echo "
view\"intranet\" {
    match-clients { 192.168.148.0/23; localhost; };
    recursion yes;
```

```
// We are the master server
```

```
zone \"internal\" {
    type master;
    file \"internal.db\";
};
```

```
// nom de zona inclou els bytes d'identificació de xarxa
```

```
// en ordre invers
zone \"148.168.192.in-addr.arpa\" {
    type master;
    file \"db.192.168.148\";
    notify no;
};
```

```
// nom de zona inclou els bytes d'identificació de xarxa
```

```
// en ordre invers
zone \"149.168.192.in-addr.arpa\" {
    type master;
    file \"db.192.168.149\";
    notify no;
};
```

```
// We are the master server
```

```
zone \"grup37.gsx\" {
    type master;
    file \"grup37.gsx.db\";
};
```

```
// nom de zona inclou els bytes d'identificació de xarxa
```

```

// en ordre invers
zone \"172.in-addr.arpa\" {
    type master;
    file \"db.172\";
    notify no;
};
include \"/etc/bind/named.conf.default-zones\";

};

view\"public\" {
    match-clients { any;};
    recursion yes;

// We are the master server
zone \"grup37.gsx\" {
    type master;
    file \"grup37externa.gsx.db\";
};

// nom de zona inclou els bytes d'identificacio de xarxa
// en ordre invers
zone \"10.21.1.in-addr.arpa\" {
    type master;
    file \"db.10.21.1\";
    notify no;
};

};

view\"dmz\" {
    match-clients { 172.17.37.0/24; };
    recursion no;

// We are the master server
zone \"grup37.gsx\" {
    type master;
    file \"grup37.gsx.db\";
};

// nom de zona inclou els bytes d'identificacio de xarxa
// en ordre invers
zone \"172.in-addr.arpa\" {
    type master;
    file \"db.172\";
    notify no;
};

};

```

```
" > /etc/bind/named.conf.local
```

- A continuació eliminem l'arxiu /etc/bind/named.conf.options per a posteriorment crear el nostre propi amb nova informació respecte les ip dels forwarders (en aquest cas les de la universitat); posant el forwarding dels queries desconeguts cap al servidor DNS del ISP (la universitat)

```
sudo rm /etc/bind/named.conf.options
```

```
echo "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.

    forwarders {
        10.45.1.2;
        10.40.1.2;
        10.40.1.108;
    };
}

//=====
===
// 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 yes;

auth-nxdomain no;  # conform to RFC1035
listen-on-v6 { any; };
};" > /etc/bind/named.conf.options
```

```
echo "// This is the primary configuration file for the BIND DNS server named.
```

```
//
```

```
// Please read /usr/share/doc/bind9/README.Debian.gz for information on the
```

```
// structure of BIND configuration files in Debian, *BEFORE* you customize  
// this configuration file.  
//  
// If you are just adding zones, please do that in /etc/bind/named.conf.local  
  
include \"/etc/bind/named.conf.options\";  
include \"/etc/bind/named.conf.local\";  
//include \"/etc/bind/named.conf.default-zones\";" >/etc/bind/named.conf
```

- Li indiquem al router que ell mateix es el servidor escrivint la IP local de la maquina: "127.0.0.1" al fitxer /etc/**resolv.conf**.

```
echo "domain grup37.gsx  
search grup37.gsx interna  
nameserver 127.0.0.1  
nameserver 10.45.1.2  
nameserver 10.40.1.2  
nameserver 10.40.1.108" > /etc/resolv.conf
```

```
apt-get install openssh-server
```

```
service ssh restart
```

```
#FEM UNA COPIA DE LES IPTABLES ACTUALS  
sudo iptables-save > iptablesGuardatComprovar
```

- Configurem les iptables per a que facin SNAT de totes les nostres adreces privades per l'adreça privada del router a la URV

```
#SNAT
```

```
iptables -t nat -A POSTROUTING -s 172.17.37.2/24 -o eth1 -j MASQUERADE
```

```
iptables -t nat -A POSTROUTING -s 192.168.148.4/23 -o eth1 -j MASQUERADE
```

- Configurem les iptables per a que facin DNAT re-dirigint el tràfic web (ports 80 i 443) sol·licitat al Router cap al servidor de la DMZ. Redirigeix també les connexions entrants al port 23 del router cap el port 22 del servidor de la DMZ

```
#DNAT
```

```
iptables -t nat -A PREROUTING -i eth1 -p tcp --dport 80 -j DNAT --to-destination  
172.17.37.2:80
```

```
iptables -t nat -A PREROUTING -i eth1 -p tcp --dport 443 -j DNAT --to-destination  
172.17.37.2:443
```

```
iptables -t nat -A PREROUTING -i eth1 -p tcp --dport 23 -j DNAT --to-destination  
172.17.37.2:22
```

```
service bind9 restart
```

```
named -u bind -4 -f -g
```

crear_zones.sh

Descripció: Fitxers de zona necessaris per a les noves vistes

```
echo "$TTL 604800  
@ IN SOA ns.grup37externa.gsx. root.ns.grup37externa.gsx. (  
        1 ; Serial  
        604800 ; Refresh  
        86400 ; Retry  
        2419200 ; Expire  
        604800 ) ; Negative Cache TTL  
;  
@ IN NS ns  
ns IN A 10.21.1.2  
www.taller CNAME ns  
www.tenda CNAME ns  
www.botiga CNAME ns  
correu CNAME ns  
smtp CNAME ns  
pop3 CNAME ns" > /var/cache/bind/grup37externa.gsx.db  
  
echo "$TTL 604800  
@ IN SOA ns.grup37externa.gsx. root.ns.grup37externa.gsx. (  
        1 ; Serial  
        604800 ; Refresh  
        86400 ; Retry  
        2419200 ; Expire  
        604800 ) ; Negative Cache TTL  
;  
@ IN NS ns.grup37externa.gsx.  
1 IN PTR ns.grup37externa.gsx.  
2 IN PTR www.taller.grup37.gsx" > /var/cache/bind/db.10.21.1
```

configServidorDhcp.sh i configClientDhcp.sh

Descripció: Configura el fitxer /etc/network/interfaces tant pel client com pel servidor per tal que busquin adreces dinàmicament al router. També es instala i activa el servei ssh.

```
#!/bin/bash
#vigilar amb MAC del servidor en cas d'usar un altre ordinador
sudo ifconfig docker0 down
sudo ifdown --force eth0
sudo ifdown --force eth1

sudo echo "auto lo
iface lo inet loopback

allow-hotplug eth0
iface eth0 inet dhcp

auto eth1
iface eth1 inet dhcp" > /etc/network/interfaces

ifup eth0

apt-get install openssh-server
service ssh restart
```

crear_web.sh

Descripció: Script que s'encarrega de generar el fitxers de configuració de les pagines web i també el contingut d'aquestes(html). També modifica el fitxer envvars per actualitzar certes variables globals necessaries per fer ús del apache2.

```
sudo apt-get install apache2
#Actualitzem les variables globals del sistema
echo "# envvars - default environment variables for apache2ctl

# this won't be correct after changing uid
unset HOME

# for supporting multiple apache2 instances
if [ \"\$APACHE_CONFDIR##/etc/apache2-\}" != \"\$APACHE_CONFDIR\}" ] ; then
    SUFFIX="-\$APACHE_CONFDIR##/etc/apache2-\}"
else
    SUFFIX=
```

```
fi
```

```
# Since there is no sane way to get the parsed apache2 config in scripts, some  
# settings are defined via environment variables and then used in apache2ctl,  
# /etc/init.d/apache2, /etc/logrotate.d/apache2, etc.
```

```
export APACHE_RUN_USER=milax
```

```
export APACHE_RUN_GROUP=root
```

```
# temporary state file location. This might be changed to /run in Wheezy+1
```

```
export APACHE_PID_FILE=/var/run/apache2/apache2$SUFFIX.pid
```

```
export APACHE_RUN_DIR=/var/run/apache2$SUFFIX
```

```
export APACHE_LOCK_DIR=/var/lock/apache2$SUFFIX
```

```
# Only /var/log/apache2 is handled by /etc/logrotate.d/apache2.
```

```
export APACHE_LOG_DIR=/var/log/apache2$SUFFIX
```

```
## The locale used by some modules like mod_dav
```

```
export LANG=C
```

```
## Uncomment the following line to use the system default locale instead:
```

```
#. /etc/default/locale
```

```
export LANG
```

```
## The command to get the status for 'apache2ctl status'.
```

```
## Some packages providing 'www-browser' need '--dump' instead of '-dump'.
```

```
#export APACHE_LYNX='www-browser -dump'
```

```
## If you need a higher file descriptor limit, uncomment and adjust the
```

```
## following line (default is 8192):
```

```
#APACHE_ULIMIT_MAX_FILES='ulimit -n 65536'
```

```
## If you would like to pass arguments to the web server, add them below
```

```
## to the APACHE_ARGUMENTS environment.
```

```
#export APACHE_ARGUMENTS=""
```

```
## Enable the debug mode for maintainer scripts.
```

```
## This will produce a verbose output on package installations of web server modules and  
## web application
```

```
## installations which interact with Apache
```

```
#export APACHE2_MAINTSCRIPT_DEBUG=1" > /etc/apache2/envvars
```

```
#Creem els fitxers de configuració de les webs
```

```
echo "
```

```
<VirtualHost *:80>
```

```
    ServerAdmin admin@milax
```

```
    ServerName www.taller.grup37.gsx
```

```
    DocumentRoot /var/www/taller
```

```
    ServerAlias www.taller.grup37.gsx www.taller
```

```
<Directory /var/www/taller/admin>
Options Includes
AllowOverride All
</Directory>
ErrorLog \$\{APACHE_LOG_DIR\}/error.log
CustomLog \$\{APACHE_LOG_DIR\}/access.log combined

</VirtualHost>" > /etc/apache2/sites-available/taller.conf

echo "
<VirtualHost *:80>

    ServerName www.tenda.grup37.gsx
    DocumentRoot /var/www/tenda
    ServerAlias www.tenda.grup37.gsx www.tenda
    ErrorLog \$\{APACHE_LOG_DIR\}/error.log
    CustomLog \$\{APACHE_LOG_DIR\}/access.log combined

</VirtualHost>" > /etc/apache2/sites-available/tenda.conf

mkdir /var/www/taller

#Creem els html de les webs
echo "<!DOCTYPE html>
<html>
    <head>
        <title>ERROR</title>
    </head>
    <body>
        <h1>ERROR: AQUI NO HAURIES D'HAVER ARRIBAT</h1>
    </body>
</html>" > /var/www/html/index.html

echo "<!DOCTYPE html>
<html>
    <head>
        <title>TALLER</title>
    </head>
    <body>
        <h1>WEB DE TALLER</h1>
    </body>
</html>" > /var/www/taller/index.html

echo "<!DOCTYPE html>
<html>
    <head>
```

```
<title>TENDA</title>
</head>
<body>
    <h1>WEB DE TENDA</h1>
</body>
</html>" > /var/www/tenda/index.html
```

guarda_web.sh

Descripció: Script que s'encarrega de guardar tots els fitxers pertanyents a la nostra web

```
sudo tar -czvf /home/milax/Desktop/websites.tgz /etc/apache2/sites-available/taller.conf
/etc/apache2/sites-available/tenda.conf /etc/apache2/envvars /var/www/html/index.html
/var/www/taller /var/www/tenda
```

inici_dmz_v3.sh

Descripció: Script que s'encarrega de restaurar tots els fitxers pertanyents a la nostra web i activar el servei.

```
cd /
tar -xzf /home/milax/Desktop/websites.tgz
cd /etc/apache2
.. ./envvars
a2ensite taller.conf
a2ensite tenda.conf
service apache2 restart
```

gestioApache2.sh

Descripció: Script que s'encarrega de preparar una zona dins d'alguns dels llocs web (www.taller) que requereixi la introducció d'un password per a poder-hi accedir.

```
cd /var/www/taller
mkdir admin
cd admin
touch .htaccess
echo "AuthType Basic
AuthName \"Zona Privada. Si us plau introduiu el password\"
AuthUserFile /var/www/taller/admin/.htpasswd"
```

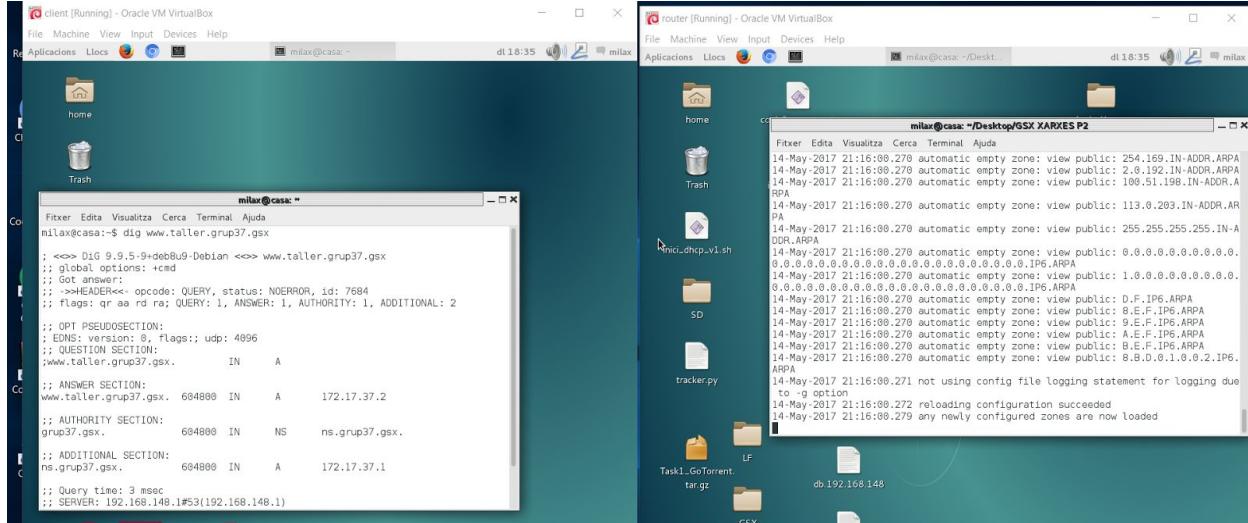
```
Require valid-user" > .htaccess  
htpasswd -c .htpasswd milax  
cp /var/www/taller/index.html /var/www/taller/admin  
rm /var/www/taller/index.html
```

Captures de pantalla

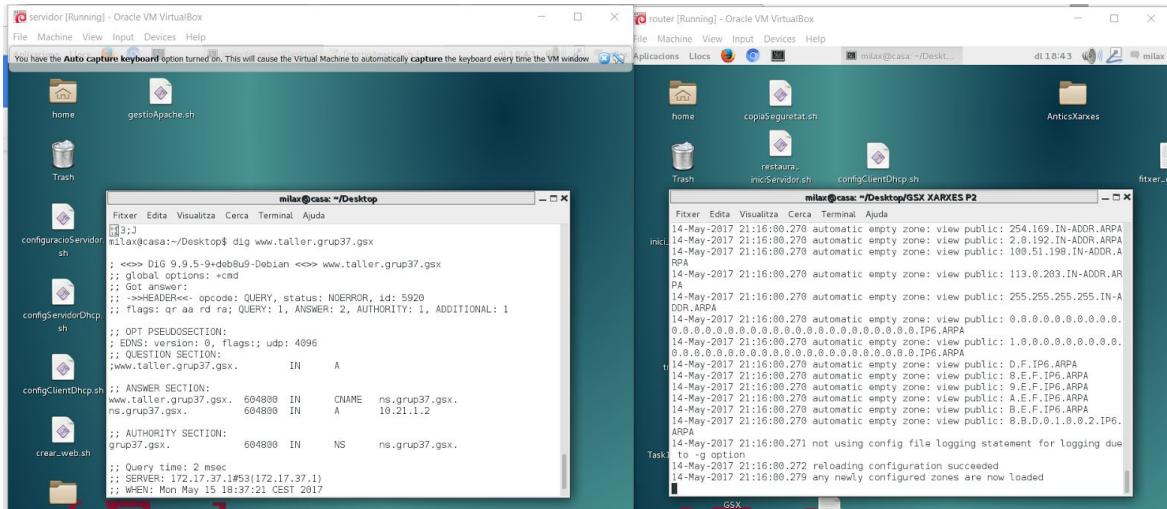
DNS-avancat

❖ Query recursiu

➤ des de la intranet:



➤ des de la DMZ:



```
milax@casa:~$ dig www.pc1.interna
; <>> DiG 9.9.5-9+deb8u9-Debian <>> www.pc1.interna
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NXDOMAIN, id: 41604
;; flags: qr rd ra; QUERY: 1, ANSWER: 0, AUTHORITY: 1, ADDITIONAL: 1
;;
;; OPT PSEUDOSECTION:
;; EDNS: version: 0, flags:; udp: 4096
;; QUESTION SECTION:
;www.pc1.interna.           IN      A
;;
;; AUTHORITY SECTION:
.a.          10800   IN      SOA     a.root-servers.net. nstld.verisi
gn-grs.com. 2017051501 1800 900 604800 86400
;;
;; Query time: 3707 msec
;; SERVER: 172.17.37.1#53(172.17.37.1)
;; WHEN: Mon May 15 19:31:47 CEST 2017
;; MSG SIZE rcvd: 119
milax@casa:~$
```

➤ des de una màquina externa:

```
milax@d104:~$ sudo dig www.taller.grup37.gsx
; <>> DiG 9.9.5-9+deb8u10-Debian <>> www.taller.grup37.gsx
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 4559
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 2, AUTHORITY: 1, ADDITIONAL: 1
;;
;; OPT PSEUDOSECTION:
;; EDNS: version: 0, flags:; udp: 4096
;; QUESTION SECTION:
;www.taller.grup37.gsx.       IN      A
;;
;; ANSWER SECTION:
www.taller.grup37.gsx. 604800  IN      CNAME    ns.grup37.gsx.
ns.grup37.gsx.          604800  IN      A        10.21.1.2
;;
;; AUTHORITY SECTION:
grup37.gsx.              604800  IN      NS       ns.grup37.gsx.
;;
;; Query time: 1 msec
;; SERVER: 10.21.1.2#53(10.21.1.2)
;; WHEN: Tue May 16 11:41:01 CEST 2017
```

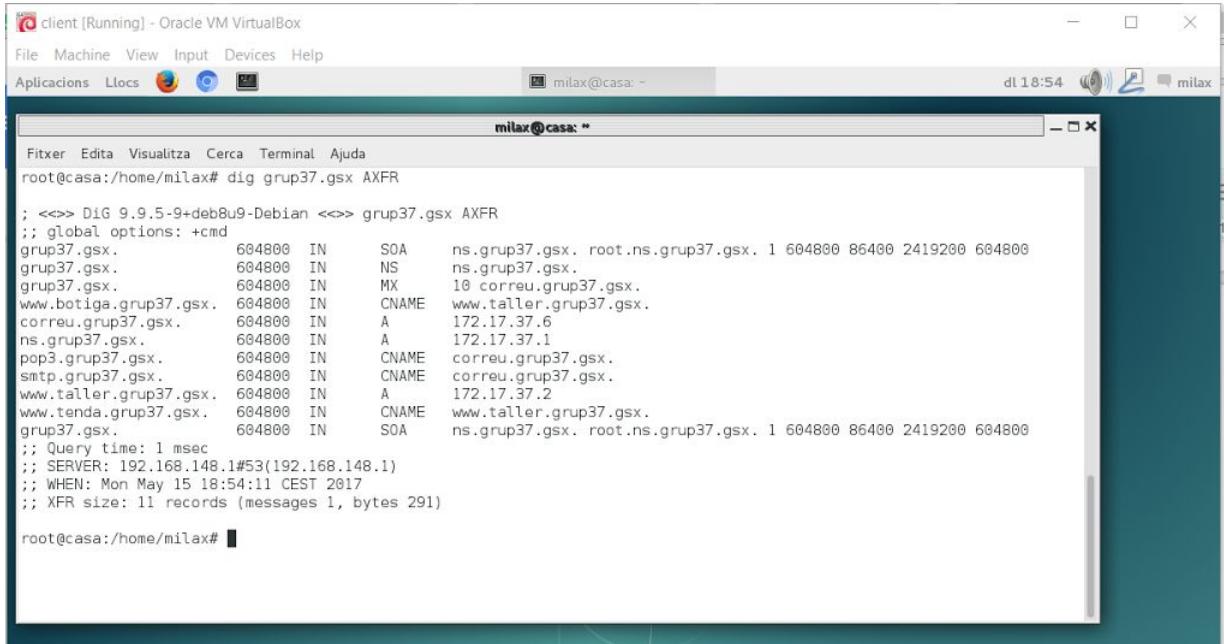
❖ Transferència de zona

➤ des del localhost:



```
milax@casa:~$ dig grup37.gs AXFR
;; Connection to 80.58.61.254#53(80.58.61.254) for grup37.gs failed: connection
refused.
milax@casa:~$
```

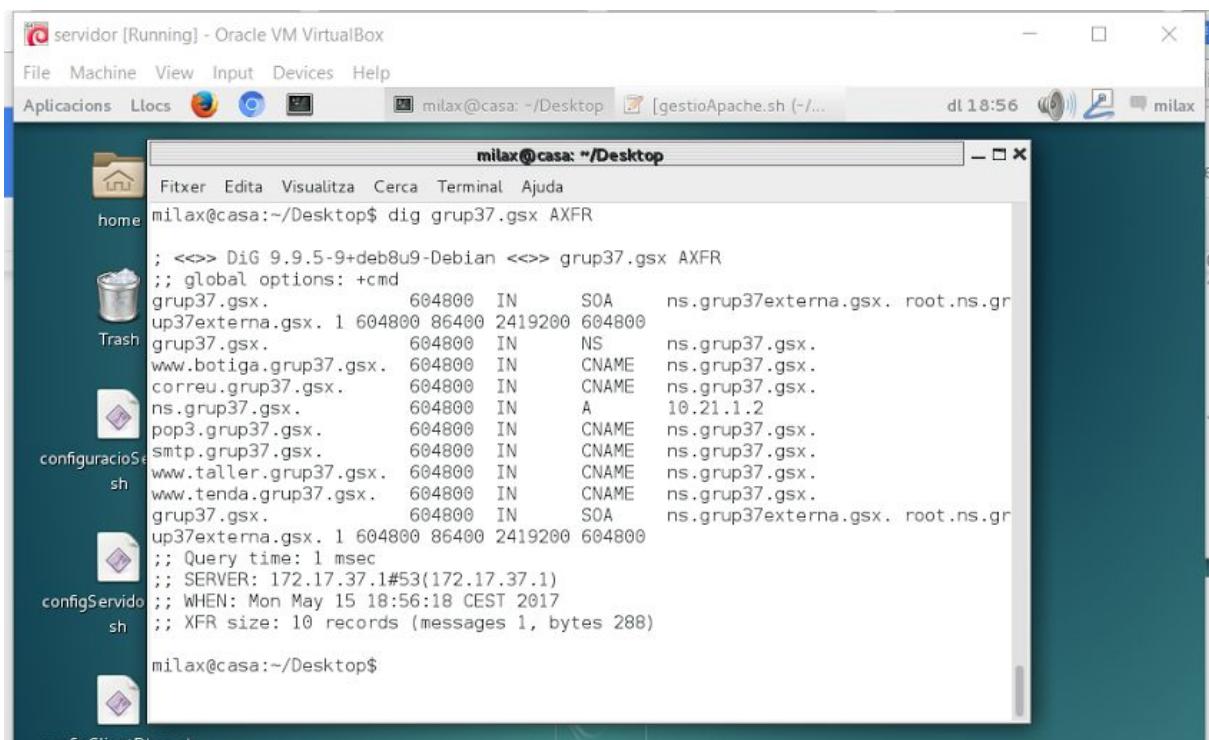
➤ des de la intranet:



```
root@casa:/home/milax# dig grup37.gs AXFR
; <>> DiG 9.9.5-9+deb8u9-Debian <>> grup37.gs AXFR
;; global options: +cmd
grup37.gs.      604800 IN      SOA    ns.grup37.gs. root.ns.grup37.gs. 1 604800 86400 2419200 604800
grup37.gs.      604800 IN      NS     ns.grup37.gs.
grup37.gs.      604800 IN      MX     10 correu.grup37.gs.
www.botiga.grup37.gs. 604800 IN      CNAME  www.taller.grup37.gs.
correu.grup37.gs. 604800 IN      A      172.17.37.6
ns.grup37.gs.   604800 IN      A      172.17.37.1
pop3.grup37.gs. 604800 IN      CNAME  correu.grup37.gs.
smtp.grup37.gs. 604800 IN      CNAME  correu.grup37.gs.
www.taller.grup37.gs. 604800 IN      A      172.17.37.2
www.tenda.grup37.gs. 604800 IN      CNAME  www.taller.grup37.gs.
grup37.gs.      604800 IN      SOA    ns.grup37.gs. root.ns.grup37.gs. 1 604800 86400 2419200 604800
;; Query time: 1 msec
;; SERVER: 192.168.148.1#53(192.168.148.1)
;; WHEN: Mon May 15 18:54:11 CEST 2017
;; XFR size: 11 records {messages 1, bytes 291}

root@casa:/home/milax#
```

> des de la DMZ:

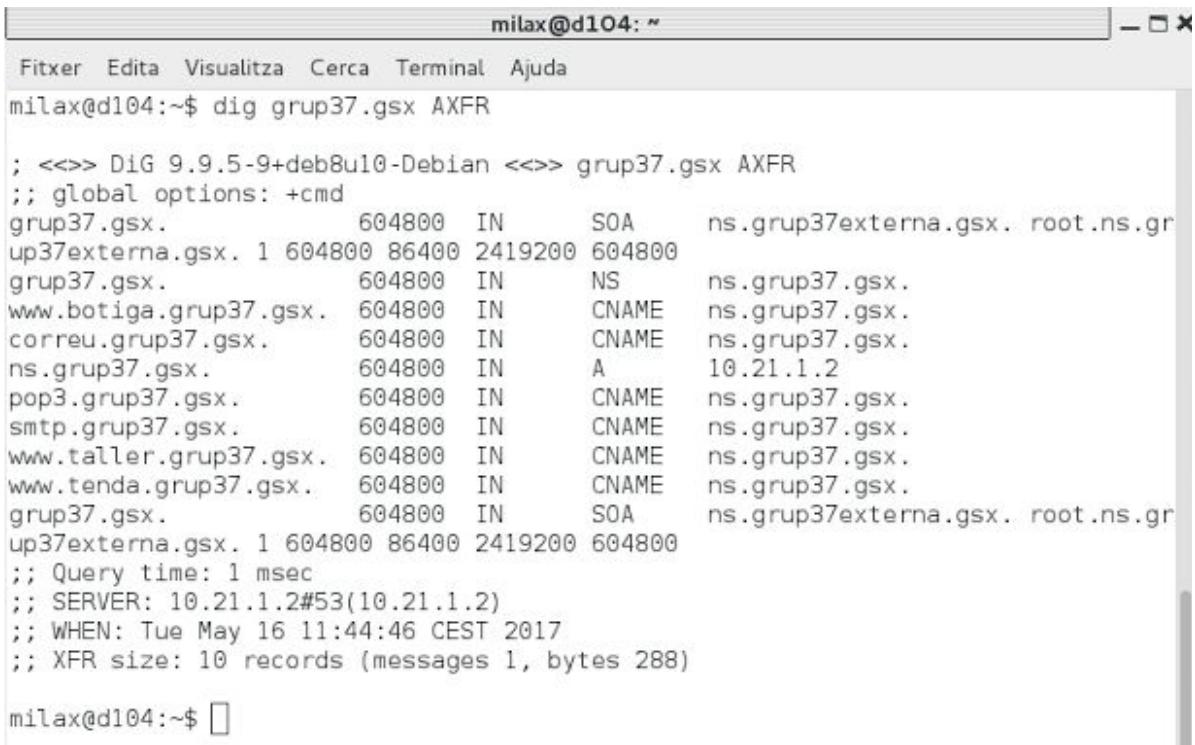


```
milax@casa: ~/Desktop
milax@casa:~/Desktop$ dig grp37.gsx AXFR

; <>> DiG 9.9.5-9+deb8u9-Debian <>> grp37.gsx AXFR
;; global options: +cmd
grp37.gsx.          604800  IN      SOA    ns.grp37externa.gsx. root.ns.gr
up37externa.gsx. 1 604800 86400 2419200 604800
grp37.gsx.          604800  IN      NS     ns.grp37.gsx.
www.botiga.grp37.gsx. 604800  IN      CNAME  ns.grp37.gsx.
correu.grp37.gsx.   604800  IN      CNAME  ns.grp37.gsx.
ns.grp37.gsx.       604800  IN      A      10.21.1.2
pop3.grp37.gsx.    604800  IN      CNAME  ns.grp37.gsx.
smtp.grp37.gsx.    604800  IN      CNAME  ns.grp37.gsx.
www.taller.grp37.gsx. 604800  IN      CNAME  ns.grp37.gsx.
www.tenda.grp37.gsx. 604800  IN      CNAME  ns.grp37.gsx.
grp37.gsx.          604800  IN      SOA    ns.grp37externa.gsx. root.ns.gr
up37externa.gsx. 1 604800 86400 2419200 604800
;; Query time: 1 msec
;; SERVER: 172.17.37.1#53(172.17.37.1)
;; WHEN: Mon May 15 18:56:18 CEST 2017
;; XFR size: 10 records (messages 1, bytes 288)

milax@casa:~/Desktop$
```

> des d'una màquina externa:



```
milax@d104: ~
milax@d104:~$ dig grp37.gsx AXFR

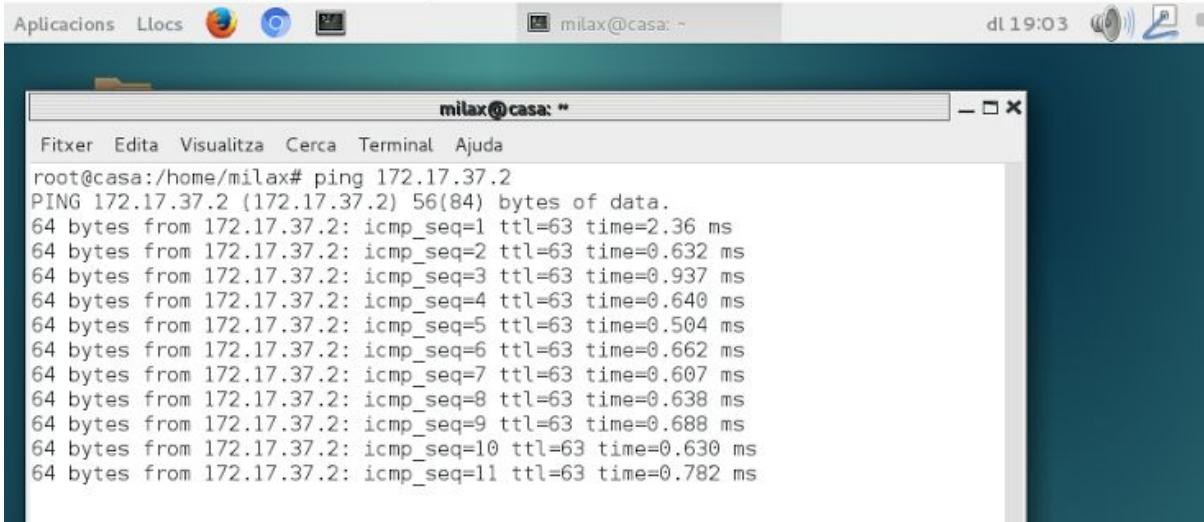
; <>> DiG 9.9.5-9+deb8u10-Debian <>> grp37.gsx AXFR
;; global options: +cmd
grp37.gsx.          604800  IN      SOA    ns.grp37externa.gsx. root.ns.gr
up37externa.gsx. 1 604800 86400 2419200 604800
grp37.gsx.          604800  IN      NS     ns.grp37.gsx.
www.botiga.grp37.gsx. 604800  IN      CNAME  ns.grp37.gsx.
correu.grp37.gsx.   604800  IN      CNAME  ns.grp37.gsx.
ns.grp37.gsx.       604800  IN      A      10.21.1.2
pop3.grp37.gsx.    604800  IN      CNAME  ns.grp37.gsx.
smtp.grp37.gsx.    604800  IN      CNAME  ns.grp37.gsx.
www.taller.grp37.gsx. 604800  IN      CNAME  ns.grp37.gsx.
www.tenda.grp37.gsx. 604800  IN      CNAME  ns.grp37.gsx.
grp37.gsx.          604800  IN      SOA    ns.grp37externa.gsx. root.ns.gr
up37externa.gsx. 1 604800 86400 2419200 604800
;; Query time: 1 msec
;; SERVER: 10.21.1.2#53(10.21.1.2)
;; WHEN: Tue May 16 11:44:46 CEST 2017
;; XFR size: 10 records (messages 1, bytes 288)

milax@d104:~$
```

- ❖ Query des de la intranet demandant per un servidor web extern:

```
milax@casa: ~/Desktop
Fitxer Edita Visualitza Cerca Terminal Ajuda
milax@casa:~/Desktop$ ping www.google.es
ping: unknown host www.google.es
milax@casa:~/Desktop$
```

- ❖ Queries des de la intranet demandant pels nostres servidors web:



The screenshot shows a Linux desktop interface with a terminal window open. The terminal window title is "milax@casa: ~". The terminal content displays the output of a "ping" command to the IP address 172.17.37.2. The output shows 11 ICMP echo requests sent, each with a sequence number (icmp_seq) from 1 to 11, a TTL of 63, and a time between 0.632 ms and 0.782 ms.

```
milax@casa: ~
Fitxer Edita Visualitza Cerca Terminal Ajuda
root@casa:/home/milax# ping 172.17.37.2
PING 172.17.37.2 (172.17.37.2) 56(84) bytes of data.
64 bytes from 172.17.37.2: icmp_seq=1 ttl=63 time=2.36 ms
64 bytes from 172.17.37.2: icmp_seq=2 ttl=63 time=0.632 ms
64 bytes from 172.17.37.2: icmp_seq=3 ttl=63 time=0.937 ms
64 bytes from 172.17.37.2: icmp_seq=4 ttl=63 time=0.640 ms
64 bytes from 172.17.37.2: icmp_seq=5 ttl=63 time=0.504 ms
64 bytes from 172.17.37.2: icmp_seq=6 ttl=63 time=0.662 ms
64 bytes from 172.17.37.2: icmp_seq=7 ttl=63 time=0.607 ms
64 bytes from 172.17.37.2: icmp_seq=8 ttl=63 time=0.638 ms
64 bytes from 172.17.37.2: icmp_seq=9 ttl=63 time=0.688 ms
64 bytes from 172.17.37.2: icmp_seq=10 ttl=63 time=0.630 ms
64 bytes from 172.17.37.2: icmp_seq=11 ttl=63 time=0.782 ms
```

client [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Aplicacions Llocs

milax@casa: ~

```
milax@casa: ~
Fitxer Edita Visualitza Cerca Terminal Ajuda
root@casa:/home/milax# ping www.taller.grup37.gsx
PING www.taller.grup37.gsx (172.17.37.2) 56(84) bytes of data.
64 bytes from 172.17.37.2: icmp_seq=1 ttl=63 time=0.650 ms
64 bytes from 172.17.37.2: icmp_seq=2 ttl=63 time=0.630 ms
64 bytes from 172.17.37.2: icmp_seq=3 ttl=63 time=0.587 ms
64 bytes from 172.17.37.2: icmp_seq=4 ttl=63 time=0.661 ms
64 bytes from 172.17.37.2: icmp_seq=5 ttl=63 time=0.699 ms
^C
--- www.taller.grup37.gsx ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 3997ms
rtt min/avg/max/mdev = 0.587/0.645/0.699/0.043 ms
root@casa:/home/milax# ping www.tenda.grup37.gsx
PING www.taller.grup37.gsx (172.17.37.2) 56(84) bytes of data.
64 bytes from 172.17.37.2: icmp_seq=1 ttl=63 time=0.534 ms
64 bytes from 172.17.37.2: icmp_seq=2 ttl=63 time=0.515 ms
64 bytes from 172.17.37.2: icmp_seq=3 ttl=63 time=0.559 ms
64 bytes from 172.17.37.2: icmp_seq=4 ttl=63 time=0.610 ms
64 bytes from 172.17.37.2: icmp_seq=5 ttl=63 time=0.624 ms
64 bytes from 172.17.37.2: icmp_seq=6 ttl=63 time=0.706 ms
^C
--- www.taller.grup37.gsx ping statistics ---
6 packets transmitted, 6 received, 0% packet loss, time 4999ms
rtt min/avg/max/mdev = 0.515/0.591/0.706/0.067 ms
```

- ❖ Queries des d'una màquina externa demanant pels nostres servidors web:

milax@d104: ~

Fitxer Edita Visualitza Cerca Terminal Ajuda

```
milax@d104:~$ sudo ping www.taller.grup37.gsx
PING ns.grup37.gsx (10.21.1.2) 56(84) bytes of data.
64 bytes from 10.21.1.2: icmp_seq=1 ttl=64 time=0.193 ms
64 bytes from 10.21.1.2: icmp_seq=2 ttl=64 time=0.219 ms
64 bytes from 10.21.1.2: icmp_seq=3 ttl=64 time=0.241 ms
64 bytes from 10.21.1.2: icmp_seq=4 ttl=64 time=0.241 ms
64 bytes from 10.21.1.2: icmp_seq=5 ttl=64 time=0.249 ms
^C
--- ns.grup37.gsx ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 3998ms
rtt min/avg/max/mdev = 0.193/0.228/0.249/0.026 ms
milax@d104:~$ 
```

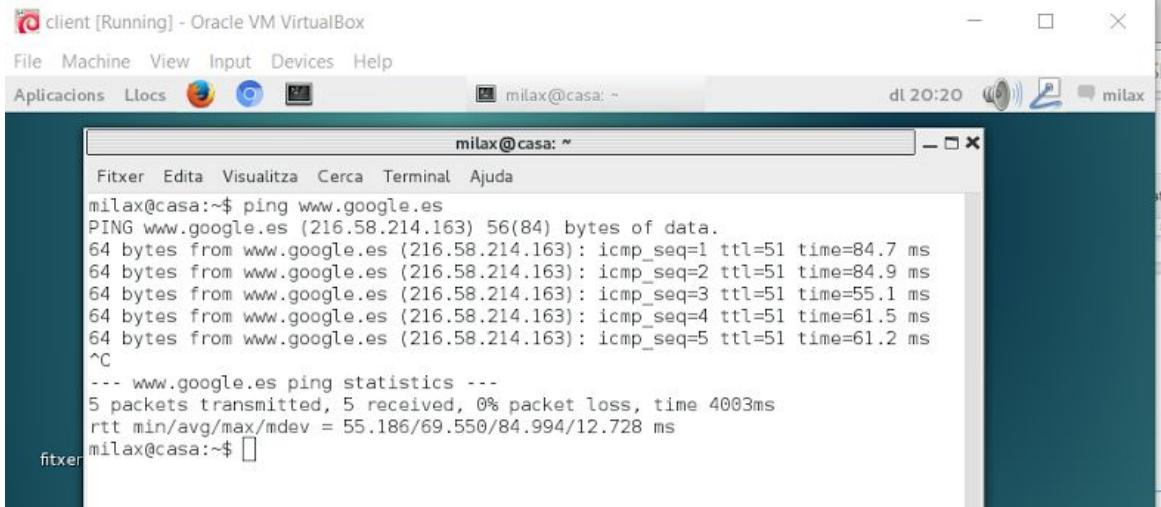
milax@d104:~

Fitxer Edita Visualitza Cerca Terminal Ajuda

```
milax@d104:~$ sudo ping www.tenda.grup37.gsx
PING ns.grup37.gsx (10.21.1.2) 56(84) bytes of data.
64 bytes from 10.21.1.2: icmp_seq=1 ttl=64 time=0.253 ms
64 bytes from 10.21.1.2: icmp_seq=2 ttl=64 time=0.252 ms
64 bytes from 10.21.1.2: icmp_seq=3 ttl=64 time=0.230 ms
64 bytes from 10.21.1.2: icmp_seq=4 ttl=64 time=0.279 ms
64 bytes from 10.21.1.2: icmp_seq=5 ttl=64 time=0.263 ms
^C
--- ns.grup37.gsx ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 4001ms
rtt min/avg/max/mdev = 0.230/0.255/0.279/0.021 ms
milax@d104:~$ 
```

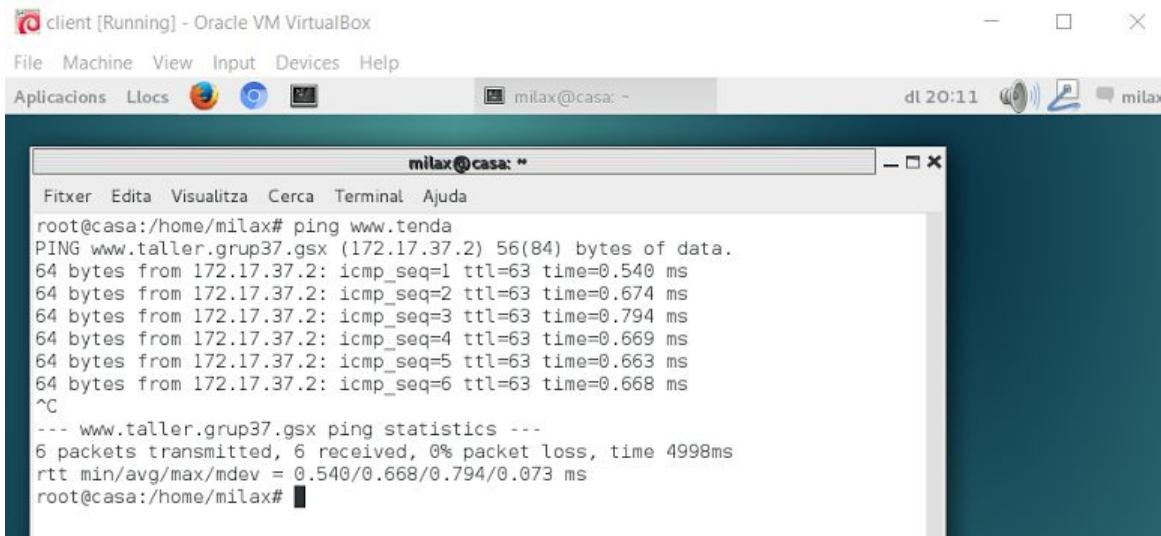
SSH i NAT

- ❖ Des del client (a la intranet):
 - query DNS extern:



```
client [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Aplicaciones Llocs   milax@casa: ~ dl 20:20
milax@casa:~$ ping www.google.es
PING www.google.es (216.58.214.163) 56(84) bytes of data.
64 bytes from www.google.es (216.58.214.163): icmp_seq=1 ttl=51 time=84.7 ms
64 bytes from www.google.es (216.58.214.163): icmp_seq=2 ttl=51 time=84.9 ms
64 bytes from www.google.es (216.58.214.163): icmp_seq=3 ttl=51 time=55.1 ms
64 bytes from www.google.es (216.58.214.163): icmp_seq=4 ttl=51 time=61.5 ms
64 bytes from www.google.es (216.58.214.163): icmp_seq=5 ttl=51 time=61.2 ms
^C
--- www.google.es ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 4003ms
rtt min/avg/max/mdev = 55.186/69.550/84.994/12.728 ms
milax@casa:~$ fitxer
```

➤ ping www.tenda:



```
client [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Aplicaciones Llocs   milax@casa: ~ dl 20:11
milax@casa:~$ 
Fitxer Edita Visualitza Cerca Terminal Ajuda
root@casa:/home/milax# ping www.tenda
PING www.taller.grup37.gsx (172.17.37.2) 56(84) bytes of data.
64 bytes from 172.17.37.2: icmp_seq=1 ttl=63 time=0.540 ms
64 bytes from 172.17.37.2: icmp_seq=2 ttl=63 time=0.674 ms
64 bytes from 172.17.37.2: icmp_seq=3 ttl=63 time=0.794 ms
64 bytes from 172.17.37.2: icmp_seq=4 ttl=63 time=0.669 ms
64 bytes from 172.17.37.2: icmp_seq=5 ttl=63 time=0.663 ms
64 bytes from 172.17.37.2: icmp_seq=6 ttl=63 time=0.668 ms
^C
--- www.taller.grup37.gsx ping statistics ---
6 packets transmitted, 6 received, 0% packet loss, time 4998ms
rtt min/avg/max/mdev = 0.540/0.668/0.794/0.073 ms
root@casa:/home/milax#
```

➤ ssh a www.taller



client [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Aplicaciones Llocs

milax@casa: ~

milax@casa:~\$ ssh www.taller

milax@www.taller's password:

The programs included with the Debian GNU/Linux system are free software; the exact distribution terms for each program are described in the individual files in /usr/share/doc/*copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent permitted by applicable law.

Last login: Sun May 14 18:59:44 2017 from 192.168.148.4

milax@casa:~\$

➤ ssh al router



client [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Aplicaciones Llocs

milax@casa: ~

milax@casa:~\$ ssh 10.0.3.15

milax@10.0.3.15's password:

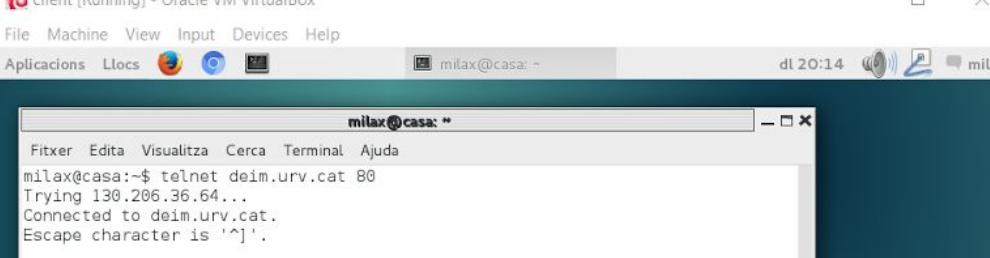
The programs included with the Debian GNU/Linux system are free software; the exact distribution terms for each program are described in the individual files in /usr/share/doc/*copyright.

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Last login: Sun May 14 19:01:01 2017 from 192.168.148.4

milax@casa:~\$

➤ telnet deim.urv.cat 80



client [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Aplicaciones Llocs

milax@casa: ~

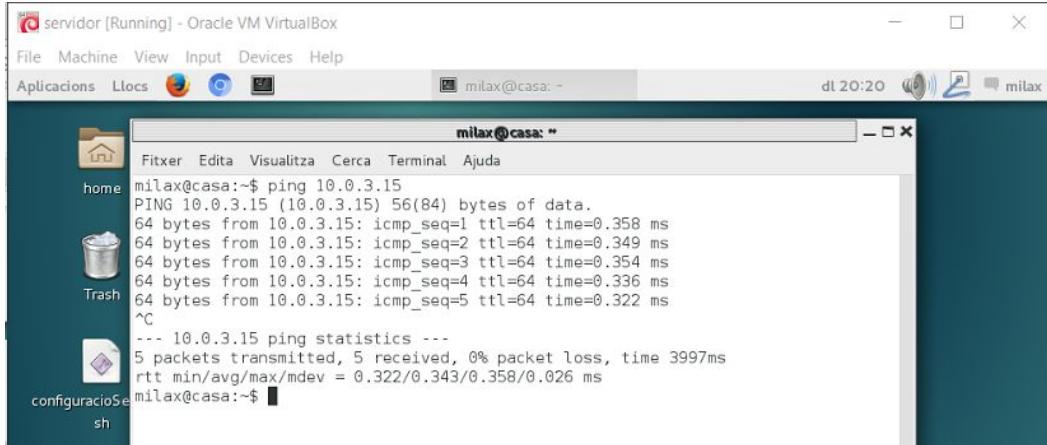
milax@casa:~\$ telnet deim.urv.cat 80

Trying 130.206.36.64...

Connected to deim.urv.cat.

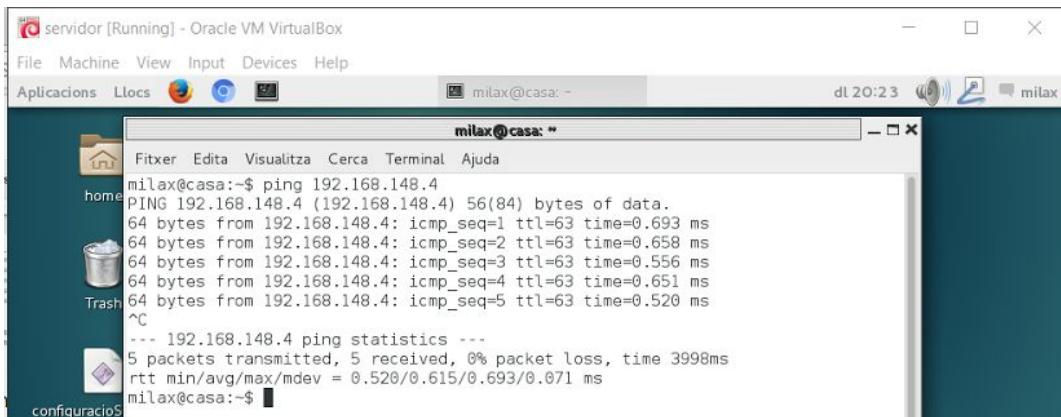
Escape character is '^]'.

❖ Des del servidor (a la DMZ):
➤ ping al router



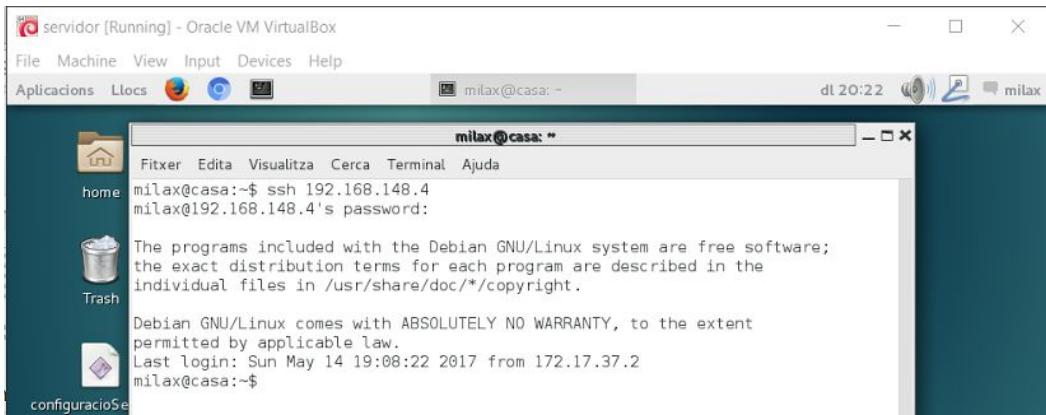
```
servidor [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Aplicacions Llocs   milax@casa: ~ dl 20:20
milax@casa:~$ ping 10.0.3.15
PING 10.0.3.15 (10.0.3.15) 56(84) bytes of data.
64 bytes from 10.0.3.15: icmp_seq=1 ttl=64 time=0.358 ms
64 bytes from 10.0.3.15: icmp_seq=2 ttl=64 time=0.349 ms
64 bytes from 10.0.3.15: icmp_seq=3 ttl=64 time=0.354 ms
64 bytes from 10.0.3.15: icmp_seq=4 ttl=64 time=0.336 ms
64 bytes from 10.0.3.15: icmp_seq=5 ttl=64 time=0.322 ms
^C
--- 10.0.3.15 ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 3997ms
rtt min/avg/max/mdev = 0.322/0.343/0.358/0.026 ms
milax@casa:~$
```

➤ ping al client de la intranet



```
servidor [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Aplicacions Llocs   milax@casa: ~ dl 20:23
milax@casa:~$ ping 192.168.148.4
PING 192.168.148.4 (192.168.148.4) 56(84) bytes of data.
64 bytes from 192.168.148.4: icmp_seq=1 ttl=63 time=0.693 ms
64 bytes from 192.168.148.4: icmp_seq=2 ttl=63 time=0.658 ms
64 bytes from 192.168.148.4: icmp_seq=3 ttl=63 time=0.556 ms
64 bytes from 192.168.148.4: icmp_seq=4 ttl=63 time=0.651 ms
64 bytes from 192.168.148.4: icmp_seq=5 ttl=63 time=0.520 ms
^C
--- 192.168.148.4 ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 3998ms
rtt min/avg/max/mdev = 0.520/0.615/0.693/0.071 ms
milax@casa:~$
```

➤ ssh al client de la intranet



```
servidor [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Aplicacions Llocs   milax@casa: ~ dl 20:22
milax@casa:~$ ssh 192.168.148.4
milax@192.168.148.4's password:
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the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Sun May 14 19:08:22 2017 from 172.17.37.2
milax@casa:~$
```

❖ Des de l'exterior:

➤ ping al router

```
milax@d104:~
```

Fitxer Edita Visualitza Cerca Terminal Ajuda

```
milax@d104:~$ sudo ping 10.21.1.2
PING 10.21.1.2 (10.21.1.2) 56(84) bytes of data.
64 bytes from 10.21.1.2: icmp_seq=1 ttl=64 time=0.240 ms
64 bytes from 10.21.1.2: icmp_seq=2 ttl=64 time=0.287 ms
64 bytes from 10.21.1.2: icmp_seq=3 ttl=64 time=0.231 ms
64 bytes from 10.21.1.2: icmp_seq=4 ttl=64 time=0.248 ms
^C
--- 10.21.1.2 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 2997ms
rtt min/avg/max/mdev = 0.231/0.251/0.287/0.026 ms
milax@d104:~$
```

➤ ssh a www.viatjar

```
milax@d102:~
```

Fitxer Edita Visualitza Cerca Terminal Ajuda

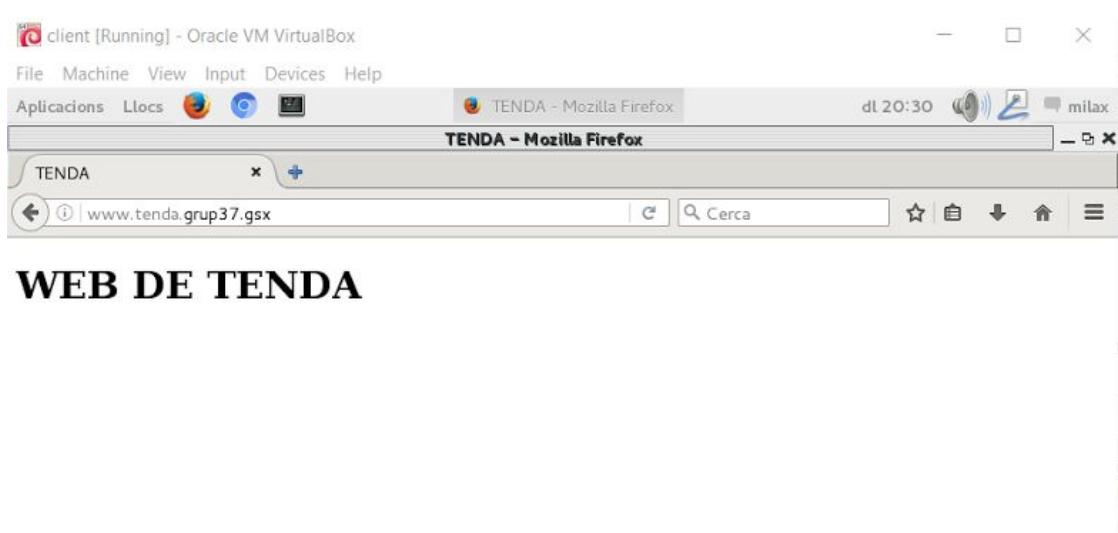
```
milax@d104:~$ ssh www.taller
milax@www.taller's password:
```

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the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Tue May 16 11:51:41 2017 from 10.21.1.4
milax@d102:~\$

Servei Web

- ❖ Accés als 3 websites des del pc de la intranet:



- ❖ Accés als 3 websites des d'una màquina exterior a la nostra instal·lació



Gestió Amb Apache

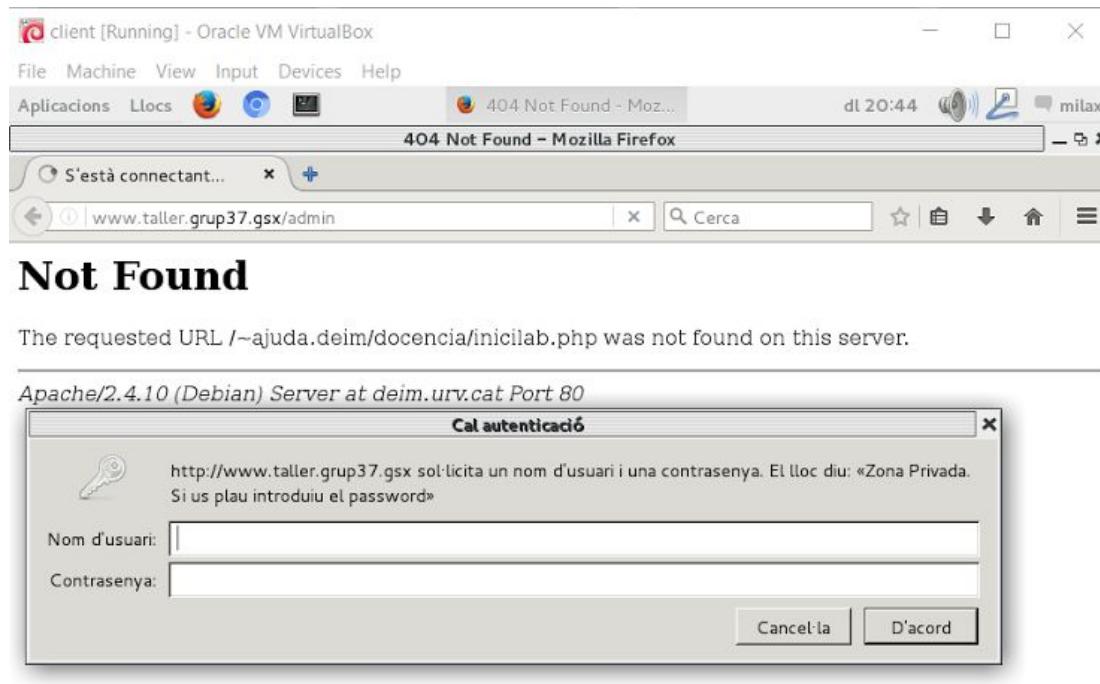
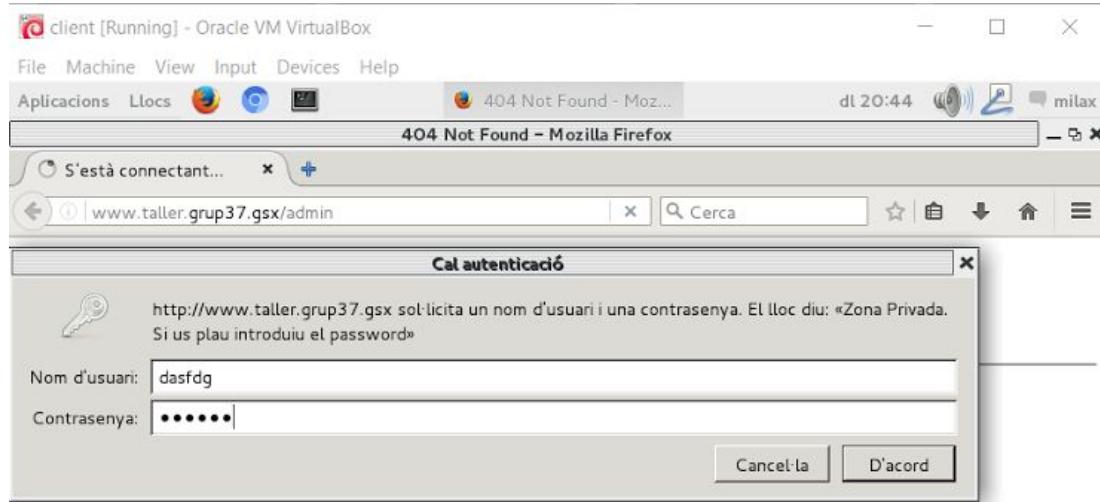
- ❖ Accedir a la web de taller
 - des del client



➢ des de la màquina externa



- ❖ Accedir al directori admin de la web de taller. Provar a posar un usuari i/o una contrasenya incorrecte



- ❖ Accedir al directori admin de la web de taller, provant-ho ara amb l'usuari correcte (potser us calgui tancar i reobrir el navegador)



WEB DE TALLER

Permisos dels fitxers

Scripts

```
milax@casa: ~/Desktop/GSX_XARXES/ScriptsXarxes$ ls -la
total 52
drwxr--r-- 2 milax milax 4096 mai 15 20:59 .
drwxr-xr-x 8 milax milax 4096 mai 15 20:59 ..
-rwxr--r-- 1 milax milax 4400 mai 14 18:58 confDNS.sh
-rwxr--r-- 1 milax milax 296 mai 14 18:58 configClientDhcp.sh
-rwxr--r-- 1 milax milax 358 mai 14 20:33 configServidorDhcp.sh
-rwxr--r-- 1 milax milax 3036 mai 14 20:25 crear_web.sh
-rwxr--r-- 1 milax milax 2344 mai 14 14:03 crear_zones.sh
-rwxr--r-- 1 milax milax 325 mai 14 20:24 gestioApache.sh
-rwxr--r-- 1 milax milax 208 mai 14 20:26 guarda_web.sh
-rwxr--r-- 1 milax milax 8183 mai 13 21:15 inici_dhcp_v1.sh
-rwxr--r-- 1 milax milax 141 mai 14 20:25 inici_dmz_v3.sh
milax@casa: ~/Desktop/GSX_XARXES/ScriptsXarxes$
```

Fitxers del bind

```
milax@casa: /etc/bind$ ls -l named.conf named.conf.local named.conf.options
-rwxrwxrwx 1 root bind 465 mai 15 19:57 named.conf
-rw-r--r-- 1 root bind 1430 mai 15 19:57 named.conf.local
-rw-r--r-- 1 root bind 908 mai 15 19:57 named.conf.options
milax@casa: /etc/bind$
```

Fitxers de zona

```
milax@casa: /var/cache/bind$ ls -la
total 40
drwxrwxrwx 2 root bind 4096 mai 15 21:17 .
drwxr-xr-x 15 root root 4096 mar 24 20:37 ..
-rw-r--r-- 1 root root 267 mai 15 21:17 db.10.21.1
-rw-r--r-- 1 root root 282 mai 15 21:17 db.172
-rw-r--r-- 1 root root 276 mai 15 21:17 db.192.168.148
-rw-r--r-- 1 root root 232 mai 15 21:17 db.192.168.149
-rw-r--r-- 1 root root 326 mai 15 21:17 grup37externa.gsx.db
-rw-r--r-- 1 root root 383 mai 15 21:17 grup37.gsx.db
-rw-r--r-- 1 root root 294 mai 15 21:17 interna.db
-rw-r--r-- 1 bind bind 221 mar 28 16:11 managed-keys.bind
milax@casa: /var/cache/bind$
```

Fitxers d'apache2

```
milax@casa: /etc/apache2
Fitxer Edita Visualitza Cerca Terminal Ajuda
milax@casa:/etc/apache2$ ls -l envvars
-rw-r--r-- 1 root root 1775 mai 14 20:10 envvars
milax@casa:/etc/apache2$ ls -laR sites-available/
sites-available/:
total 28
drwxr-xr-x 2 root root 4096 mai 14 20:10 .
drwxr-xr-x 8 root root 4096 mai 14 20:10 ..
-rw-r--r-- 1 root root 1332 jul 5 2016 000-default.conf
-rw-r--r-- 1 root root 6437 ago 7 2016 default-ssl.conf
-rw-r--r-- 1 root root 349 mai 14 20:10 taller.conf
-rw-r--r-- 1 root root 220 mai 14 20:10 tenda.conf
milax@casa:/etc/apache2$ ls -laR sites-enabled/
sites-enabled/:
total 8
drwxr-xr-x 2 root root 4096 mai 11 16:18 .
drwxr-xr-x 8 root root 4096 mai 14 20:10 ..
lrwxrwxrwx 1 root root 35 feb 1 11:31 000-default.conf -> ../sites-available/000-default.conf
lrwxrwxrwx 1 root root 30 mai 11 16:18 taller.conf -> ../sites-available/taller.conf
lrwxrwxrwx 1 root root 29 mai 11 16:15 tenda.conf -> ../sites-available/tenda.conf
milax@casa:/etc/apache2$
```

Fitxers del /var/www

```
milax@casa: /var
Fitxer Edita Visualitza Cerca Terminal Ajuda
milax@casa:/var$ ls -laR www
www:
total 20
drwxr-xr-x 5 root root 4096 mai 11 16:11 .
drwxr-xr-x 12 root root 4096 feb 1 11:04 ..
drwxr-xr-x 2 root root 4096 mai 14 20:10 html
drwxrwxrwx 3 root root 4096 mai 14 20:10 taller
drwxrwxrwx 2 root root 4096 mai 11 16:13 tenda

www/html:
total 12
drwxr-xr-x 2 root root 4096 mai 14 20:10 .
drwxr-xr-x 5 root root 4096 mai 11 16:11 ..
-rw-r--r-- 1 root root 144 mai 14 20:10 index.html

www/taller:
total 12
drwxrwxrwx 3 root root 4096 mai 14 20:10 .
drwxr-xr-x 5 root root 4096 mai 11 16:11 ..
drwxr-xr-x 2 milax milax 4096 mai 14 20:10 admin

www/taller/admin:
total 20
drwxr-xr-x 2 milax milax 4096 mai 14 20:10 .
drwxrwxrwx 3 root root 4096 mai 14 20:10 .
-rw-r--r-- 1 milax milax 137 mai 14 20:18 .htaccess
-rw-r--r-- 1 milax milax 44 mai 14 20:18 .htpasswd
-rw-r--r-- 1 root root 120 mai 14 20:10 index.html

www/tenda:
total 12
drwxrwxrwx 2 root root 4096 mai 11 16:13 .
drwxr-xr-x 5 root root 4096 mai 11 16:11 ..
-rw-r--r-- 1 milax milax 118 mai 14 20:10 index.html
milax@casa:/var$
```

Comprimit websites.tgz

```
milax@casa: ~/Desktop
Fitxer Edita Visualitza Cerca Terminal Ajuda
milax@casa:~/Desktop$ ls -l websites.tgz
-rw-r--r-- 1 root root 1777 mai 14 20:10 websites.tgz
milax@casa:~/Desktop$ █
```