

# DÍA 9: GESTIÓN DE REDES Y CONECTIVIDAD EN LINUX SERVER

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## Fase 1: Configuración de la red en Linux Server

✓ Asignar una IP estática en la configuración de la interfaz de red.

(Ya realizado anteriormente)

✓ Comprobar conectividad con otros dispositivos en la red local.

(Ya realizado anteriormente)

## Fase 2: Implementación de un servidor DHCP y DNS

✓ Configurar un servidor DHCP para asignar direcciones IP automáticamente a clientes.

```
vboxuser@UbuntuServer:~$ sudo apt install isc-dhcp-server -y
[sudo] password for vboxuser:
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  isc-dhcp-common
Suggested packages:
  isc-dhcp-server-ldap policycoreutils
The following NEW packages will be installed:
  isc-dhcp-common isc-dhcp-server
0 upgraded, 2 newly installed, 0 to remove and 2 not upgraded.
Need to get 1,281 kB of archives.
After this operation, 4,281 kB of additional disk space will be used.
Get:1 http://es.archive.ubuntu.com/ubuntu noble/universe amd64 isc-dhcp-server amd64 4.4.3-P1-4ubuntu2 [1,236 kB]
Get:2 http://es.archive.ubuntu.com/ubuntu noble/universe amd64 isc-dhcp-common amd64 4.4.3-P1-4ubuntu2 [45.8 kB]
Fetched 1,281 kB in 1s (1,118 kB/s)
Preconfiguring packages ...
Selecting previously unselected package isc-dhcp-server.
(Reading database ... 125068 files and directories currently installed.)
Preparing to unpack .../isc-dhcp-server-4.4.3-P1-4ubuntu2_amd64.deb ...
Unpacking isc-dhcp-server (4.4.3-P1-4ubuntu2) ...
Selecting previously unselected package isc-dhcp-common.
Preparing to unpack .../isc-dhcp-common-4.4.3-P1-4ubuntu2_amd64.deb ...
Unpacking isc-dhcp-common (4.4.3-P1-4ubuntu2) ...
Setting up isc-dhcp-server (4.4.3-P1-4ubuntu2) ...
Generating /etc/default/isc-dhcp-server...
Created symlink /etc/systemd/system/multi-user.target.wants/isc-dhcp-server.service → /usr/lib/systemd/system/isc-dhcp-server.service.
Created symlink /etc/systemd/system/multi-user.target.wants/isc-dhcp-server6.service → /usr/lib/systemd/system/isc-dhcp-server6.service.
Setting up isc-dhcp-common (4.4.3-P1-4ubuntu2) ...
Processing triggers for man-db (2.12.0-4build2) ...
Scanning processes...
Scanning linux images...

Running kernel seems to be up-to-date.

No services need to be restarted.

No containers need to be restarted.

No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
vboxuser@UbuntuServer:~$
```

```

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=""

```

```

GNU nano 7.2
option domain-name "codearts.lan";
option domain-name-servers 192.168.1.100

subnet 192.168.1.0 netmask 255.255.255.0 {
    range 192.168.1.100 192.168.1.200;
    option routers 192.168.1.1
}

```

## ✓ Implementar un servidor DNS interno para la resolución de nombres.

```

Suggested packages:
  bind-doc
The following NEW packages will be installed:
  bind9 bind9-utils dns-root-data
0 upgraded, 3 newly installed, 0 to remove and 2 not upgraded.
Need to get 419 kB of archives.
After this operation, 1.624 kB of additional disk space will be used.
Get:1 http://es.archive.ubuntu.com/ubuntu noble-updates/main amd64 bind9-utils amd64 1:9.18.30-0ubuntu0.24.04.2 [159 kB]
Get:2 http://es.archive.ubuntu.com/ubuntu noble-updates/main amd64 dns-root-data all 2024071801~ubuntu0.24.04.1 [5,918 B]
Get:3 http://es.archive.ubuntu.com/ubuntu noble-updates/main amd64 bind9 amd64 1:9.18.30-0ubuntu0.24.04.2 [254 kB]
Fetched 419 kB in 1s (449 kB/s)
Selecting previously unselected package bind9-utils.
(Reading database ... 125102 files and directories currently installed.)
Preparing to unpack .../bind9-utils_1:9.18.30-0ubuntu0.24.04.2_amd64.deb ...
Unpacking bind9-utils (1:9.18.30-0ubuntu0.24.04.2) ...
Selecting previously unselected package dns-root-data.
Preparing to unpack .../dns-root-data_2024071801~ubuntu0.24.04.1_all.deb ...
Unpacking dns-root-data (2024071801~ubuntu0.24.04.1) ...
Selecting previously unselected package bind9.
Preparing to unpack .../bind9_1:9.18.30-0ubuntu0.24.04.2_amd64.deb ...
Unpacking bind9 (1:9.18.30-0ubuntu0.24.04.2) ...
Setting up dns-root-data (2024071801~ubuntu0.24.04.1) ...
Setting up bind9-utils (1:9.18.30-0ubuntu0.24.04.2) ...
Setting up bind9 (1:9.18.30-0ubuntu0.24.04.2) ...
info: Selecting GID from range 100 to 999 ...
info: Adding group 'bind' (GID 111) ...
info: Selecting UID from range 100 to 999 ...

info: Adding system user 'bind' (UID 111) ...
info: Adding new user 'bind' (UID 111) with group 'bind' ...
info: Not creating home directory '/var/cache/bind'.
wrote key file "/etc/bind/rndc.key"
named-resolvconf.service is a disabled or a static unit, not starting it.
Created symlink /etc/systemd/system/multi-user.target.wants/named.service → /usr/lib/systemd/system/named.service.
Processing triggers for man-db (2.12.0-4build2) ...
Processing triggers for ufw (0.36.2-6) ...
Scanning processes...
Scanning linux images...

Running kernel seems to be up-to-date.

No services need to be restarted.

No containers need to be restarted.

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```

```

GNU nano 7.2
//
// 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 "codearts.lan" {
    type master;
    file "/etc/bind/db.codearts.lan";
};

```

```

GNU nano 7.2
;
; BIND data file for local loopback interface
;
$TTL      604800
@         IN      SOA      codearts.lan. root.codearts.lan. (
                        2      ; Serial
                        604800  ; Refresh
                        86400   ; Retry
                        2419200 ; Expire
                        604800 ) ; Negative Cache TTL
;
@         IN      NS       codearts.lan.
@         IN      A        192.168.1.100_
@         IN      AAAA     ::1

```

```

vboxuser@UbuntuServer:~$ sudo named-checkconf
vboxuser@UbuntuServer:~$ sudo named-checkzone codearts.lan /etc/bind/db.codearts.lan
zone codearts.lan/IN: loaded serial 2
OK
vboxuser@UbuntuServer:~$ _

```

### Fase 3: Configuración del firewall y seguridad

☒ **Configurar reglas en ufw o iptables para permitir solo tráfico esencial.**

(Ya realizado anteriormente)

☒ **Restringir accesos desde direcciones IP no autorizadas.**

(Ya realizado anteriormente)

✅ Implementar reglas de seguridad para evitar ataques de red.

(Ya realizado anteriormente)

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## 🚀 Fase 1: Creación y organización de usuarios

✅ Crear los siguientes usuarios:

- ana, carlos, elena

✅ Crear los grupos:

- webdev, infra, docs

✅ Asignar:

- ana al grupo webdev
- carlos a infra
- elena a docs

```
vboxuser@UbuntuServer:~$ sudo groupadd webdev
vboxuser@UbuntuServer:~$ sudo groupadd infra
vboxuser@UbuntuServer:~$ sudo groupadd docs
vboxuser@UbuntuServer:~$ sudo useradd -m -g webdev ana
vboxuser@UbuntuServer:~$ sudo useradd -m -g infra carlos
vboxuser@UbuntuServer:~$ sudo useradd -m -g docs elena
vboxuser@UbuntuServer:~$ sudo passwd ana
New password:
Retype new password:
passwd: password updated successfully
vboxuser@UbuntuServer:~$ sudo passwd carlos
New password:
Retype new password:
passwd: password updated successfully
vboxuser@UbuntuServer:~$ sudo passwd elena
New password:
Retype new password:
passwd: password updated successfully
vboxuser@UbuntuServer:~$
```

## Fase 2: Estructura de directorios y control de acceso

### Crear las siguientes carpetas:

- `/grupos/web`, `/grupos/infra`, `/grupos/docs`

```
password: password updated successfully
vboxuser@UbuntuServer:~$ sudo mkdir -p /grupos/web
vboxuser@UbuntuServer:~$ sudo mkdir -p /grupos/infra
vboxuser@UbuntuServer:~$ sudo mkdir -p /grupos/docs
vboxuser@UbuntuServer:~$
```

### Asignar propietario al grupo correspondiente y cambiar permisos:

- Solo los miembros del grupo pueden leer y escribir en su carpeta
- Otros usuarios no deben tener acceso

### Aplicar `chmod` y `chown` correctamente para:

- Establecer permisos `770`
- Activar `setgid` para que los nuevos archivos hereden el grupo

```
password: password updated successfully
vboxuser@UbuntuServer:~$ sudo mkdir -p /grupos/web
vboxuser@UbuntuServer:~$ sudo mkdir -p /grupos/infra
vboxuser@UbuntuServer:~$ sudo mkdir -p /grupos/docs
vboxuser@UbuntuServer:~$ sudo chown ana:webdev /grupos/web
vboxuser@UbuntuServer:~$ sudo chmod 2770 /grupos/web
vboxuser@UbuntuServer:~$ sudo chown carlos:infra /grupos/infra
vboxuser@UbuntuServer:~$ sudo chmod 2770 /grupos/infra
vboxuser@UbuntuServer:~$ sudo chown elena:docs /grupos/docs
vboxuser@UbuntuServer:~$ sudo chmod 2770 /grupos/docs
vboxuser@UbuntuServer:~$
```



### Fase 3: Configuración avanzada de permisos y restricciones

```
vboxuser@UbuntuServer:~$ sudo apt install acl -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following NEW packages will be installed:
  acl
0 upgraded, 1 newly installed, 0 to remove and 2 not upgraded.
Need to get 39.4 kB of archives.
After this operation, 197 kB of additional disk space will be used.
Get:1 http://es.archive.ubuntu.com/ubuntu noble-updates/main amd64 acl amd64 2.3.2-1build1.1 [39.4 kB]
Fetched 39.4 kB in 1s (51.8 kB/s)
Selecting previously unselected package acl.
(Reading database ... 125203 files and directories currently installed.)
Preparing to unpack .../acl_2.3.2-1build1.1_amd64.deb ...
Unpacking acl (2.3.2-1build1.1) ...
Setting up acl (2.3.2-1build1.1) ...
Processing triggers for man-db (2.12.0-4build2) ...
Scanning processes...
Scanning linux images...

Running kernel seems to be up-to-date.

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vboxuser@UbuntuServer:~$
```

- ✓ Crear en /grupos/docs un archivo llamado plan.txt.
- ✓ Permitir que solo elena pueda modificarlo, pero que ana y carlos puedan leerlo sin poder editarlo.
- ✓ Configurar un grupo compartido llamado lectura e incluir a los tres usuarios.
- ✓ Usar ACLs (Access Control Lists) para asignar permisos finos.

```
vboxuser@UbuntuServer:~$ sudo touch /grupos/docs/plan.txt
vboxuser@UbuntuServer:~$ sudo chown elena:docs /grupos/docs/plan.txt
vboxuser@UbuntuServer:~$ sudo groupadd lectura
vboxuser@UbuntuServer:~$ sudo usermod -aG lectura ana
vboxuser@UbuntuServer:~$ sudo usermod -aG lectura carlos
vboxuser@UbuntuServer:~$ sudo usermod -aG lectura elena
vboxuser@UbuntuServer:~$ sudo chmod g-w /grupos/docs/plan.txt
vboxuser@UbuntuServer:~$ sudo setfacl -m u:elena:rw- /grupos/docs/plan.txt
vboxuser@UbuntuServer:~$ sudo setfacl -m g:lectura:r-- /grupos/docs/plan.txt
vboxuser@UbuntuServer:~$ _
```

#### -La comprobación:

```
vboxuser@UbuntuServer:~$ sudo getfacl /grupos/docs/plan.txt
getfacl: Removing leading '/' from absolute path names
# file: grupos/docs/plan.txt
# owner: elena
# group: docs
user::rw-
user:elena:rw-
group::r--
group:lectura:r--
mask::rw-
other::r--
```

## Fase 4: Buenas prácticas y seguridad básica

✓ Establecer una política de caducidad de contraseñas de 60 días para todos los usuarios.

```
vboxuser@UbuntuServer:~$ sudo chage -m 60 ana
vboxuser@UbuntuServer:~$ sudo chage -m 60 carlos
vboxuser@UbuntuServer:~$ sudo chage -m 60 elena
vboxuser@UbuntuServer:~$ sudo chage -l ana
Last password change          : Jun 25, 2025
Password expires               : never
Password inactive              : never
Account expires                : never
Minimum number of days between password change : 60
Maximum number of days between password change : 99999
Number of days of warning before password expires : 7
vboxuser@UbuntuServer:~$ sudo chage -l carlos
Last password change          : Jun 25, 2025
Password expires               : never
Password inactive              : never
Account expires                : never
Minimum number of days between password change : 60
Maximum number of days between password change : 99999
Number of days of warning before password expires : 7
vboxuser@UbuntuServer:~$ sudo chage -l elena
Last password change          : Jun 25, 2025
Password expires               : never
Password inactive              : never
Account expires                : never
Minimum number of days between password change : 60
Maximum number of days between password change : 99999
Number of days of warning before password expires : 7
vboxuser@UbuntuServer:~$ _
```

✓ Bloquear el acceso SSH al usuario elena.


```
#PermitTunnel no
#ChrootDirectory none
#VersionAddendum none

# no default banner path
#Banner none

# Allow client to pass locale environment variables
AcceptEnv LANG LC_*

# override default of no subsystems
Subsystem sftp /usr/lib/openssh/sftp-server

# Example of overriding settings on a per-user basis
#Match User anoncvs
#    X11Forwarding no
#    AllowTcpForwarding no
#    PermitTTY no
#    ForceCommand cvs server
DenyUsers elena
```



- ✓ Crear un alias de shell en `/etc/skel/.bashrc` para que todos los nuevos usuarios vean un mensaje de bienvenida personalizado al iniciar sesión.

```
alias alert='notify-send --urgency=low -i "${[ $? = 0 ]}&& echo termin
# Alias definitions.
# You may want to put all your additions into a separate file like
# ~/.bash_aliases, instead of adding them here directly.
# See /usr/share/doc/bash-doc/examples in the bash-doc package.

if [ -f ~/.bash_aliases ]; then
    . ~/.bash_aliases
fi

# enable programmable completion features (you don't need to enable
# this, if it's already enabled in /etc/bash.bashrc and /etc/profile
# sources /etc/bash.bashrc).
if ! shopt -oq posix; then
    if [ -f /usr/share/bash-completion/bash_completion ]; then
        . /usr/share/bash-completion/bash_completion
    elif [ -f /etc/bash_completion ]; then
        . /etc/bash_completion
    fi
fi

#Mensaje de bienvenida reto dia 9
echo "Bienvenido a los servidores de CodeArts"
```

