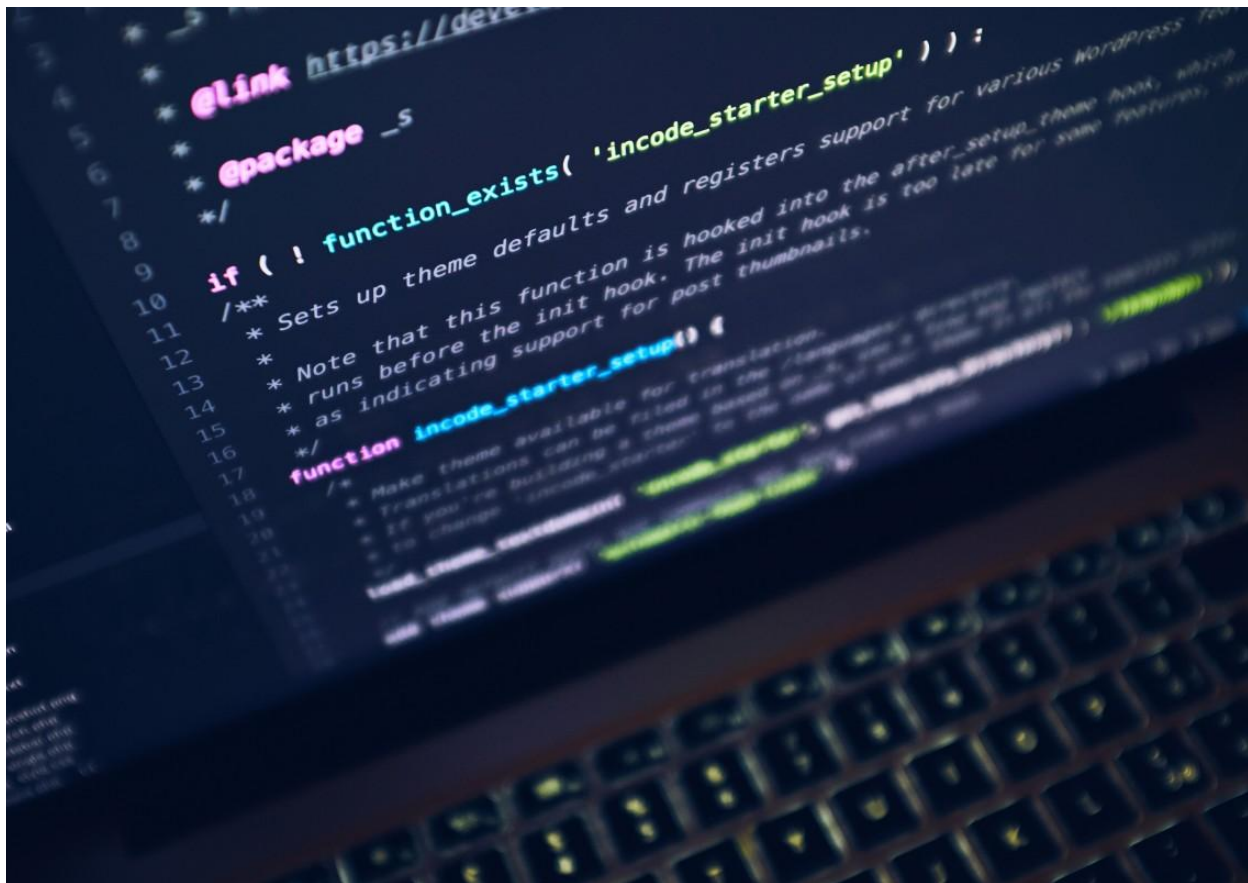


PREPARACIÓN ENTORNO DE TRABAJO

Vamos a crear las máquinas, configurar la red y montar servicios básicos como DHCP.



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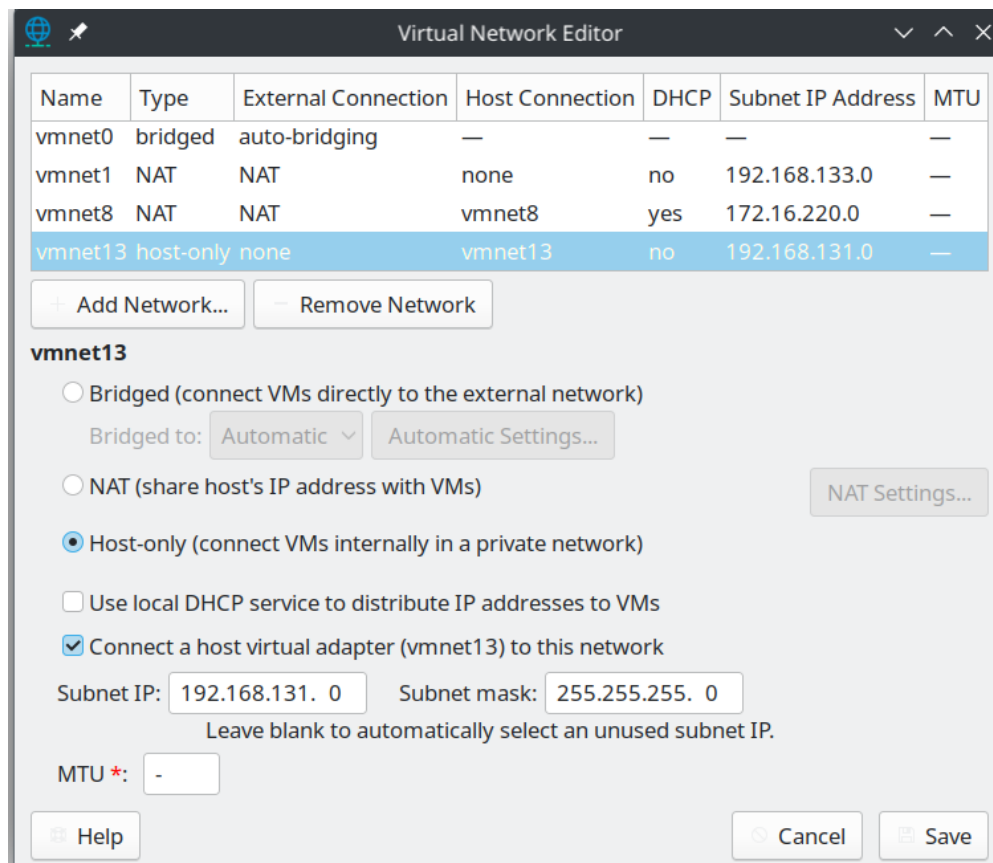
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INTRODUCCIÓN

Se busca un despliegue de un entorno virtual, en nuestro caso en VMWare. Para ello crearemos una red que interconecte todos los equipos. Habrá un servidor (Ubuntu Server) que se encargará de dar IPs al resto de equipos de la red. En esta ocasión solo habrá un cliente (Lubuntu).

CREACIÓN DE RED VIRTUAL

Creamos una nueva red, en nuestro caso la vmnet13. La configuramos como host-only para que se vean entre ellas. Desactivamos el DHCP de VMWare ya que usaremos el nuestro y asignaremos la IP correspondiente a la subred, en nuestro caso la 131.



Después de esto asignaremos una tarjeta de red con esta red a cada máquina, quedando el servidor con dos tarjetas de red (una para internet y otra para esta nueva red) y el cliente con solo una tarjeta para la nueva red.

CONFIGURACIÓN SISTEMA LINUX

1. Poner nombre a máquina -> /etc/hostname

```
apriego@dawebserver:~$ cat /etc/hostname
daweb_server
```

2. Configuración para resolución básica de nombres (sin DNS): Asociar IP a un nombre de máquina en /etc/hosts

```
GNU nano 6.2 /etc/hosts *
127.0.0.1 localhost
127.0.1.1 daweb_server
192.168.66.129 ubuntu_client

# The following lines are desirable for IPv6 capable hosts
::1 ip6-localhost ip6-loopback
fe00::0 ip6-localnet
ff00::0 ip6-mcastprefix
ff02::1 ip6-allnodes
ff02::2 ip6-allrouters
```

3. Crea un usuario nuevo llamado [tuapellido]daw y dale permisos super usuario
sudo adduser <usuario>

sudo usermod -aG sudo <usuario>

4. Comprueba si tienes instalado el servicio ssh y el editor nano.

```
prriegodaw@dawebserver:/$ dpkg -l | grep nano
ii nano 6.2-1 amd64 small, friendly text editor inspired by Pico
prriegodaw@dawebserver:/$ dpkg -l | grep ssh
ii libssh-4:amd64 0.9.6-2ubuntu0.22.04.1 amd64 tiny C SSH library (OpenSSL flavor)
ii openssh-client 1:8.9p1-3ubuntu0.4 amd64 secure shell (SSH) client, for secure access to remote machines
ii openssh-server 1:8.9p1-3ubuntu0.4 amd64 secure shell (SSH) server, for secure access from remote machines
ii openssh-sftp-server 1:8.9p1-3ubuntu0.4 amd64 secure shell (SSH) sftp server module, for SFTP access from remote machines
ii ssh-import-id 5.11-0ubuntu1 all securely retrieve an SSH public key and install it locally
prriegodaw@dawebserver:/$
```

5. Elige un navegador web en consola y pruébalo.



6. Instala DHCP

```
priegodaw@dawebserver:/$ sudo apt install isc-dhcp-server
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
isc-dhcp-server is already the newest version (4.4.1-2.3ubuntu2.4).
0 upgraded, 0 newly installed, 0 to remove and 23 not upgraded.
priegodaw@dawebserver:/$
```

7. Escribir el comando para instalar el editor de texto Geany

```
priegodaw@dawebserver:/$ sudo apt install geany
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
geany is already the newest version (1.38-1).
0 upgraded, 0 newly installed, 0 to remove and 23 not upgraded.
priegodaw@dawebserver:/$
```

8. Elimina algún paquete. Eliminar toda la configuración y ficheros secundarios.

```
prtegodaw@dawebserveri:/$ sudo apt autoremove geany
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following packages will be REMOVED:
  adwaita-icon-theme at-spi2-core dconf-gsettings-backend dconf-service geany geany-common gsettings-desktop-schemas gtk-update-icon-cache hicolor-icon-theme humanity-icon-theme
  libatk-bridge2.0-0 libatk1.0-0 libatk1.0-data libatspi2.0-0 libavahi-client3 libavahi-common-data libavahi-common3 libcolord2 libcups2 libdconf1 libepoxy0 libgtk-3-0 libgtk-3-bin
  libgtk-3-common liblcms2-2 libwayland-client0 libwayland-cursor0 libwayland-egl1 libxcursor1 libxdamage1 libxkbcommon0 session-migration ubuntu-mono
0 upgraded, 0 newly installed, 33 to remove and 23 not upgraded.
After this operation, 62.2 MB disk space will be freed.
Do you want to continue? [Y/n]
(Reading database ... 89422 files and directories currently installed.)
Removing libgtk-3-bin (3.24.33-1ubuntu2) ...
Removing geany (1.38-1) ...
Removing libgtk-3-0:amd64 (3.24.33-1ubuntu2) ...
Removing at-spi2-core (2.44.0-3) ...
Removing libgtk-3-common (3.24.33-1ubuntu2) ...
Removing gsettings-desktop-schemas (42.0-1ubuntu1) ...
Removing dconf-gsettings-backend:amd64 (0.40.0-3) ...
Removing dconf-service (0.40.0-3) ...
Removing geany-common (1.38-1) ...
Removing libatk-bridge2.0-0:amd64 (2.38.0-3) ...
Removing libatk1.0-0:amd64 (2.36.0-3build1) ...
Removing libatk1.0-data (2.36.0-3build1) ...
Removing libatspi2.0-0:amd64 (2.44.0-3) ...
Removing libcups2:amd64 (2.4.1op1-1ubuntu4.6) ...
Removing libavahi-client3:amd64 (0.8-5ubuntu5.1) ...
Removing libavahi-common3:amd64 (0.8-5ubuntu5.1) ...
Removing libavahi-common-data:amd64 (0.8-5ubuntu5.1) ...
Removing libcolord2:amd64 (1.4.6-1) ...
Removing libdconf1:amd64 (0.40.0-3) ...
Removing libepoxy0:amd64 (1.5.10-1) ...
Removing liblcms2-2:amd64 (2.12-rc1-2build2) ...
Removing libwayland-cursor0:amd64 (1.20.0-1ubuntu0.1)
```

9. Usa la ayuda online (man) y busca información sobre wget. Úsalo con un ejemplo.

```
WGET(1) GNU Wget WGET(1)

NAME
  Wget - The non-interactive network downloader.

SYNOPSIS
  wget [opt[on]]... [URL]...

DESCRIPTION
  GNU Wget is a free utility for non-interactive download of files from the Web. It supports HTTP, HTTPS, and FTP protocols, as well as retrieval through HTTP proxies.

  Wget is non-interactive, meaning that it can work in the background, while the user is not logged on. This allows you to start a retrieval and disconnect from the system, letting Wget finish the work. By contrast, most of the Web browsers require constant user's presence, which can be a great hindrance when transferring a lot of data.

  Wget can follow links in HTML, XHTML, and CSS pages, to create local versions of remote web sites, fully recreating the directory structure of the original site. This is sometimes referred to as "recursive downloading." While doing that, Wget respects the Robot Exclusion Standard (/robots.txt). Wget can be instructed to convert the links in downloaded files to point at the local files, for offline viewing.

  Wget has been designed for robustness over slow or unstable network connections; if a download fails due to a network problem, it will keep retrying until the whole file has been retrieved. If the server supports regeting, it will instruct the server to continue the download from where it left off.

OPTIONS
  Option Syntax
  Since Wget uses GNU getopt to process command-line arguments, every option has a long form along with the short one. Long options are more convenient to remember, but take time to type. You may freely mix different option styles, or specify options after the command-line arguments. Thus you may write:

    wget -r --tries=10 http://fly.srk.fer.hr/ -o log

  The space between the option accepting an argument and the argument may be omitted. Instead of -o log you can write -olog.

  You may put several options that do not require arguments together, like:

    wget -drc <URL>

  This is completely equivalent to:

    wget -d -r -c <URL>

  Since the options can be specified after the arguments, you may terminate them with --. So the following will try to download URL -x, reporting failure to log:

Manual page wget(1) line 1 (press h for help or q to quit)
```

10. Mira tu repositorio: cat /etc/apt/sources.list . Indica el formato que tiene.

```
# deb-src http://es.archive.ubuntu.com/ubuntu jammy main restricted

## Major bug fix updates produced after the final release of the
## distribution.
deb http://es.archive.ubuntu.com/ubuntu jammy-updates main restricted
# deb-src http://es.archive.ubuntu.com/ubuntu jammy-updates main restricted

## N.B. software from this repository is ENTIRELY UNSUPPORTED by the Ubuntu
## team. Also, please note that software in universe WILL NOT receive any
## review or updates from the Ubuntu security team.
deb http://es.archive.ubuntu.com/ubuntu jammy universe
# deb-src http://es.archive.ubuntu.com/ubuntu jammy universe
deb http://es.archive.ubuntu.com/ubuntu jammy-updates universe
# deb-src http://es.archive.ubuntu.com/ubuntu jammy-updates universe

## N.B. software from this repository is ENTIRELY UNSUPPORTED by the Ubuntu
## team, and may not be under a free licence. Please satisfy yourself as to
## your rights to use the software. Also, please note that software in
## multiverse WILL NOT receive any review or updates from the Ubuntu
## security team.
deb http://es.archive.ubuntu.com/ubuntu jammy multiverse
# deb-src http://es.archive.ubuntu.com/ubuntu jammy multiverse
deb http://es.archive.ubuntu.com/ubuntu jammy-updates multiverse
# deb-src http://es.archive.ubuntu.com/ubuntu jammy-updates multiverse

## N.B. software from this repository may not have been tested as
## extensively as that contained in the main release, although it includes
## newer versions of some applications which may provide useful features.
## Also, please note that software in backports WILL NOT receive any review
## or updates from the Ubuntu security team.
deb http://es.archive.ubuntu.com/ubuntu jammy-backports main restricted universe multiverse
# deb-src http://es.archive.ubuntu.com/ubuntu jammy-backports main restricted universe multiverse

deb http://es.archive.ubuntu.com/ubuntu jammy-security main restricted
# deb-src http://es.archive.ubuntu.com/ubuntu jammy-security main restricted
deb http://es.archive.ubuntu.com/ubuntu jammy-security universe
# deb-src http://es.archive.ubuntu.com/ubuntu jammy-security universe
deb http://es.archive.ubuntu.com/ubuntu jammy-security multiverse
# deb-src http://es.archive.ubuntu.com/ubuntu jammy-security multiverse
prriegodaw@dawebserver:/$
```

CONFIGURACIÓN DE RED

```
prriegodaw@dawebserver:/$ 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: ens32: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 00:0c:29:94:b4:05 brd ff:ff:ff:ff:ff:ff
    altname enp2s0
    inet 172.16.220.130/24 metric 100 brd 172.16.220.255 scope global dynamic ens32
        valid_lft 1517sec preferred_lft 1517sec
    inet6 fe80::20c:29ff:fe94:b405/64 scope link
        valid_lft forever preferred_lft forever
3: ens33: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 00:0c:29:94:b4:0f brd ff:ff:ff:ff:ff:ff
    altname enp2s1
    inet 192.168.66.128/24 metric 100 brd 192.168.66.255 scope global dynamic ens33
        valid_lft 1477sec preferred_lft 1477sec
    inet6 fe80::20c:29ff:fe94:b40f/64 scope link
        valid_lft forever preferred_lft forever
prriegodaw@dawebserver:/$ ip route show
default via 172.16.220.2 dev ens32 proto dhcp src 172.16.220.130 metric 100
172.16.220.0/24 dev ens32 proto kernel scope link src 172.16.220.130 metric 100
172.16.220.2 dev ens32 proto dhcp scope link src 172.16.220.130 metric 100
192.168.66.0/24 dev ens33 proto kernel scope link src 192.168.66.128 metric 100
192.168.66.1 dev ens33 proto dhcp scope link src 192.168.66.128 metric 100
prriegodaw@dawebserver:/$
```

Modificamos el fichero en netplan para conseguir una IP estática en nuestro servidor, así como asignaremos una IP en la nueva red a la que asignaremos IPs mediante DHCP.

```
GNU nano 6.2 /etc/netplan/00-installer-config
# This is the network config written by 'subiquity'
network:
  ethernets:
    ens32:
      dhcp4: no
      addresses: [172.16.220.130/24]
      nameservers:
        addresses: [8.8.8.8]
      gateway4: 172.16.220.1
    ens33:
      dhcp4: no
      addresses: [192.168.131.1/24]
      nameservers:
        addresses: [127.0.0.1,8.8.8.8]
  version: 2
```

Tras esto verificamos la configuración y la aplicamos.

- sudo netplan try
- sudo netplan apply

CONFIGURACIÓN DHCP

Configuramos el servicio DHCP-Server instalado previamente.

Primero la configuración en /etc/dhcp/dhcpd.conf:

```
GNU nano 6.2 dhcpd.conf
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 192.168.131.0 netmask 255.255.255.0 {
    range 192.168.131.10 192.168.131.30;
    option routers 192.168.131.1;
    option domain-name-servers 8.8.8.8, 1.1.1.1;
}

# This is a very basic subnet declaration.

#subnet 10.254.239.0 netmask 255.255.255.224 {
#    range 10.254.239.10 10.254.239.20;
#    option routers rtr-239-0-1.example.org, rtr-239-0-2.example.org;
#}
```

Después seleccionamos la tarjeta de red donde trabajará nuestro servidor DHCP:

```
GNU nano 6.2                                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="ens33"
INTERFACESv6=""
```

Reiniciamos el servicio con “sudo systemctl restart isc-dhcp-server”

RESULTADOS

Si conectamos la máquina cliente a la misma red y solicitamos que nos de una IP nueva “sudo dhclient -v”, obtendremos una ip de la subred 192.168.131.0 y dentro del rango indicado, es decir, entre la 10 y la 30.