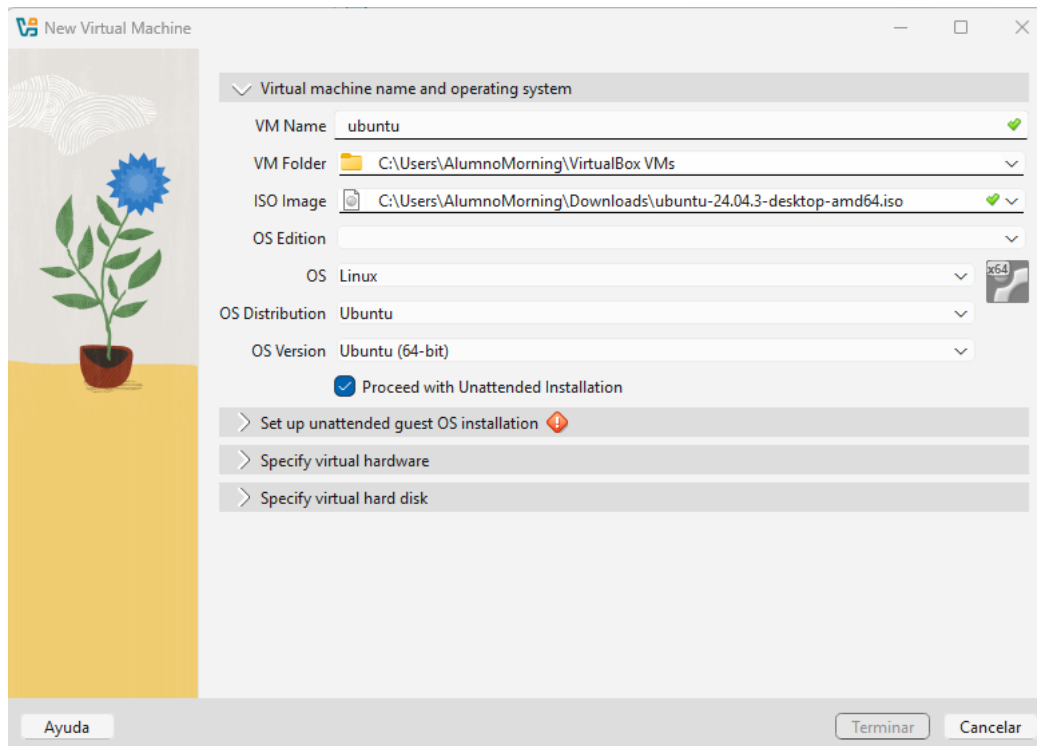
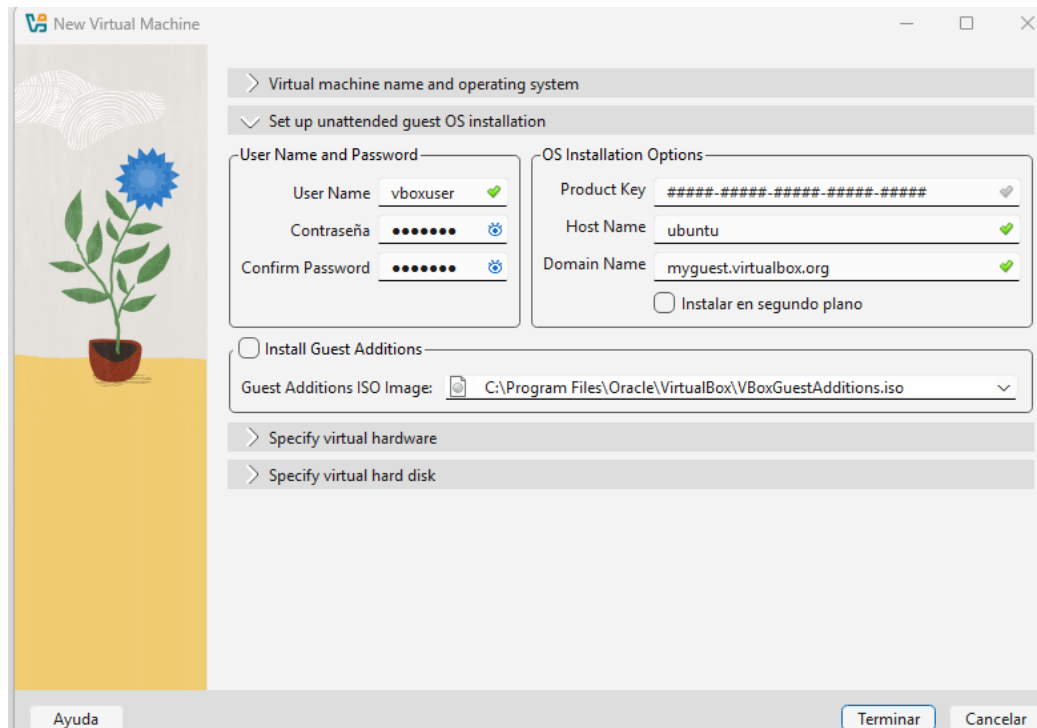


ARQUITECTURA EN LA NUBE

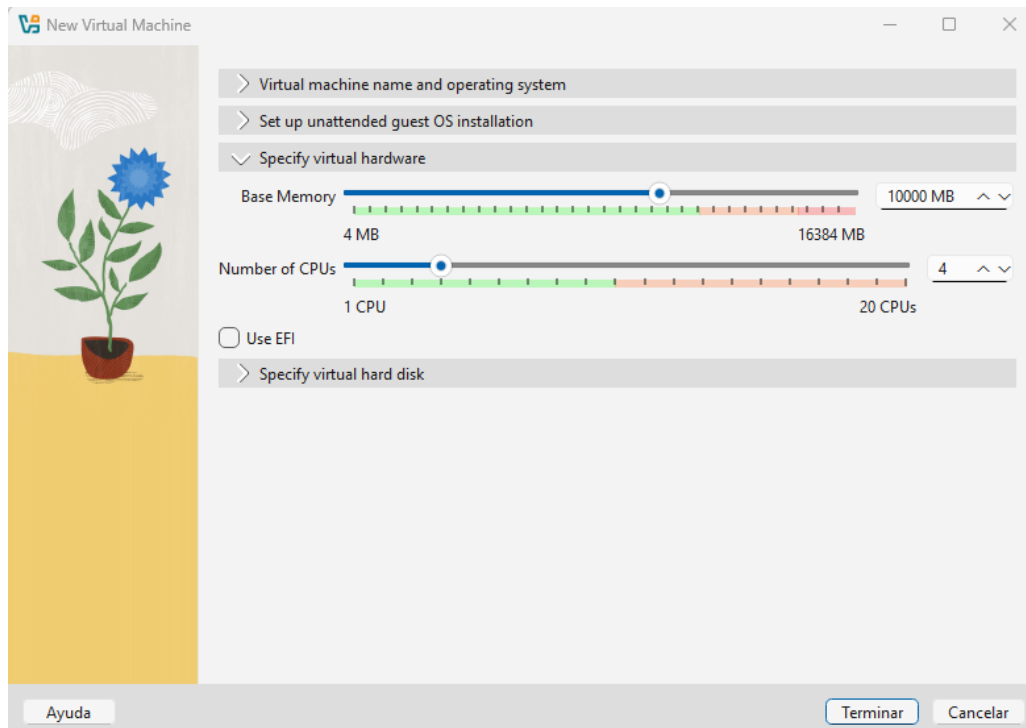
Primero tendremos que entrar en VirtualBox y procederemos a crear una máquina de Ubuntu



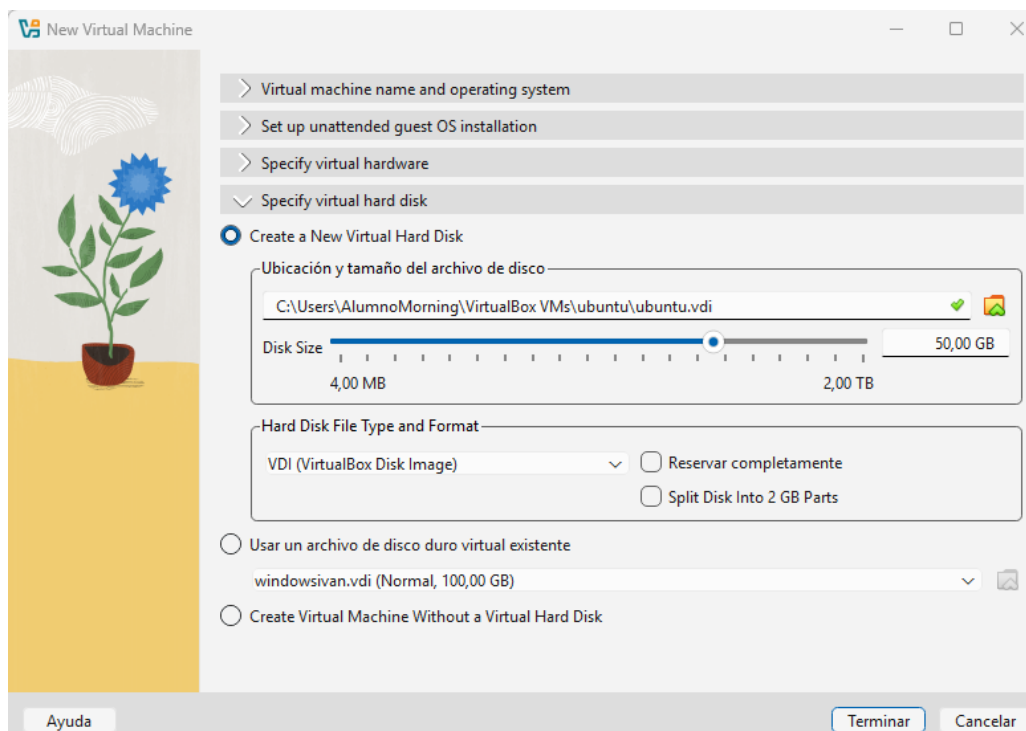
Introduciremos una contraseña para esta máquina de Ubuntu



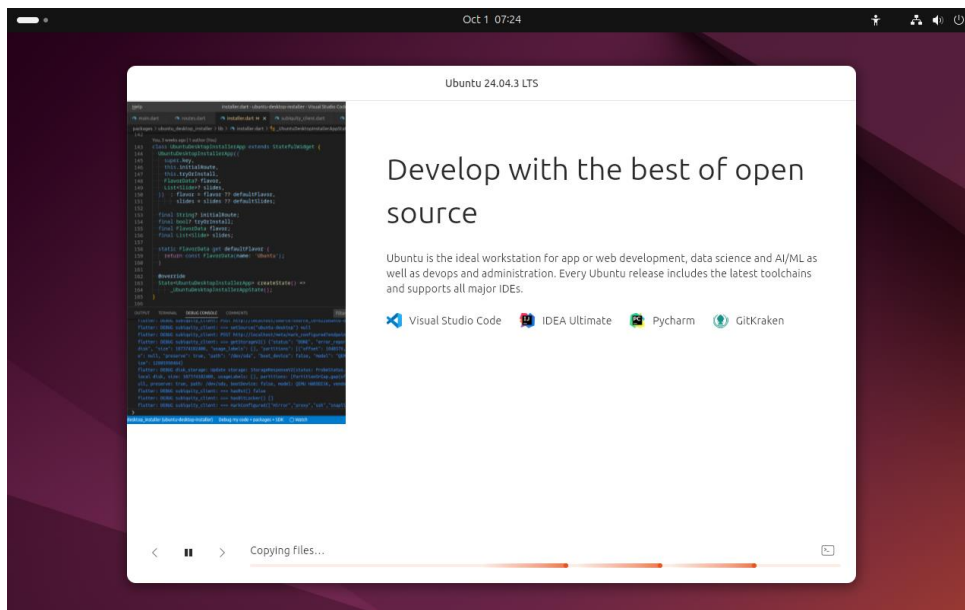
Introduciremos la memoria base y las CPU que usaremos en la maquina



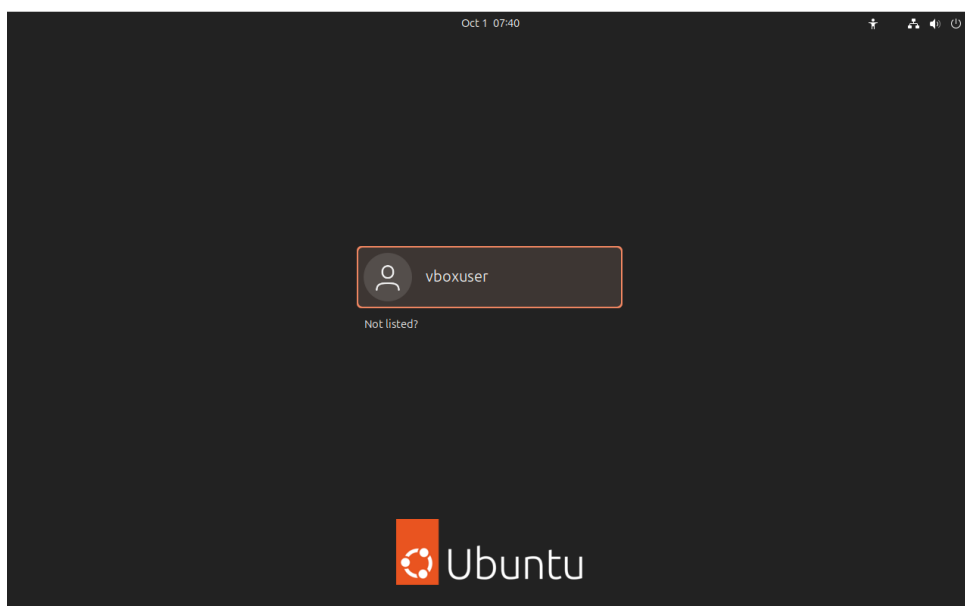
Introduciremos para finalizar la memoria de la maquina



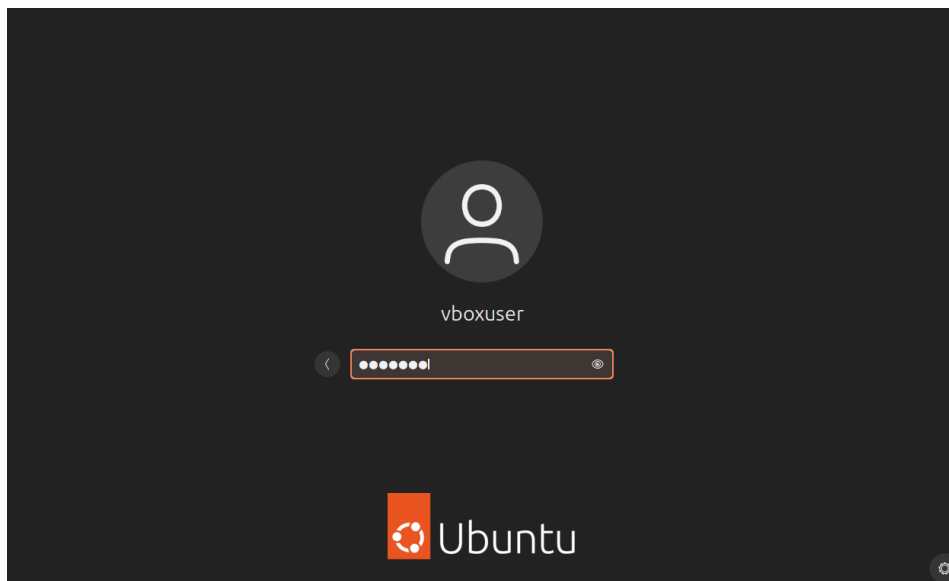
Iniciamos Ubuntu



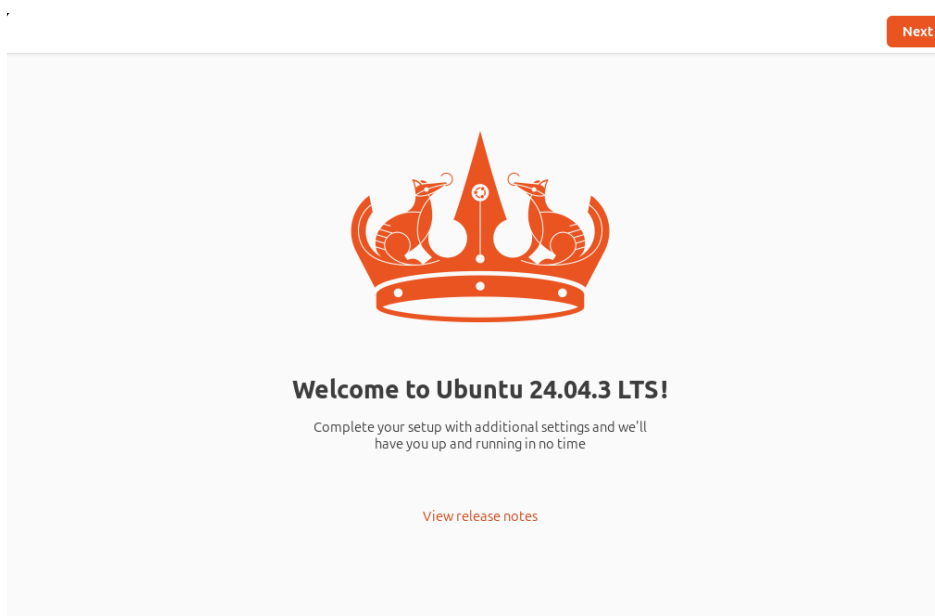
Una vez se instala todo nos aparece lo siguiente



Iniciamos sesión en Ubuntu



Una vez iniciamos sesión



1. Actualizar el sistema

Ejecutaremos el siguiente comando para ver que todo está actualizado `sudo apt update && sudo apt upgrade -y`

```
vboxuser@ubuntu: ~  
vboxuser@ubuntu:~$ sudo apt update && sudo apt upgrade -y
```

```
vboxuser@ubuntu: ~  
vboxuser@ubuntu:~$ sudo apt update && sudo apt upgrade -y  
Get:1 http://security.ubuntu.com/ubuntu noble-security InRelease [126 kB]  
Hit:2 http://es.archive.ubuntu.com/ubuntu noble InRelease  
Get:3 http://security.ubuntu.com/ubuntu noble-security/main amd64 Components [21.5 kB]  
Get:4 http://security.ubuntu.com/ubuntu noble-security/restricted amd64 Components [208 B]  
Get:5 http://security.ubuntu.com/ubuntu noble-security/universe amd64 Components [52.3 kB]  
Get:6 http://es.archive.ubuntu.com/ubuntu noble-updates InRelease [126 kB]  
Get:7 http://security.ubuntu.com/ubuntu noble-security/multiverse amd64 Components [208 B]  
Get:8 http://es.archive.ubuntu.com/ubuntu noble-backports InRelease [126 kB]  
Get:9 http://es.archive.ubuntu.com/ubuntu noble-updates/main amd64 Components [175 kB]  
Get:10 http://es.archive.ubuntu.com/ubuntu noble-updates/restricted amd64 Components [212 B]  
Get:11 http://es.archive.ubuntu.com/ubuntu noble-updates/universe amd64 Components [377 kB]  
Get:12 http://es.archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 Components [940 B]  
Get:13 http://es.archive.ubuntu.com/ubuntu noble-backports/main amd64 Components [7,148 B]  
Get:14 http://es.archive.ubuntu.com/ubuntu noble-backports/restricted amd64 Components [2 B]  
Get:15 http://es.archive.ubuntu.com/ubuntu noble-backports/universe amd64 Components [11.5 kB]  
Get:16 http://es.archive.ubuntu.com/ubuntu noble-backports/multiverse amd64 Components [2 B]  
Fetched 1,025 kB in 1s (787 kB/s)  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
5 packages can be upgraded. Run 'apt list --upgradable' to see them.  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
Calculating upgrade... Done  
The following package was automatically installed and is no longer required:  
  libllvm19  
Use 'sudo apt autoremove' to remove it.  
The following upgrades have been deferred due to phasing:  
  cloud-init gir1.2-nm-1.0 libnm0 network-manager network-manager-config-connectivity-ubuntu  
0 upgraded, 0 newly installed, 0 to remove and 5 not upgraded.
```

2. Instalar Apache2

Instalaremos el apache2

```
vboxuser@ubuntu: ~  
vboxuser@ubuntu:~$ sudo apt install apache2 -y
```

```
vboxuser@ubuntu:~$ sudo apt install apache2 -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
apache2 is already the newest version (2.4.58-1ubuntu8.8).
The following package was automatically installed and is no longer required:
  libllvm19
Use 'sudo apt autoremove' to remove it.
0 upgraded, 0 newly installed, 0 to remove and 5 not upgraded.
vboxuser@ubuntu:~$
```

3. Instalar PHP

Instalamos php

```
vboxuser@ubuntu:~$ sudo apt install php libapache2-mod-php -y
```

```
vboxuser@ubuntu:~$ sudo apt install php libapache2-mod-php -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
php is already the newest version (2:8.3+93ubuntu2).
libapache2-mod-php is already the newest version (2:8.3+93ubuntu2).
The following package was automatically installed and is no longer required:
  libllvm19
Use 'sudo apt autoremove' to remove it.
0 upgraded, 0 newly installed, 0 to remove and 5 not upgraded.
vboxuser@ubuntu:~$
```

4. Iniciar Apache y Vemos su estado

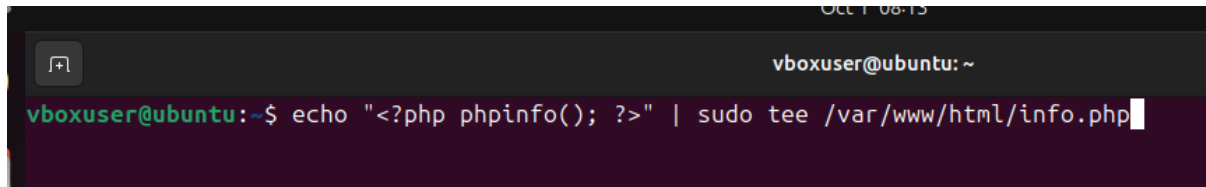
Iniciamos el apache2 y vemos el estado del apache2

```
vboxuser@ubuntu:~$ sudo service apache2 start
vboxuser@ubuntu:~$ sudo service apache2 status
● apache2.service - The Apache HTTP Server
   Loaded: loaded (/usr/lib/systemd/system/apache2.service; enabled; preset: >
   Active: active (running) since Wed 2025-10-01 08:02:09 UTC; 48s ago
     Docs: https://httpd.apache.org/docs/2.4/
   Process: 10887 ExecStart=/usr/sbin/apachectl start (code=exited, status=0/S>
   Main PID: 10890 (apache2)
      Tasks: 6 (limit: 11554)
    Memory: 10.6M (peak: 11.4M)
       CPU: 40ms
    CGroup: /system.slice/apache2.service
            └─10890 /usr/sbin/apache2 -k start
              10893 /usr/sbin/apache2 -k start
              10894 /usr/sbin/apache2 -k start
              10895 /usr/sbin/apache2 -k start
              10896 /usr/sbin/apache2 -k start
              10897 /usr/sbin/apache2 -k start

Oct 01 08:02:09 ubuntu systemd[1]: Starting apache2.service - The Apache HTTP S>
Oct 01 08:02:09 ubuntu apachectl[10889]: AH00558: apache2: Could not reliably d>
Oct 01 08:02:09 ubuntu systemd[1]: Started apache2.service - The Apache HTTP S>
lines 1-20/20 (END)
```

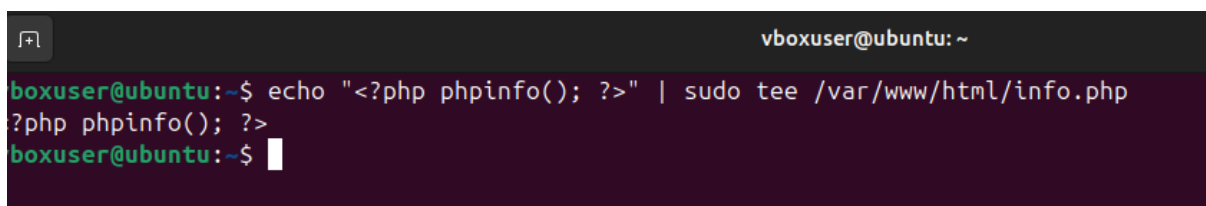
5. Crear archivo PHP info

Crearemos un archivo php

A terminal window with a dark background. The prompt is 'vboxuser@ubuntu: ~'. The command entered is 'echo "<?php phpinfo(); ?>" | sudo tee /var/www/html/info.php'. The cursor is at the end of the command.

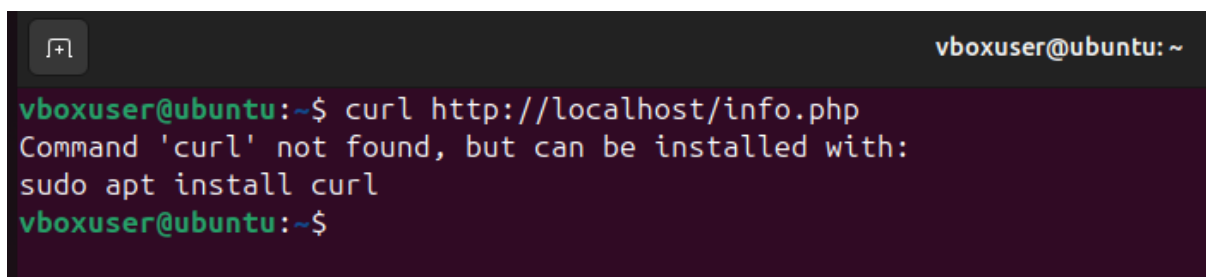
```
vboxuser@ubuntu:~$ echo "<?php phpinfo(); ?>" | sudo tee /var/www/html/info.php
```

Me crea el archivo

A terminal window with a dark background. The prompt is 'vboxuser@ubuntu: ~'. The command entered is 'echo "<?php phpinfo(); ?>" | sudo tee /var/www/html/info.php'. The cursor is at the end of the command.

```
vboxuser@ubuntu:~$ echo "<?php phpinfo(); ?>" | sudo tee /var/www/html/info.php
```

Lo intentamos buscar en curl

A terminal window with a dark background. The prompt is 'vboxuser@ubuntu: ~'. The command entered is 'curl http://localhost/info.php'. The output is 'Command 'curl' not found, but can be installed with: sudo apt install curl'. The cursor is at the end of the command.

```
vboxuser@ubuntu:~$ curl http://localhost/info.php
Command 'curl' not found, but can be installed with:
sudo apt install curl
vboxuser@ubuntu:~$
```

No nos lo encontrara debido a que no tenemos instalado curl, procederemos a instalarlo

Lo instalamos

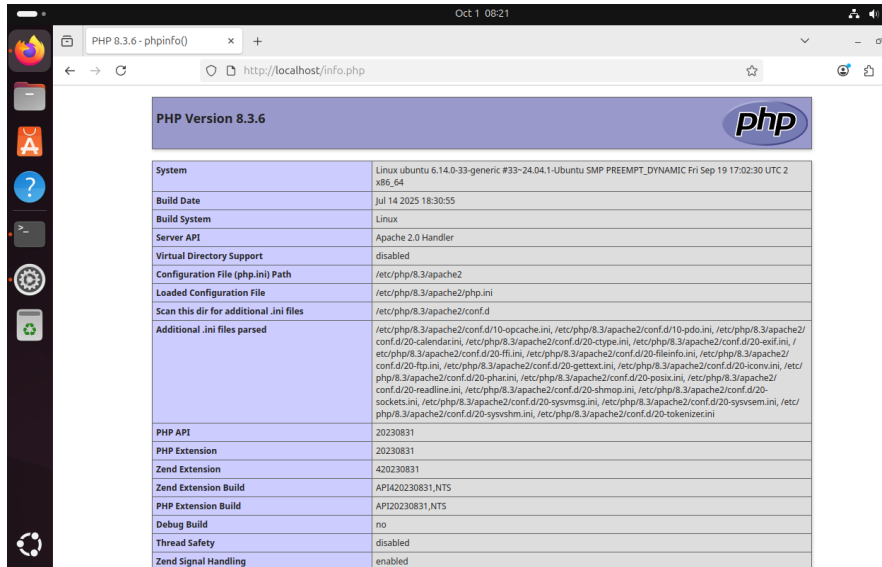
```
vboxuser@ubuntu: ~  
vboxuser@ubuntu:~$ sudo apt install curl  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
The following package was automatically installed and is no longer required:  
  libllvm19  
Use 'sudo apt autoremove' to remove it.  
The following NEW packages will be installed:  
  curl  
0 upgraded, 1 newly installed, 0 to remove and 5 not upgraded.  
Need to get 226 kB of archives.  
After this operation, 534 kB of additional disk space will be used.  
Get:1 http://es.archive.ubuntu.com/ubuntu noble-updates/main amd64 curl amd64 8.5.0-2ubuntu10.6 [226 kB]  
Fetched 226 kB in 1s (202 kB/s)  
Selecting previously unselected package curl.  
(Reading database ... 150982 files and directories currently installed.)  
Preparing to unpack .../curl_8.5.0-2ubuntu10.6_amd64.deb ...  
Unpacking curl (8.5.0-2ubuntu10.6) ...  
Setting up curl (8.5.0-2ubuntu10.6) ...  
Processing triggers for man-db (2.12.0-4build2) ...  
vboxuser@ubuntu:~$
```

Volveremos a buscarlo

```
vboxuser@ubuntu: ~  
<tr><td class="e">Ilia Alshanetsky, Joerg Behrens, Antony Dovgal, Stefan Esser, Moriyoshi  
ian Nohn, Derick Rethans, Melvyn Sopacua, Pierre-Alain Joye, Dmitry Stogov, Felipe Pena,  
lyshev, Julien Pauli, Stephen Zarkos, Anatol Belski, Remi Collet, Ferenc Kovacs </td></tr>  
</table>  
<table>  
<tr class="h"><th colspan="2">Websites and Infrastructure team</th></tr>  
<tr><td class="e">PHP Websites Team </td><td class="v">Rasmus Lerdorf, Hannes Magnusson,  
, Pierre-Alain Joye, Kalle Sommer Nielsen, Peter Cowburn, Adam Harvey, Ferenc Kovacs, Lev  
<tr><td class="e">Event Maintainers </td><td class="v">Damien Seguy, Daniel P. Brown </td>  
<tr><td class="e">Network Infrastructure </td><td class="v">Daniel P. Brown </td></tr>  
<tr><td class="e">Windows Infrastructure </td><td class="v">Alex Schoenmaker </td></tr>  
</table>  
<table>  
<tr class="h"><th colspan="1">Debian Packaging</th></tr>  
<tr><td class="e">Ondřej Surý </td></tr>  
</table>  
<h2>PHP License</h2>  
<table>  
<tr class="v"><td>  
<p>  
This program is free software; you can redistribute it and/or modify it under the terms o  
by the PHP Group and included in the distribution in the file: LICENSE  
</p>  
<p>This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANT  
rranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.  
</p>  
<p>If you did not receive a copy of the PHP license, or have any questions about PHP lice  
hp.net.  
</p>  
</td></tr>  
</table>  
</div></body></html>vboxuser@ubuntu:~$
```


Después lo buscamos en Firefox, una vez instalado el curl

7. Verificar en navegador



EJERCICIO 2

1. Instalar Nginx

Instalamos Nginx

```
vboxuser@ubuntu: ~  
  
vboxuser@ubuntu:~$ sudo apt install nginx -y  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
The following package was automatically installed and is no longer required:  
  libllvm19  
Use 'sudo apt autoremove' to remove it.  
The following additional packages will be installed:  
  nginx-common  
Suggested packages:  
  fcgiwrap nginx-doc  
The following NEW packages will be installed:  
  nginx nginx-common  
0 upgraded, 2 newly installed, 0 to remove and 5 not upgraded.  
Need to get 564 kB of archives.  
After this operation, 1,596 kB of additional disk space will be used.  
Get:1 http://es.archive.ubuntu.com/ubuntu noble-updates/main amd64 nginx-common all 1.24.  
Get:2 http://es.archive.ubuntu.com/ubuntu noble-updates/main amd64 nginx amd64 1.24.0-2ub  
Fetched 564 kB in 1s (1,034 kB/s)  
Preconfiguring packages ...  
Selecting previously unselected package nginx-common.  
(Reading database ... 150989 files and directories currently installed.)  
Preparing to unpack .../nginx-common_1.24.0-2ubuntu7.5_all.deb ...  
Unpacking nginx-common (1.24.0-2ubuntu7.5) ...  
Selecting previously unselected package nginx.  
Preparing to unpack .../nginx_1.24.0-2ubuntu7.5_amd64.deb ...  
Unpacking nginx (1.24.0-2ubuntu7.5) ...  
Setting up nginx-common (1.24.0-2ubuntu7.5) ...  
Created symlink /etc/systemd/system/multi-user.target.wants/nginx.service → /usr/lib/syst  
  
Progress: [ 56%] [#####.....]
```

Una vez instalado, intentaremos iniciar el servicio. Tendremos un error debido a que Ubuntu no permite tener dos servicios abiertos a la vez, por lo que tendríamos que parar el otro servicio y una vez Ubuntu no tiene ningún servicio corriendo pues podríamos iniciar este servicio

2. Iniciar Nginx y Verificar el estado

```
vboxuser@ubuntu: ~  
vboxuser@ubuntu:~$ sudo service nginx start  
Job for nginx.service failed because the control process exited with error code.  
See "systemctl status nginx.service" and "journalctl -xeu nginx.service" for details.  
vboxuser@ubuntu:~$
```

Aquí mostramos que hemos parado el servicio que estaba corriendo y no nos permitía iniciar el otro servicio

```
vboxuser@ubuntu:~$ service apache2 stop  
vboxuser@ubuntu:~$ sudo service nginx start  
vboxuser@ubuntu:~$ sudo service nginx status  
● nginx.service - A high performance web server and a reverse proxy server  
   Loaded: loaded (/usr/lib/systemd/system/nginx.service; enabled; preset: enabled)  
   Active: active (running) since Wed 2025-10-01 09:15:08 UTC; 2s ago  
     Docs: man:nginx(8)  
  Process: 14500 ExecStartPre=/usr/sbin/nginx -t -q -g daemon on; master_process on; (code=exited, status=0/SUCCESS)  
  Process: 14502 ExecStart=/usr/sbin/nginx -g daemon on; master_process on; (code=exited, status=0/SUCCESS)  
 Main PID: 14503 (nginx)  
    Tasks: 5 (limit: 11554)  
  Memory: 3.7M (peak: 4.4M)  
     CPU: 14ms  
   CGroup: /system.slice/nginx.service  
           └─14503 "nginx: master process /usr/sbin/nginx -g daemon on; master_process on;"  
             └─14504 "nginx: worker process"  
               └─14505 "nginx: worker process"  
                 └─14506 "nginx: worker process"  
                   └─14507 "nginx: worker process"  
  
Oct 01 09:15:08 ubuntu systemd[1]: Starting nginx.service - A high performance web server  
Oct 01 09:15:08 ubuntu systemd[1]: Started nginx.service - A high performance web server  
vboxuser@ubuntu:~$
```

Iniciamos el servicio y vemos su estado

```
vboxuser@ubuntu: ~  
vboxuser@ubuntu:~$ sudo service nginx start  
vboxuser@ubuntu:~$ sudo systemctl status nginx  
● nginx.service - A high performance web server and a reverse proxy server  
   Loaded: loaded (/usr/lib/systemd/system/nginx.service; enabled; preset: enabled)  
   Active: active (running) since Wed 2025-10-01 08:45:58 UTC; 14s ago  
     Docs: man:nginx(8)  
  Process: 13724 ExecStartPre=/usr/sbin/nginx -t -q -g daemon on; master_process on; (code=exited, status=0/SUCCESS)  
  Process: 13725 ExecStart=/usr/sbin/nginx -g daemon on; master_process on; (code=exited, status=0/SUCCESS)  
 Main PID: 13727 (nginx)  
    Tasks: 5 (limit: 11554)  
  Memory: 3.7M (peak: 4.7M)  
     CPU: 16ms  
   CGroup: /system.slice/nginx.service  
           └─13727 "nginx: master process /usr/sbin/nginx -g daemon on; master_process  
             └─13728 "nginx: worker process"  
               └─13729 "nginx: worker process"  
                 └─13730 "nginx: worker process"  
                   └─13731 "nginx: worker process"  
  
Oct 01 08:45:58 ubuntu systemd[1]: Starting nginx.service - A high performance web server  
Oct 01 08:45:58 ubuntu systemd[1]: Started nginx.service - A high performance web server  
vboxuser@ubuntu:~$
```

3. Crear archivo HTML

Creamos el Archivo

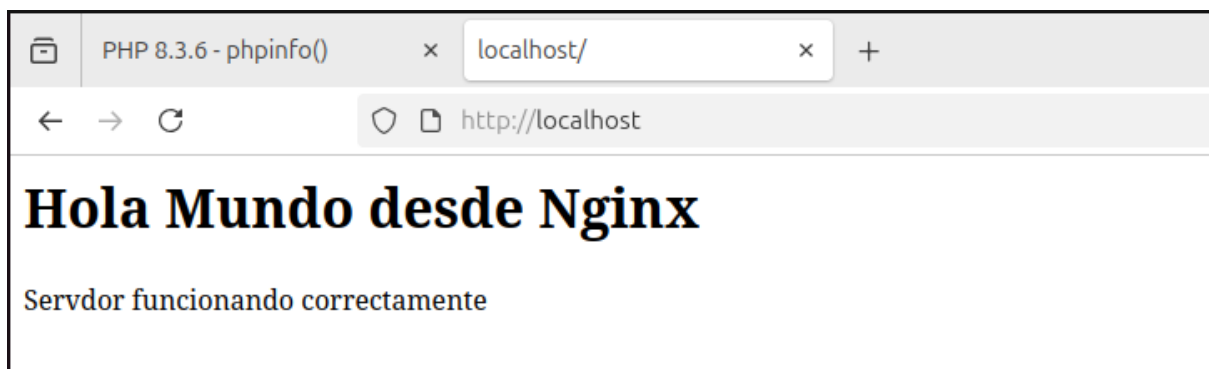
```
vboxuser@ubuntu:~$ echo "<h1>Hola Mundo desde Nginx</h1><p>Servdor funcionando correctamente</p>" | sudo tee /var/www/html/index.html  
<h1>Hola Mundo desde Nginx</h1><p>Servdor funcionando correctamente</p>  
vboxuser@ubuntu:~$
```

Lo ejecutamos

```
vboxuser@ubuntu:~$ curl http://localhost  
<h1>Hola Mundo desde Nginx</h1><p>Servdor funcionando correctamente</p>  
vboxuser@ubuntu:~$
```

4. Verificar en navegador

Lo comprobamos en Firefox que todo funciona correctamente



5. Ver IP de WSL (si aplica)

Primero pondremos ese comando, nos dice que no va debido a que no detecta a el eth0

```
vboxuser@ubuntu: ~  
vboxuser@ubuntu:~$ ip addr show eth0 | grep inet  
Device "eth0" does not exist.  
vboxuser@ubuntu:~$
```

Hacemos un ifconfig, no funciona debido a que no lo tenemos instalado

```
vboxuser@ubuntu:~$ ifconfig  
Command 'ifconfig' not found, but can be installed with:  
sudo apt install net-tools  
vboxuser@ubuntu:~$
```

Instalaremos el net-tools

```
vboxuser@ubuntu:~$ sudo apt install net-tools  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
The following package was automatically installed and is no longer required:  
  libllvm19  
Use 'sudo apt autoremove' to remove it.  
The following NEW packages will be installed:  
  net-tools  
0 upgraded, 1 newly installed, 0 to remove and 5 not upgraded.  
Need to get 204 kB of archives.  
After this operation, 811 kB of additional disk space will be used.  
Get:1 http://es.archive.ubuntu.com/ubuntu noble-updates/main amd64 net-tools amd64 2.10-0  
Fetched 204 kB in 0s (1,019 kB/s)  
Selecting previously unselected package net-tools.  
(Reading database ... 151036 files and directories currently installed.)  
Preparing to unpack .../net-tools_2.10-0.1ubuntu4.4_amd64.deb ...  
Unpacking net-tools (2.10-0.1ubuntu4.4) ...  
Setting up net-tools (2.10-0.1ubuntu4.4) ...  
Processing triggers for man-db (2.12.0-4build2) ...  
vboxuser@ubuntu:~$
```

Hacemos un ifconfig

```
vboxuser@ubuntu:~$ ifconfig
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 10.0.2.15 netmask 255.255.255.0 broadcast 10.0.2.255
    inet6 fd17:625c:f037:2:a00:27ff:fee8:d53c prefixlen 64 scopeid 0x0<global>
    inet6 fd17:625c:f037:2:ec9a:2e04:232e:785b prefixlen 64 scopeid 0x0<global>
    inet6 fe80::a00:27ff:fee8:d53c prefixlen 64 scopeid 0x20<link>
    ether 08:00:27:e8:d5:3c txqueuelen 1000 (Ethernet)
    RX packets 24993 bytes 25410420 (25.4 MB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 11217 bytes 1013771 (1.0 MB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 prefixlen 128 scopeid 0x10<host>
    loop txqueuelen 1000 (Local Loopback)
    RX packets 1063 bytes 266705 (266.7 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 1063 bytes 266705 (266.7 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

vboxuser@ubuntu:~$
```

Hacemos lo de la IP pero en vez de con etw0 con enp0s3

```
vboxuser@ubuntu:~$ ifconfig
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 10.0.2.15 netmask 255.255.255.0 broadcast 10.0.2.255
    inet6 fd17:625c:f037:2:a00:27ff:fee8:d53c prefixlen 64 scopeid 0x0<global>
    inet6 fd17:625c:f037:2:ec9a:2e04:232e:785b prefixlen 64 scopeid 0x0<global>
    inet6 fe80::a00:27ff:fee8:d53c prefixlen 64 scopeid 0x20<link>
    ether 08:00:27:e8:d5:3c txqueuelen 1000 (Ethernet)
    RX packets 24993 bytes 25410420 (25.4 MB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 11217 bytes 1013771 (1.0 MB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 prefixlen 128 scopeid 0x10<host>
    loop txqueuelen 1000 (Local Loopback)
    RX packets 1063 bytes 266705 (266.7 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 1063 bytes 266705 (266.7 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

vboxuser@ubuntu:~$ ip addr show enp0s3 | grep inet
    inet 10.0.2.15/24 brd 10.0.2.255 scope global dynamic noprefixroute enp0s3
    inet6 fd17:625c:f037:2:ec9a:2e04:232e:785b/64 scope global temporary dynamic
    inet6 fe80::a00:27ff:fee8:d53c/64 scope link dynamic mngtmpaddr
vboxuser@ubuntu:~$
```