


1. Apache2 y Nginx ya están instalados
2. Cambio puerto

```
vboxuser@ubuntu24: ~  
GNU nano 7.2 /etc/apache2/ports.conf *  
# If you just change the port or add more ports here, you will likely  
# have to change the VirtualHost statement in  
# /etc/apache2/sites-enabled/000-default.conf  
  
Listen 8080  
  
<IfModule ssl_module>  
    Listen 443  
</IfModule>  
  
<IfModule mod_gnutls.c>  
    Listen 443  
</IfModule>
```

```
GNU nano 7.2 /etc/apache2/sites-available/000-default.conf *  
<VirtualHost *:8080>  
    # The ServerName directive sets the request scheme, hostname  
    # the server uses to identify itself. This is used when creat  
    # redirection URLs. In the context of virtual hosts, the Ser  
    # specifies what hostname must appear in the request's Host:  
    # match this virtual host. For the default virtual host (this  
    # value is not decisive as it is used as a last resort host  
    # However, you must set it for any further virtual host expl  
    #ServerName www.example.com  
  
    ServerAdmin webmaster@localhost  
    DocumentRoot /var/www/html  
  
    # Available loglevels: trace8, ..., trace1, debug, info, not  
    # error, crit, alert, emerg.  
    # It is also possible to configure the loglevel for particul
```

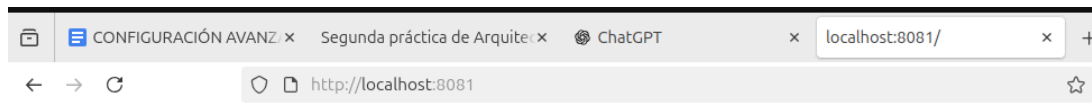
### 3. Funciona Apache2

PHP Version 8.3.6	
	
System	Linux ubuntu24 6.14.0-33-generic #33~24.04.1-Ubuntu SMP PREEMPT_DYNAMIC Fri Sep 19 17:02:30 UTC 2 x86_64
Build Date	Jul 14 2025 18:30:55
Build System	Linux
Server API	Apache 2.0 Handler
Virtual Directory Support	disabled
Configuration File (php.ini) Path	/etc/php/8.3/apache2
Loaded Configuration File	/etc/php/8.3/apache2/php.ini
Scan this dir for additional .ini files	/etc/php/8.3/apache2/conf.d
Additional .ini files parsed	/etc/php/8.3/apache2/conf.d/10-opcache.ini, /etc/php/8.3/apache2/conf.d/10-pdo.ini, /etc/php/8.3/apache2/conf.d/20-calendar.ini, /etc/php/8.3/apache2/conf.d/20-ctype.ini, /etc/php/8.3/apache2/conf.d/20-exif.ini, /etc/php/8.3/apache2/conf.d/20-ffi.ini, /etc/php/8.3/apache2/conf.d/20-fileinfo.ini, /etc/php/8.3/apache2/conf.d/20-ftp.ini, /etc/php/8.3/apache2/conf.d/20-gettext.ini, /etc/php/8.3/apache2/conf.d/20-iconv.ini, /etc/php/8.3/apache2/conf.d/20-phar.ini, /etc/php/8.3/apache2/conf.d/20-posix.ini, /etc/php/8.3/apache2/conf.d/20-readline.ini, /etc/php/8.3/apache2/conf.d/20-shmop.ini, /etc/php/8.3/apache2/conf.d/20-sockets.ini, /etc/php/8.3/apache2/conf.d/20-sysmsg.ini, /etc/php/8.3/apache2/conf.d/20-syssem.ini, /etc/php/8.3/apache2/conf.d/20-sysvshm.ini, /etc/php/8.3/apache2/conf.d/20-tokenizer.ini
PHP API	20230831
PHP Extension	20230831
Zend Extension	420230831
Zend Extension Build	API420230831,NTS
PHP Extension Build	API20230831,NTS
Debug Build	no
Thread Safety	disabled
Zend Signal Handling	enabled

### 4. Cambiamos puerto de Nginx

```
vboxuser@ubuntu24: ~  
GNU nano 7.2 /etc/nginx/sites-available/default  
#  
# Please see /usr/share/doc/nginx-doc/examples/ for more examples  
##  
  
# Default server configuration  
#  
server {  
    listen 8081 default_server;  
    listen [::]:8081 default_server;  
  
    # SSL configuration  
    #  
    # listen 443 ssl default_server;  
    # listen [::]:443 ssl default_server;  
    #  
    # Note: You should disable gzip for SSL traffic.  
    # See: https://bugs.debian.org/773332  
    #  
    #
```

## 5. Nginx funciona



## 6. Instalamos dependencias y el repositorio de Caddy

```
vboxuser@ubuntu24:~$ sudo apt install -y debian-keyring debian-archive-keyring
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
curl is already the newest version (8.5.0-2ubuntu10.6).
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:
  apt-transport-https debian-archive-keyring debian-keyring
0 upgraded, 3 newly installed, 0 to remove and 5 not upgraded.
Need to get 31.5 MB of archives.
After this operation, 33.4 MB of additional disk space will be used.
Get:1 http://es.archive.ubuntu.com/ubuntu noble-updates/universe amd64 apt-transport-https 2.8.3_all.deb [31.5 kB]
Get:2 http://es.archive.ubuntu.com/ubuntu noble/universe amd64 debian-archive-keyring 0.2.24_all.deb [4,812 B]
Get:3 http://es.archive.ubuntu.com/ubuntu noble/universe amd64 debian-keyring 0.2.24_all.deb [4,812 B]
Fetched 31.5 MB in 14s (2,266 kB/s)
Selecting previously unselected package apt-transport-https.
(Reading database ... 151052 files and directories currently installed.)
Preparing to unpack .../apt-transport-https_2.8.3_all.deb ...
Unpacking apt-transport-https (2.8.3) ...
```

```
vboxuser@ubuntu24:~$ curl -sLf 'https://dl.cloudsmith.io/public/caddy/stable/gpg.k
e/keyrings/caddy-stable-archive-keyring.gpg
vboxuser@ubuntu24:~$ curl -sLf 'https://dl.cloudsmith.io/public/caddy/stable/debia
s.list.d/caddy-stable.list
# Source: Caddy
# Site: https://github.com/caddyserver/caddy
# Repository: Caddy / stable
# Description: Fast, multi-platform web server with automatic HTTPS

deb [signed-by=/usr/share/keyrings/caddy-stable-archive-keyring.gpg] https://dl.cl
bian any-version main

deb-src [signed-by=/usr/share/keyrings/caddy-stable-archive-keyring.gpg] https://dl
b/debian any-version main
```

## 7. Instalamos Caddy

```
vboxuser@ubuntu24:~$ sudo apt update && sudo apt install caddy -y
Hit:1 http://es.archive.ubuntu.com/ubuntu noble InRelease
Get:2 http://security.ubuntu.com/ubuntu noble-security InRelease [126
Get:3 http://es.archive.ubuntu.com/ubuntu noble-updates InRelease [126
Get:4 https://dl.cloudsmith.io/public/caddy/stable/deb/debian any-vers
Get:5 http://es.archive.ubuntu.com/ubuntu noble-backports InRelease [1
Get:6 http://security.ubuntu.com/ubuntu noble-security/main amd64 Pack
Get:7 https://dl.cloudsmith.io/public/caddy/stable/deb/debian any-vers
Get:8 http://es.archive.ubuntu.com/ubuntu noble-updates/main amd64 Pac
Get:9 http://security.ubuntu.com/ubuntu noble-security/main Translatio
Get:10 http://security.ubuntu.com/ubuntu noble-security/main amd64 Com
Get:11 http://security.ubuntu.com/ubuntu noble-security/main amd64 c-n
Get:12 http://security.ubuntu.com/ubuntu noble-security/restricted amd
```

## 8. Creo directorio para Caddy

```
vboxuser@ubuntu24:~$ sudo mkdir -p /var/www/caddy
vboxuser@ubuntu24:~$
```

## 9. Creamos archivo markdown

```
vboxuser@ubuntu24:~$ echo "# Bienvenido a Caddy" | sudo tee /var/www/caddy/README.md
echo "" | sudo tee -a /var/www/caddy/README.md
echo "Este servidor está funcionando correctamente." | sudo tee -a /var/www/caddy/README.md
echo "" | sudo tee -a /var/www/caddy/README.md
echo "## Características" | sudo tee -a /var/www/caddy/README.md
echo "- Servidor moderno" | sudo tee -a /var/www/caddy/README.md
echo "- HTTPS automático" | sudo tee -a /var/www/caddy/README.md
echo "- Fácil configuración" | sudo tee -a /var/www/caddy/README.md

# Bienvenido a Caddy

Este servidor está funcionando correctamente.

## Características
- Servidor moderno
- HTTPS automático
- Fácil configuración
```

## 10. Descargamos imagen de prueba

```
vboxuser@ubuntu24:~$ curl -o /tmp/test-image.jpg "https://www.python.org/static/images/python-logo.png"
sudo mv /tmp/test-image.jpg /var/www/caddy/test.jpg
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left   Speed
100  7382  100  7382    0     0   186k      0  --:--:-- --:--:-- --:--:--  189k
```

## 11. Configura el archivo Caddyfile

```
# To use your own domain name (with automatic HTTPS), you must supply a domain name to Caddyfile.
# sure your domain's A/AAAA DNS records are properly set up in DNS to match this machine's public IP, then replace ":80" below
# with your domain name.

:8082 {
    # Set this path to your site's directory.
    root * /usr/share/caddy

    # Enable the static file server.
    file_server

    # Another common task is to set up a reverse proxy, but this isn't required for our example.
```

## 12. Reiniciamos Caddy y hacemos status

```
vboxuser@ubuntu24:~$ sudo systemctl restart caddy
vboxuser@ubuntu24:~$ sudo systemctl status caddy
● caddy.service - Caddy
   Loaded: loaded (/usr/lib/systemd/system/caddy.service; enabled; preset: enabled)
   Active: active (running) since Wed 2025-10-08 07:27:50 UTC; 5s ago
     Docs: https://caddyserver.com/docs/
  Main PID: 7982 (caddy)
    Tasks: 9 (limit: 4603)
   Memory: 10.9M (peak: 11.7M)
      CPU: 75ms
   CGroup: /system.slice/caddy.service
           └─7982 /usr/bin/caddy run --environ --config /etc/caddy/Caddyfile
```

## 13. Pruebas con Caddy



```
CONFIGURACIÓN AVANZADA x Segunda práctica de Arquitectura x ChatGPT x localhost:8082/README.md x
http://localhost:8082/README.md

# Bienvenido a Caddy

Este servidor está funcionando correctamente.

## Características
- Servidor moderno
- HTTPS automático
- Fácil configuración
```

#### 14. Instala Certbot y plugin Apache

```
vboxuser@ubuntu24:~$ sudo apt install certbot python3-certbot-apache -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:
  augeas-lenses libaugeas0 python3-acme python3-augeas python3-certbot python3-
python3-josepy python3-openssl python3-parsedatetime python3-rfc3339
Suggested packages:
```

#### 15. Genera certificado autofirmado

```
vboxuser@ubuntu24:~$ sudo openssl req -x509 -nodes -days 365
-keyout /etc/ssl/private/apache-selfsigned.key \
-out /etc/ssl/certs/apache-selfsigned.crt
.....+.....+.....+.....+.....+.....+.....+.....+.....+
*.....+.....+.....+.....+.....+.....+.....+.....+.....+
+.....+.....+.....+.....+.....+.....+.....+.....+.....+
...+.....+.....+.....+.....+.....+.....+.....+.....+
+.....+.....+.....+.....+.....+.....+.....+.....+.....+
+.....+.....+.....+.....+.....+.....+.....+.....+.....+
+.....+.....+.....+.....+.....+.....+.....+.....+.....+
+.....+.....+.....+.....+.....+.....+.....+.....+.....+
-----
You are about to be asked to enter information that will be
into your certificate request.
What you are about to enter is what is called a Distinguished
There are quite a few fields but you can leave some blank
For some fields there will be a default value,
If you enter '.', the field will be left blank.
-----
Country Name (2 letter code) [AU]:ES
State or Province Name (full name) [Some-State]:Madrid
Locality Name (eg, city) []:Madrid
Organization Name (eg, company) [Internet Widgits Pty Ltd]:
Organizational Unit Name (eg, section) []:
Common Name (e.g. server FQDN or YOUR name) []:
Email Address []:
```

#### 16. Activa módulo SSL

```
vboxuser@ubuntu24:~$ sudo a2enmod ssl
Considering dependency mime for ssl:
Module mime already enabled
Considering dependency socache_shmcb for ssl:
Enabling module socache_shmcb.
Enabling module ssl.
See /usr/share/doc/apache2/README.Debian.gz on
To activate the new configuration, you need to
systemctl restart apache2
```

#### 17. Edita VirtualHost SSL

```
# Enable/Disable SSL for this virtual host.
SSLEngine on

# A self-signed (snakeoil) certificate can be created by installing
# the ssl-cert package. See
# /usr/share/doc/apache2/README.Debian.gz for more info.
# If both key and certificate are stored in the same file, the
# SSLCertificateFile directive is needed.
SSLCertificateFile /etc/ssl/certs/apache-selfsigned.crt
SSLCertificateKeyFile /etc/ssl/private/apache-selfsigned.key
# Server Certificate Chain:
```

#### 18. Cambiamos puerto

```
# /etc/apache2/sites-enabled/000-default.conf

Listen 8443

<IfModule ssl_module>
    Listen 443
</IfModule>

<VirtualHost *:8443>
    ServerAdmin webmaster@localhost

    DocumentRoot /var/www/html

    # Available loglevels: trace8,
    # error, crit, alert, emerg.
```



## 19. Habilita sitio SSL

```
vboxuser@ubuntu24:~$ sudo a2ensite default-ssl.conf
Enabling site default-ssl.
To activate the new configuration, you need to run:
    systemctl reload apache2
vboxuser@ubuntu24:~$ sudo systemctl restart apache2
vboxuser@ubuntu24:~$
```

## 20. Verifica HTTPS

```
vboxuser@ubuntu24:~$ sudo systemctl restart apache2
vboxuser@ubuntu24:~$ curl -i -k https://localhost:8443
HTTP/1.1 200 OK
Date: Wed, 08 Oct 2025 07:58:00 GMT
Server: Apache/2.4.58 (Ubuntu)
Last-Modified: Wed, 01 Oct 2025 08:56:05 GMT
ETag: "49-6401509f0146e"
Accept-Ranges: bytes
Content-Length: 73
Vary: Accept-Encoding
Content-Type: text/html

<h1>Hola Mundo desde Nginx</h1><p>Servidor funcionando correctamente</p>
vboxuser@ubuntu24:~$
```

## 21. Verificación Final de los 3 Servidores

```
● apache2.service - The Apache HTTP Server
   Loaded: loaded (/usr/lib/systemd/system/apache2.service; disabled; preset: enabled)
   Active: active (running) since Wed 2025-10-08 07:56:37 UTC; 2min 15s ago
     Docs: https://httpd.apache.org/docs/2.4/
   Process: 9790 ExecStart=/usr/sbin/apachectl start (code=exited, status=0/SUCCESS)
    Main PID: 9796 (apache2)
       Tasks: 6 (limit: 4603)
      Memory: 11.8M (peak: 12.2M)
         CPU: 61ms
    CGroup: /system.slice/apache2.service
            └─9796 /usr/sbin/apache2 -k start
              └─9798 /usr/sbin/apache2 -k start
                └─9799 /usr/sbin/apache2 -k start
                  └─9800 /usr/sbin/apache2 -k start
                    └─9801 /usr/sbin/apache2 -k start
                      └─9802 /usr/sbin/apache2 -k start

Oct 08 07:56:37 ubuntu24 systemd[1]: Starting apache2.service - The Apache HTTP Server...
Oct 08 07:56:37 ubuntu24 apachectl[9795]: AH00558: apache2: Could not reliably determine the server's
Oct 08 07:56:37 ubuntu24 systemd[1]: Started apache2.service - The Apache HTTP Server.

● 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 2025-10-08 07:12:00 UTC; 46min ago
     Docs: man:nginx(8)
            file:///ubuntu24/usr/lib/systemd/system/nginx.service
    Main PID: 6303 (nginx)
       Tasks: 5 (limit: 4603)
      Memory: 4.4M (peak: 5.0M)
         CPU: 18ms
    CGroup: /system.slice/nginx.service
            └─6303 "nginx: master process /usr/sbin/nginx -q daemon on; master process on;"
```

```

● caddy.service - Caddy
   Loaded: loaded (/usr/lib/systemd/system/caddy.service; enabled; preset: en
   Active: active (running) since Wed 2025-10-08 07:34:53 UTC; 25min ago
     Docs: https://caddyserver.com/docs/
   Main PID: 8452 (caddy)
    Tasks: 8 (limit: 4603)
   Memory: 9.9M (peak: 11.3M)
      CPU: 447ms
   CGroup: /system.slice/caddy.service
           └─8452 /usr/bin/caddy run --environ --config /etc/caddy/Caddyfile

```

```

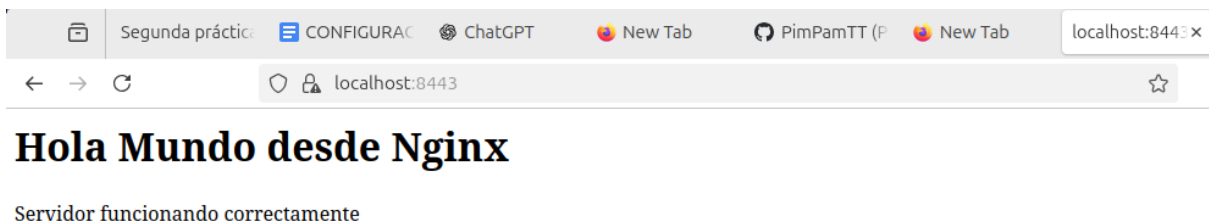
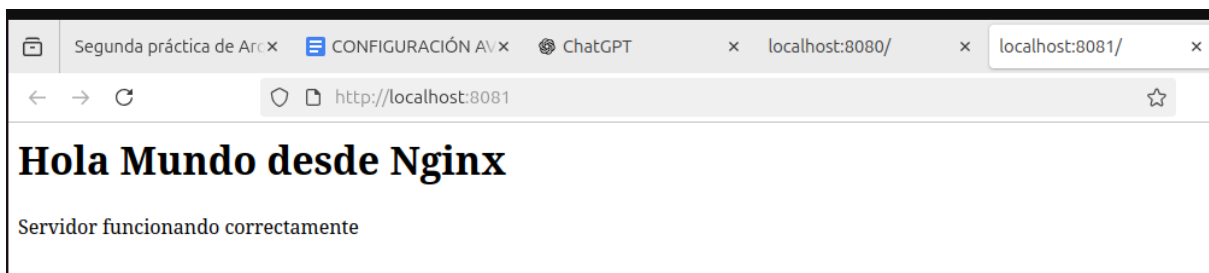
vboxuser@ubuntu24:~$ sudo netstat -tulpn | grep -E '8080|8081|8082|8443'
tcp        0      0 0.0.0.0:8081          0.0.0.0:*            LISTEN      11509/nginx: master
tcp6       0      0 :::8082              :::*                  LISTEN      8452/caddy
tcp6       0      0 :::8080              :::*                  LISTEN      11531/apache2
tcp6       0      0 :::8081              :::*                  LISTEN      11509/nginx: master
tcp6       0      0 :::8443              :::*                  LISTEN      11531/apache2
vboxuser@ubuntu24:~$

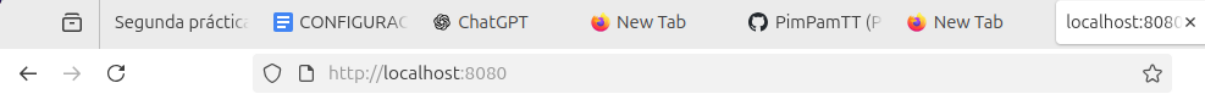
```

```

vboxuser@ubuntu24:~$ curl http://localhost:8081
<h1>Hola Mundo desde Nginx</h1><p>Servidor funcionando correctamente</p>
vboxuser@ubuntu24:~$

```





# Hola Mundo desde Nginx

Servidor funcionando correctamente