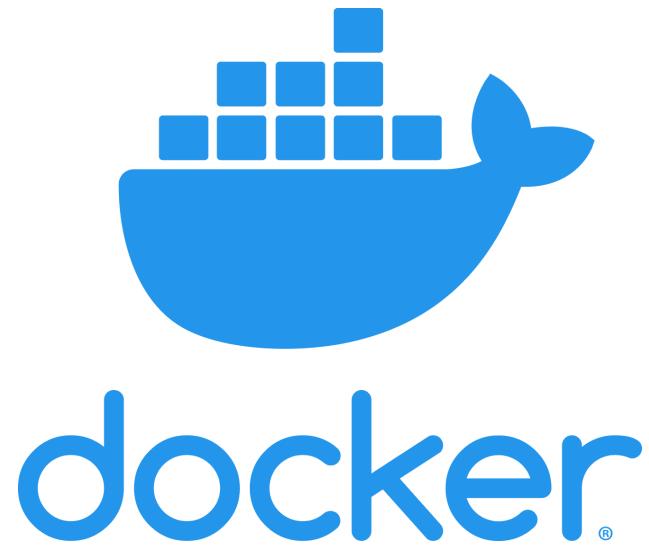


# Docker i Apache



Victor Redel Ruedas  
CFGS ASIX  
2025-2026

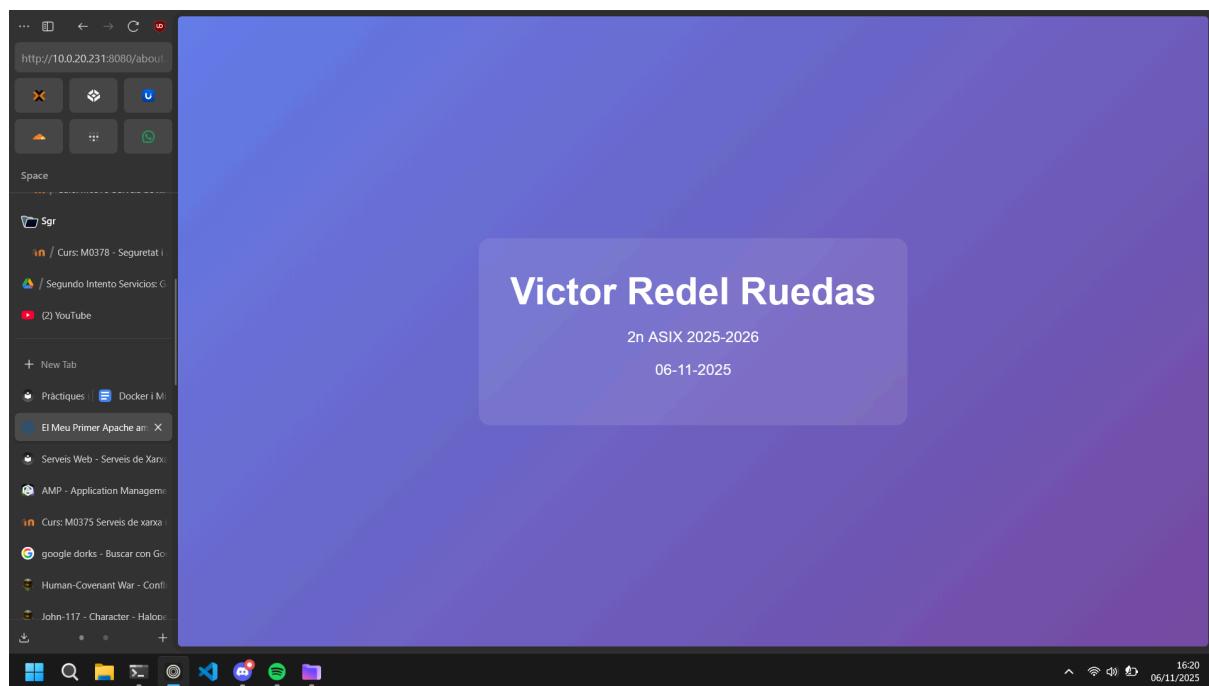
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## Reptes

### Repte 1

```
root@debian13:~/docker-apache-lab/html# cp index.html about.html  
root@debian13:~/docker-apache-lab/html# |
```

```
GNU nano 8.4                               about.html  
background: linear-gradient(135deg, #667eea 0%, #764ba2 100%);  
color: white;  
display: flex;  
justify-content: center;  
align-items: center;  
height: 100vh;  
margin: 0;  
}  
.container {  
text-align: center;  
background: rgba(255, 255, 255, 0.1);  
padding: 40px;  
border-radius: 15px;  
backdrop-filter: blur(10px);  
}  
h1 { font-size: 3em; margin: 0; }  
p { font-size: 1.2em; }  
</style>  
</head>  
<body>  
  <div class="container">  
    <h1> Victor Redel Ruedas</h1>  
    <p>2n ASIX 2025-2026</p>  
    <p>06-11-2025</p>  
  </div>  
</body>  
</html>
```



## Repte 2

Crearé les paginés primer:

```
root@debian13:~/docker-httpd-vrr# mkdir Paginas
root@debian13:~/docker-httpd-vrr# cd Paginas/
root@debian13:~/docker-httpd-vrr/Paginas# touch index.html services.html contact.html
root@debian13:~/docker-httpd-vrr/Paginas# ls
contact.html index.html services.html
root@debian13:~/docker-httpd-vrr/Paginas# |
```

```
GNU nano 8.4
index.html *
victor redel ruedas
cfgs asix
2025-2026
```

Definim el Dockerfile:

```
GNU nano 8.4
Dockerfile
#Base Docker
FROM httpd:2.4.65-alpine

#Copiar paginas
COPY Paginas/ /usr/local/apache2/htdocs/

#creacion del usuario no root
RUN addgroup -g 1001 apachevr-user && \
    adduser -D -u 1001 -G apachevr-user apachevr-user

#asignar permisos
RUN chown -R 1001:1001 /usr/local/apache2/

#definein userio no root
USER 1001

#Metadatos
LABEL maintainer="vredel@sapalomera.cat"
LABEL description="Apache VRR"

#puertos
EXPOSE 80
```

Crea'm la imatge i l'arranquem

```
root@debian13:~/docker-httpd-vrr# docker build -t apache-exercise-victorredel:v1.0 .
[+] Building 11.4s (9/9) FINISHED
--> [internal] load build definition from Dockerfile
--> [internal] transfering dockerfile: 464B
--> [internal] load metadata for docker.io/library/httpd:2.4.65-alpine
--> [internal] load .dockerignore
--> [internal] transfering context: 28
--> [internal] load build context
--> [internal] transfering context: 199B
--> CACHED [1/4] FROM docker.io/library/httpd:2.4.65-alpine@sha256:07b2fab7029a0b8aebe0fd02651c28fe22c21c5b5a59d6ff9b022791fcdb89e
--> [2/4] COPY Paginas/ /usr/local/apache2/htdocs/
--> [3/4] RUN addgroup -g 1001 apachevr-user && \
--> [4/4] RUN chown -R 1001:1001 /usr/local/apache2/
--> exporting image
--> exporting layers
--> writing image sha256:8b0e84bb0f72cd42886520202b0453dcf05a3598a8dbffae2034501c82e0ef2
--> naming to docker.io/victorredel/apache-exercise-victorredel:v1.0
root@debian13:~/docker-httpd-vrr# docker run -d -p 8083:80 --name apache-exercise-victorredel apache-exercise-victorredel:v1.0
1b61aa4ff199059d2f31bdceddf05a95037bf619ee5a8871dbfb8232485985a
```



```
root@debian13:~/docker-httpd-vrr# docker exec -it apache-exercise-victorredel sh
/usr/local/apache2 $ ls htdocs/
contact.html index.html      services.html
/usr/local/apache2 $ |
```

## Repte 3

### Modificació de l'arxiu ".htaccess"

```

GNU nano 8.4                                         html/.htaccess
# Activar el motor de rewrite
RewriteEngine On

# Exemple: Redirigir .htm a .html
RewriteCond %{REQUEST_FILENAME}.html -f
RewriteRule ^(.*)$ $1.html [L]
RewriteRule ^old-page$ /new-page.html [R=301,L]

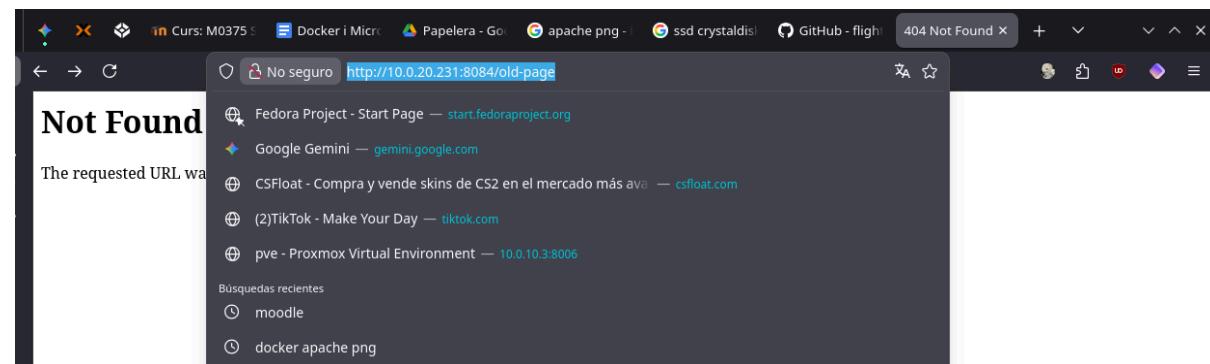
# Protegir fitxers de configuració
<FilesMatch "\.">
    Require all denied
</FilesMatch>

# Capçalera personalitzada per indicar que s'està utilitzant .htaccess
#Header set X-Powered-By "Apache-ASIX-Lab"
Header set X-Lab-Version "1.0"

# Desactivar listatge de directoris (si no hi ha index.html)
Options -Indexes

root@debian13:~/docker-apache-lab/apache-config# docker stop apache-configured
apache-configured
root@debian13:~/docker-apache-lab/apache-config# docker rm apache-configured
apache-configured
root@debian13:~/docker-apache-lab/apache-config# docker build -t apache-configured:v1.2 .
[+] Building 2.3s (8/8) FINISHED
--> [internal] load build definition from Dockerfile          docker:default
--> => transferring dockerfile: 371B                         0.0s
--> [internal] load metadata for docker.io/library/httpd:2.4.65-alpine   0.0s
--> [internal] load .dockerignore                           0.0s
--> => transferring context: 2B                         0.0s
--> [1/3] FROM docker.io/library/httpd:2.4.65-alpine@sha256:07b2fabb7029a0b8aeb2e0fd02651c28fe22c21c5b5a59d6ff5b022791fcdb89e  0.0s
--> [internal] load build context                         0.1s
--> => transferring context: 6948                         0.0s
--> => CACHED [2/3] COPY conf/httpd-custom.conf /usr/local/apache2/conf/httpd.conf  0.0s
--> [3/3] COPY html/ /usr/local/apache2/htdocs/           0.7s
--> => exporting image                                     0.2s
--> => exporting layers                                    0.1s
--> => writing image sha256:93fcf00635c13b8891a3c82390aabef8e4357fc844f548953da9e2b169229459  0.0s
--> => naming to docker.io/library/apache-configured:v1.2  0.0s
root@debian13:~/docker-apache-lab/apache-config# 

```



The screenshot shows a browser window with a 404 Not Found error message: "Not Found" and "The requested URL was not found on this server." Below the browser is the developer tools Network tab, which displays two requests:

Estado	Mét..	Dominio	Archivo	Iniciador	Tipo	Transferido	Tam...	Cabeceras	Cookies	Solicitud	Respuesta	Caché	Tiempos				
304	GET	10.0.20.23...	index.html	document	html	cacheado	1,13 ...	Filtrar cabeceras				Bloquear   Reenviar					
196	GET	10.0.20.23...	favicon.ico	img	html	cacheado	196 B	Estado	304 Not Modified	Versión	HTTP/1.1	Transferido	1,46 KB (tamaño 1,13 KB)	Prioridad de la solicitud	Highest	Resolución DNS	Sistema

The "Cabeceras" section shows the response headers:

- Accept-Ranges: bytes
- Connection: Keep-Alive
- Date: Thu, 27 Nov 2025 12:24:25 GMT
- ETag: "46c-644815967ba40"
- Keep-Alive: timeout=5, max=100
- Last-Modified: Wed, 26 Nov 2025 15:50:01 GMT
- Server: Apache/2.4.65 (Unix)
- X-Content-Type-Options: nosniff
- X-Frame-Options: SAMEORIGIN
- X-Lab-Version: 1.0

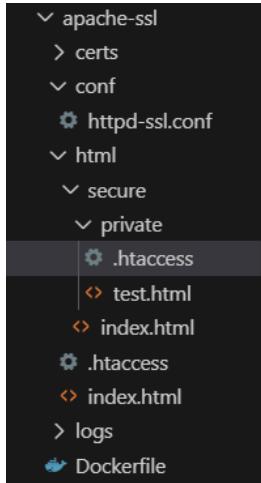
The "Cabeceras de la petición" section shows the request headers:

- Accept: text/html,application/xhtml+xml,application/xml;q=0.9,\*/\*;q=0.8
- Accept-Encoding: gzip, deflate
- Accept-Language: es-ES;es;q=0.8,en-US;q=0.5,en;q=0.3
- Connection: keep-alive
- Host: 10.0.20.231:8084

At the bottom of the Network tab, there are performance metrics: 2 solicitudes, 1,33 KB / 0 B transferido, Finalizado: 77 ms, DOMContentLoaded: 26 ms, load: 30 ms.

## Repte 4

Estructura per la nova pàgina:



Arxiu de configuració httpd-ssl:

apache-ssl

```

93  <VirtualHost *:80>
94    ServerAlias www.secure-site-victorredel.local
95
96    # Redirigeix tot el tràfic HTTP a HTTPS
97    RewriteEngine On
98    RewriteCond %{HTTPS} off
99    #   RewriteRule ^(.*)$ https:// %{HTTP_HOST}$1 [R=301,L]
100   RewriteRule ^(.*)$ https://secure-site-victorredel.local:9443$1 [R=301,L]
101
102   ErrorLog "logs/http-error.log"
103   CustomLog "logs/http-access.log" combined
104 </VirtualHost>
105
106
107 <VirtualHost *:443>
108   ServerName secure-site-victorredel.local
109   ServerAlias www.secure-site-victorredel.local
110   DocumentRoot "/usr/local/apache2/htdocs/secure"
111
112   # Activa SSL
113   SSLEngine on
114
115   # Rutes als certificats
116   SSLCertificateFile "/usr/local/apache2/certs/server.crt"
117   SSLCertificateKeyFile "/usr/local/apache2/certs/server.key"
118
119   # Protocols SSL/TLS moderns (desactiva versions antigues insegures)
120   # Seguint les recomanacions de seguretat 2025
121   SSLProtocol all -SSLv3 -TLSv1 -TLSv1.1
122
123   # Cipher suites segures (prioritza algoritmes moderns)
124   SSLCipherSuite HIGH:!aNULL:!MD5:!RC4
125   SSLHonorCipherOrder on
126
127   # Capçaleres de seguretat HTTP
128   Header always set Strict-Transport-Security "max-age=31536000; includeSubDomains"
129   Header always set X-Frame-Options "SAMEORIGIN"
130   Header always set X-Content-Type-Options "nosniff"
131   Header always set X-XSS-Protection "1; mode=block"
132
133   <Directory "/usr/local/apache2/htdocs/secure">
134     Options -Indexes +FollowSymLinks
135     AllowOverride All
136     Require all granted
137   </Directory>
138
139   # 1. Log de Errors (ErrorLog)
140   # Aquí se registran los errores internos de Apache (404, 500, problemas de configuración, etc.)
141   ErrorLog "/usr/local/apache2/logs/secure-site-victorredel-error.log"
142
143   # 2. Log de Acceso (CustomLog)
144   # Aquí se registran todas las peticiones que llegan al servidor (GET, POST, IPs, códigos de estado, etc.)
145   CustomLog "/usr/local/apache2/logs/secure-site-victorredel-access.log" combined
146 </VirtualHost>
  
```

Bloqueja l'accés al directori /private

```
docker-apache-lab > apache-ssl > html > secure > private > .htaccess
1 # Bloquear el acceso a todos
2 Require all denied
```

Reescriu les URLs per eliminar .html

Afegeix una capçalera X-Secure-Site: true

```
docker-apache-lab > apache-ssl > html > secure > .htaccess
1 # Activa el motor de reescritura
2 RewriteEngine On
3
4 RewriteCond %{REQUEST_FILENAME} !-f
5 RewriteCond %{REQUEST_FILENAME} !-d
6
7 # checkea si hay un .html
8 RewriteRule ^([^\.]+)$ $1.html [NC,L]
9 # internamente se guarda el .html
10
11 <IfModule mod_headers>
12 |   Header set X-Secure-Site "true"
13 </IfModule>
```

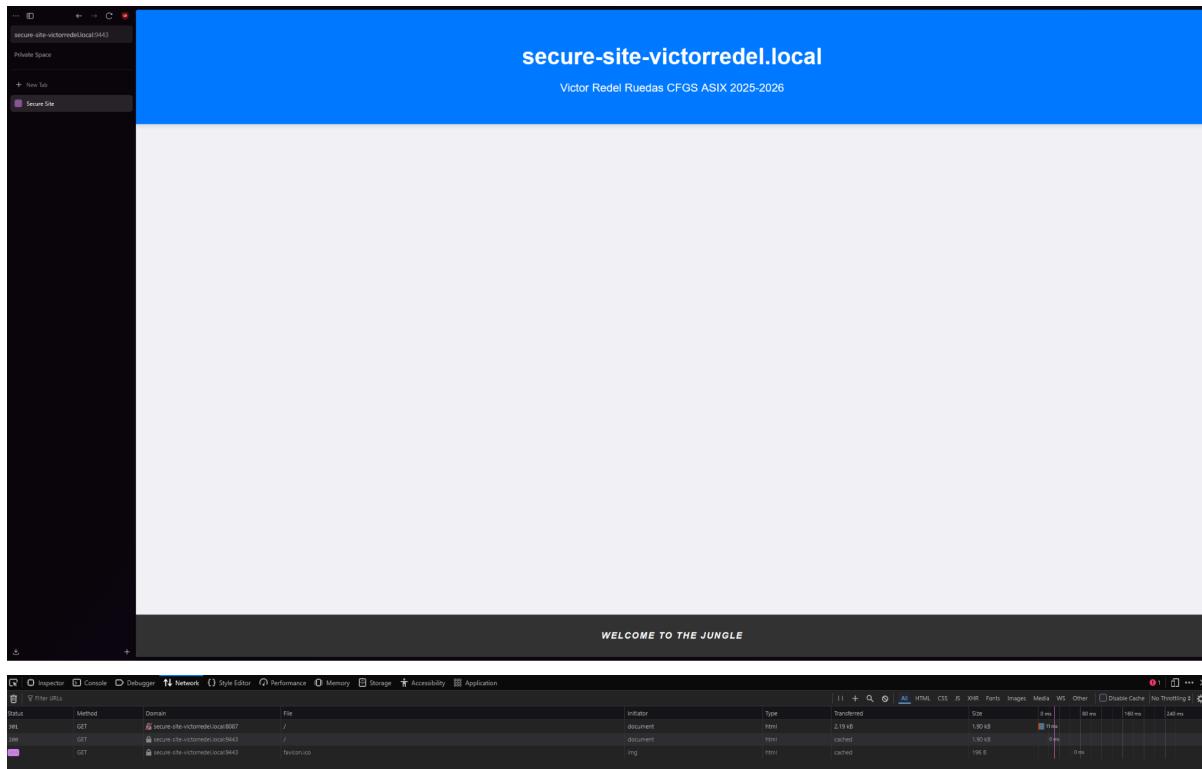
Logs separats:

```
# 1. Log de Errores (ErrorLog)
# Aquí se registran los errores internos de Apache (404, 500, problemas de configuración, etc.)
ErrorLog "/usr/local/apache2/logs/secure-site-victorredel-error.log"

# 2. Log de Acceso (CustomLog)
# Aquí se registran todas las peticiones que llegan al servidor (GET, POST, IPs, códigos de estado, etc.)
CustomLog "/usr/local/apache2/logs/secure-site-victorredel-access.log" combined
</VirtualHost>
```

```
debian13@debian13:~/docker-apache-lab/apache-ssl$ docker exec -it vrrpage sh
/usr/local/apache2 # ls logs/
access.log           http-error.log          https-error.log
error.log            httpd.pid              secure-site-victorredel-access.log
http-access.log      https-access.log       secure-site-victorredel-error.log
/usr/local/apache2 # ls logs/secure-site-victorredel-access.log

/usr/local/apache2 # cat logs/secure-site-victorredel-access.log
172.17.0.1 - - [04/Dec/2025:14:50:36 +0000] "GET / HTTP/1.1" 500 531 "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:145.0) Gecko/201001 Firefox/145.0"
172.17.0.1 - - [04/Dec/2025:14:50:36 +0000] "GET /favicon.ico HTTP/1.1" 500 531 "https://secure-site-victorredel.local:9443/" "Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:145.0) Gecko/201001 Firefox/145.0"
172.17.0.1 - - [04/Dec/2025:14:50:49 +0000] "GET / HTTP/1.1" 500 531 "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:145.0) Gecko/201001 Firefox/145.0"
172.17.0.1 - - [04/Dec/2025:15:02:54 +0000] "GET / HTTP/1.1" 200 1900 "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:145.0) Gecko/201001 Firefox/145.0"
172.17.0.1 - - [04/Dec/2025:15:02:54 +0000] "GET /favicon.ico HTTP/1.1" 404 196 "https://secure-site-victorredel.local:9443/" "Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:145.0) Gecko/201001 Firefox/145.0"
172.17.0.1 - - [04/Dec/2025:15:06:10 +0000] "GET / HTTP/1.1" 200 1900 "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:145.0) Gecko/201001 Firefox/145.0"
172.17.0.1 - - [04/Dec/2025:15:06:10 +0000] "GET /favicon.ico HTTP/1.1" 404 196 "https://secure-site-victorredel.local:9443/" "Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:145.0) Gecko/201001 Firefox/145.0"
172.17.0.1 - - [04/Dec/2025:15:06:40 +0000] "GET / HTTP/1.1" 304 - "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:145.0) Gecko/201001 Firefox/145.0"
/usr/local/apache2 #
```



## Repte 5:

```

redisdb:
  image: redis:7-alpine
  container_name: redisdb
  volumes:
    - cache:/data
  ports:
    - "6379:6379"
  command: redis-server --requirepass P@ssw0rd
  networks:
    - lamp-network

# Definició de xarxes
networks:
  lamp-network:
    driver: bridge # Xarxa bridge per defecte (permets comunicació entre contenidors)

# Definició de volums amb nom (persistents)
volumes:
  mysql-data:
    driver: local # Volum local gestionat per Docker
  cache:
    driver: local
  
```

```

// Configuración de la conexión a Redis
$host = 'redisdb'; // Nombre del servicio en docker-compose.yml
$port = 6379;
$pass = 'P@ssw0rd'; // La contraseña que definiste en Docker Compose

// --- 1. Intenta conectar a Redis ---
$redis = new Redis();

try {
    // Conexión y autenticación
    $redis->connect($host, $port);
    $redis->auth($pass);

    // Si llegamos aquí, la conexión fue exitosa
    echo '<div class="status success">';
    echo '<h3> Connexió a Redis establecida correctament</h3>';
    echo '<p><strong>Servidor:</strong> ' . $host . '</p>';

    // --- 2. Lógica para el contador de visitas (STRING) ---

    // Incrementa el contador de visitas de la clave 'total_visits'
    $total_visits = $redis->incr('total_visits');
    echo '<h3> Total de Visites: ' . $total_visits . '</h3>';

    // --- 3. Lógica para el registro de visitas (LIST) ---

    $ip = $_SERVER['REMOTE_ADDR'];
    $timestamp = date('Y-m-d H:i:s');

    // Crear un JSON o string para el registro
    $visit_data = json_encode(['timestamp' => $timestamp, 'ip_address' => $ip]);

    // Agrega el registro al inicio de la lista 'recent_visits' (LPUSH)
    $redis->lpush('recent_visits', $visit_data);

    // Mantén solo los últimos 5 registros en la lista (LTRIM)
    $redis->ltrim('recent_visits', 0, 4);

    // --- 4. Muestra las últimas visitas (LIST) ---

    echo '<h3> Últimes 5 visites registrades (des de Redis):</h3>';

    // Obtiene los primeros 5 elementos de la lista (LRANGE)
    $recent_visits = $redis->lrange('recent_visits', 0, 4);

    if (!empty($recent_visits)) {
        echo '<table>';
        echo '<tr><th>ID (Clave)</th><th>Data i hora</th><th>IP</th></tr>';

        $i = 1;
        foreach ($recent_visits as $log) {
            $data = json_decode($log, true);
            
```

```

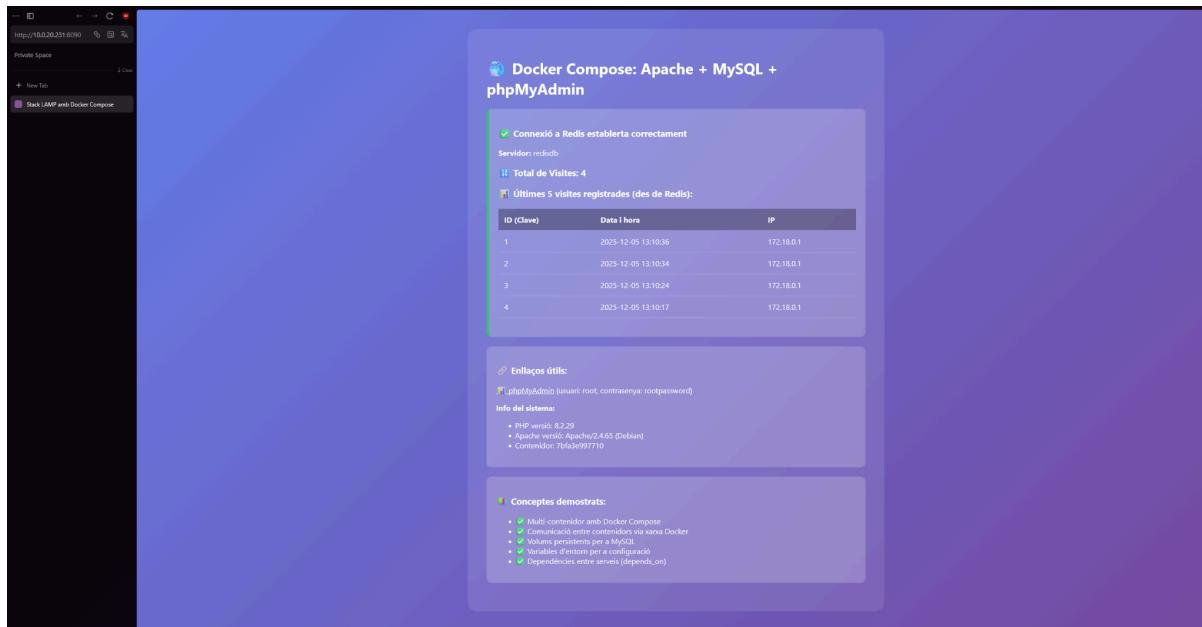
● Dockerfile X docker-compose.yml index.php
...
... docker-apache-lab > docker-compose-stack > apache > Dockerfile > ...
1  FROM php:8.2-apache
2
3  LABEL maintainer="v.redel@sapalomera.cat"
4  LABEL description="Apache amb PHP i extensió MySQL"
5
6  # Instal·la l'extensió mysqli per connectar a MySQL
7  RUN docker-php-ext-install mysqli && docker-php-ext-enable mysqli
8
9  RUN pecl install redis && \
10   docker-php-ext-enable redis
11
12 # Activa mod_rewrite
13 RUN a2enmod rewrite
14
15 # Copia el contingut web
16 COPY html/ /var/www/html/
17
18 # Exposa el port 80
19 EXPOSE 80

```

```

● debian13@debian13:~/docker-apache-lab/docker-compose-stack$ docker compose up -d --build
WARN[0000] /home/debian13/docker-apache-lab/docker-compose-stack/docker-compose.yml: the attribute `version` is obsolete, it will be ignored, please remove it to avoid potential confusion
[+] Building 1.4s (12/12) FINISHED
=> [internal] load local bake definitions 0.0s
=> => reading from stdin 599B 0.0s
=> [internal] load build definition from Dockerfile 0.0s
=> => transferring dockerfile: 461B 0.0s
=> [internal] load metadata for docker.io/library/php:8.2-apache 0.8s
=> [internal] load .dockerignore 0.0s
=> => transferring context: 2B 0.0s
=> [internal] load build context 0.1s
=> => transferring context: 60B 0.0s
=> [1/5] FROM docker.io/library/php:8.2-apache@sha256:b8c8cd2be5690fcc2a6d0a44fee6c319052ee961148236f 0.0s
=> CACHED [2/5] RUN docker-php-ext-install mysqli && docker-php-ext-enable mysqli 0.0s
=> CACHED [3/5] RUN pecl install redis && docker-php-ext-enable redis 0.0s
=> CACHED [4/5] RUN a2enmod rewrite 0.0s
=> CACHED [5/5] COPY html/ /var/www/html/ 0.0s
=> exporting to image 0.1s
=> => exporting layers 0.0s
=> => writing image sha256:aa47aba024a318451d06ef4c693bc7963b4e979940a1aba884f6f2328965e8b2 0.0s
=> => naming to docker.io/library/docker-compose-stack-apache 0.0s
=> resolving provenance for metadata file 0.0s
[+] Running 5/5
✓ docker-compose-stack-apache Built 0.0s
✓ Container lamp-mysql Running 0.0s
✓ Container redisdb Started 1.0s
✓ Container lamp-phpmyadmin Running 0.0s
✓ Container lamp-apache Running 0.0s
○ debian13@debian13:~/docker-apache-lab/docker-compose-stack$ 

```



docker-compose-stack

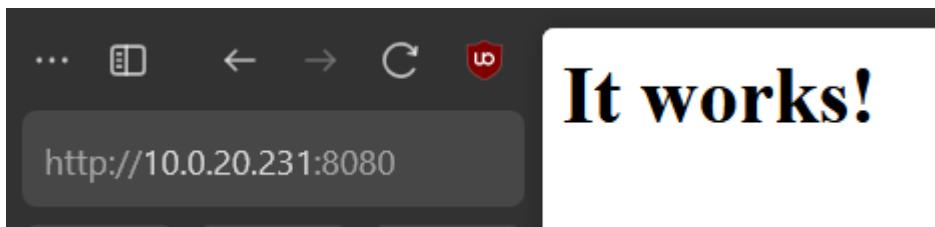
## Pràctiques

### Primer Contenidor

```
debian13@debian13:~$ docker pull httpd:2.4.65
permission denied while trying to connect to the Docker daemon socket at unix:///var/run/docker.sock: Post "http://%2Fvar%2Frun%2Fdocker.sock/v1.51/images/create?fromImage=docker.io%2Flibrary%2Fhttpd&tag=2.4.65": dial unix /var/run/docker.sock: connect: permission denied
debian13@debian13:~$ sudo !!
sudo docker pull httpd:2.4.65
[sudo] password for debian13:
2.4.65: Pulling from library/httpd
d7ecded7702a: Pull complete
fab98c44430d: Pull complete
4f4fb700ef54: Pull complete
13c22d886563: Pull complete
4870f70a8556: Pull complete
233dec01418c: Pull complete
Digest: sha256:ecfd5ca1bf1fc5e44a5836c5188bde7f397b50c7a5bb603a017543e29948a01
Status: Downloaded newer image for httpd:2.4.65
docker.io/library/httpd:2.4.65
```

REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
httpd	2.4.65	6a4fe18d08d2	2 days ago	117MB

```
debian13@debian13:~$ sudo docker run -d -p 8080:80 --name primer-apache-victorredel httpd:2.4.65
9d2b3ad1b4564f5f507c9f1819aa82e3970c2236978933732e38870df9374ac0
```

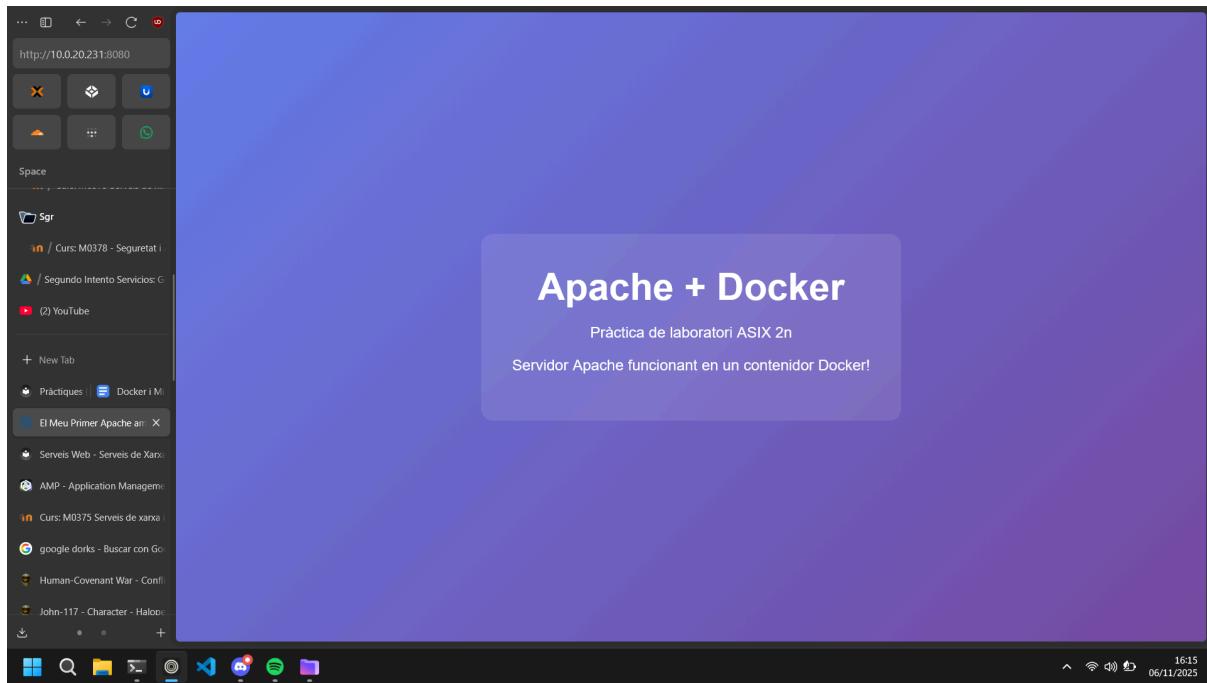


```
root@debian13:/home/debian13# docker exec -it primer-apache-victorredel /bin/bash
root@9d2b3ad1b456:/usr/local/apache2# ls -la /usr/local/apache2/
ls: cannot access /usr/local/apache2/conf/: Permission denied
cat /usr/local/apache2/conf/httpd.conf | grep DocumentRoot
total 56
drwxr-xr-x 1 www-data www-data 4096 Nov  4 04:07 .
drwxr-xr-x 1 root      root    4096 Nov  4 04:05 ..
drwxr-xr-x 2 root      root    4096 Nov  4 04:07 bin
drwxr-xr-x 2 root      root    4096 Nov  4 04:07 build
drwxr-xr-x 2 root      root    4096 Nov  4 04:07 cgi-bin
drwxr-xr-x 4 root      root    4096 Nov  4 04:07 conf
drwxr-xr-x 3 root      root    4096 Nov  4 04:07 error
drwxr-xr-x 2 root      root    4096 Nov  4 04:07 htdocs
drwxr-xr-x 3 root      root    4096 Nov  4 04:07 icons
drwxr-xr-x 2 root      root    4096 Nov  4 04:07 include
drwxr-xr-x 1 root      root    4096 Nov  6 15:05 logs
drwxr-xr-x 2 root      root    4096 Nov  4 04:07 modules
total 120
drwxr-xr-x 4 root      root    4096 Nov  4 04:07 .
drwxr-xr-x 1 www-data www-data 4096 Nov  4 04:07 ..
drwxr-xr-x 2 root      root    4096 Nov  4 04:07 extra
-rw-r--r-- 1 root      root    20827 Nov  4 04:07 httpd.conf
-rw-r--r-- 1 root      root    13064 Nov  4 04:07 magic
-rw-r--r-- 1 root      root    60970 Nov  4 04:07 mime.types
drwxr-xr-x 3 root      root    4096 Nov  4 04:07 original
# DocumentRoot: The directory out of which you will serve your
DocumentRoot "/usr/local/apache2/htdocs"
# access content that does not live under the DocumentRoot.
root@9d2b3ad1b456:/usr/local/apache2#
```

```
root@debian13:~/docker-apache-lab# ls
html
root@debian13:~/docker-apache-lab# cd html/
root@debian13:~/docker-apache-lab/html# touch index.html
root@debian13:~/docker-apache-lab/html# ls
index.html
root@debian13:~/docker-apache-lab/html# |
```

```
GNU nano 8.4
<!DOCTYPE html>
<html lang="ca">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>El Meu Primer Apache amb Docker</title>
    <style>
        body {
            font-family: Arial, sans-serif;
            background: linear-gradient(135deg, #667eea 0%, #764ba2 100%);
            color: white;
            display: flex;
            justify-content: center;
            align-items: center;
            height: 100vh;
            margin: 0;
        }
        .container {
            text-align: center;
            background: rgba(255, 255, 255, 0.1);
            padding: 40px;
            border-radius: 15px;
            backdrop-filter: blur(10px);
        }
        h1 { font-size: 3em; margin: 0; }
        p { font-size: 1.2em; }
    </style>
</head>
<body>
    <div class="container">
        <h1> Apache + Docker</h1>
        <p>Pràctica de laboratori ASIX 2n</p>
        <p>Servidor Apache funcionant en un contenidor Docker!</p>
    </div>
</body>
</html>
```

```
root@debian13:~/docker-apache-lab# docker run -d -p 8080:80 --name apache-custom-victorredel -v "./html:/usr/local/apache2/htdocs" httpd:2.4.65
690d32a8764dabf004771e175244ca012eae236024a962c0af3c3e95e883513
root@debian13:~/docker-apache-lab# docker ps
CONTAINER ID   IMAGE          COMMAND       CREATED      STATUS      PORTS          NAMES
690d32a8764d   httpd:2.4.65   "httpd-foreground"  2 seconds ago  Up 1 second  0.0.0.0:8080->80/tcp, [::]:8080->80/tcp   apache-custom-victorredel
root@debian13:~/docker-apache-lab# |
```



## Dockerfile - Creant les nostres pròpies imatges.

```
root@debian13:~/docker-apache-lab# mkdir dockerfile-basic
root@debian13:~/docker-apache-lab# cd dockerfile-basic
root@debian13:~/docker-apache-lab/dockerfile-basic# |
```

```
GNU nano 8.4                               Dockerfile
# Utilitzem Apache 2.4.65 com a imatge base (Alpine és una versió lightweight)
FROM httpd:2.4.65-alpine

# Informació sobre qui manté aquesta imatge
LABEL maintainer="elteuemail@sapalomera.cat"
LABEL description="Apache HTTP Server personalitzat per a pràctiques ASIX"
LABEL version="1.0"

# Copia el contingut web personalitzat
COPY ./web-content/ /usr/local/apache2/htdocs/

# Exposa el port 80 (documentació, no fa res funcionalment)
EXPOSE 80

# La imatge base ja té definit el CMD per iniciar Apache
# CMD ["httpd-foreground"]
```

```
debian13@debian13: ~          + | - | X
GNU nano 8.4                               Dockerfile
# Utilitzem Apache 2.4.65 com a imatge base (Alpine és una versió lightweight)
FROM httpd:2.4.65-alpine

# Informació sobre qui manté aquesta imatge
LABEL maintainer="elteuemail@sapalomera.cat"
LABEL description="Apache HTTP Server personalitzat per a pràctiques ASIX"
LABEL version="1.0"

# Copia el contingut web personalitzat
COPY ./web-content/ /usr/local/apache2/htdocs/

# Exposa el port 80 (documentació, no fa res funcionalment)
EXPOSE 80

# La imatge base ja té definit el CMD per iniciar Apache
# CMD ["httpd-foreground"]
```

```
debian13@debian13: ~          + | - | X
GNU nano 8.4                               web-content/index.html *
<!DOCTYPE html>
<html lang="ca">
<head>
    <meta charset="UTF-8">
    <title>Imatge Docker Personalitzada</title>
    <style>
        body {
            font-family: 'Segoe UI', Tahoma, Geneva, Verdana, sans-serif;
            background: #2c3e50;
            color: #ecf0f1;
            padding: 50px;
            text-align: center;
        }
        .badge {
            background: #e74c3c;
            padding: 10px 20px;
            border-radius: 20px;
            display: inline-block;
            margin: 20px 0;
        }
    </style>
</head>
<body>
    <h1>Imatge Docker Personalitzada</h1>
    <div class="badge">Construïda amb Dockerfile</div>
    <p>Aquesta pàgina s'ha copiat automàticament durant la construcció de la imatge!</p>
</body>
</html>
```

GNU nano 8.4 keyboard shortcuts:

- ^G Help
- ^O Write Out
- ^F Where Is
- ^K Cut
- ^T Execute
- ^C Location
- ^X Exit
- ^R Read File
- ^V Replace
- ^U Paste
- ^J Justify
- ^L Go To Line

```
root@debian13:~/docker-apache-lab/dockerfile-basic# docker images
REPOSITORY      TAG      IMAGE ID      CREATED      SIZE
apache-custom   v1.0     1f4e0966833f  32 seconds ago  64.6MB
httpd           2.4.65   6a4fe18d08d2  2 days ago    117MB
root@debian13:~/docker-apache-lab/dockerfile-basic#
```

```
root@debian13:~/docker-apache-lab/dockerfile-basic# docker run -d -p 8081:80 --name apache-dockerfile apache-custom:v1.0
cbf33a42428116dd96dceb0e481e3d7025aa112b8c85fd4592094e0e62ace75
root@debian13:~/docker-apache-lab/dockerfile-basic#
```



```
root@debian13:~/docker-apache-lab/dockerfile-multistage# docker build -t apache-multistage:v1.0 .
[+] Building 0.3s (1/1) FINISHED                                            docker:default
=> [internal] load build definition from Dockerfile                      0.1s
=> => transferring dockerfile: 2B                                         0.0s
ERROR: failed to build: failed to solve: failed to read dockerfile: open Dockerfile: no such file or directory
root@debian13:~/docker-apache-lab/dockerfile-multistage# |
```

```

debian3@debian13:~ % nano Dockerfile
GNU nano 8.4
# ETAPA 1: Construcció del contingut
FROM node:18-alpine AS builder

# Instal·la les dependències per "construir" el lloc web
WORKDIR /build

# En una aplicació real, aquí compilaries TypeScript, minificaries CSS, etc.
# Per simplicitat, només cream fitxers HTML
RUN mkdir -p dist &&
    echo '<!DOCTYPE html>' > dist/index.html &&
    echo '<html><head><title>Multi-stage Build</title></head>' >> dist/index.html &&
    echo '<body style="font-family: Arial, background: #3UW95e; color: white; padding: 50px; text-align: center;">' >> dist/index.html &&
    echo '<h1> Multi-Stage Build!</h1>' >> dist/index.html &&
    echo '<p>Aquesta imatge s\'ha creat utilitzant construcció en múltiples etapes</p>' >> dist/index.html &&
    echo '</p></body></html>' >> dist/index.html

# ETAPA 2: Imatge final (només runtime)
FROM httpd:2.4.65-alpine

# Metadades
LABEL maintainer="elteuemail@sapalomera.cat"
LABEL description="Apache amb multi-stage build"

# Copia NOMÉS els fitxers construïts de l'etapa anterior
# No inclou Node.js ni les eines de construcció
COPY --from=builder /build/dist/ /usr/local/apache2/htdocs

EXPOSE 80

[+ Wrote 29 lines.]
Help Write Out Where Is Cut Paste Execute Location Undo Set Mark To Bracket
X Exit Read File Replace Justify Go To Line Redo Copy Where Was

```

```

debian3@debian13:~ % docker build -t apache-multistage:v1.0 .
root@debian13:~/docker-apache-lab/dockerfile-multistage# nano Dockerfile
root@debian13:~/docker-apache-lab/dockerfile-multistage# docker build -t apache-multistage:v1.0 .
[+] Building 10.3s (10/10) FINISHED
--> [internal] load build definition from Dockerfile
--> [internal] load metadata for docker.io/library/httpd:2.4.65-alpine
--> [internal] load metadata for docker.io/library/node:18-alpine
--> [internal] load .dockignore
--> => transferring context: 2B
--> [builder 1/3] FROM docker.io/library/node:18-alpine@sha256:8d64214663bd4c284d1ebc098332f2490011d118945588d0a35cb9bc4bdc89d9e
--> [+] Building 10.3s (10/10) FINISHED
--> [internal] load build definition from Dockerfile
--> [internal] load metadata for docker.io/library/httpd:2.4.65-alpine
--> [internal] load metadata for docker.io/library/node:18-alpine
--> [internal] load .dockignore
--> => transferring context: 2B
--> [builder 1/3] FROM docker.io/library/node:18-alpine@sha256:8d64214663bd4c284d1ebc098332f2490011d118945588d0a35cb9bc4bdc89d9e
--> => sha256:f18232174bbc9171fd3da96d5011092101a072a97a388b79e99e69c2d5c870 3.64MB / 3.64MB
--> => sha256:d071d4e324b5c203d162992c6b8991cb2309xe0u9aebc4ufe0a10112b553d0e 40.01MB / 40.01MB
--> => sha256:8d6421d663bd4c284d1ebc098332f2490011d118945588d0a35cb9bc4bdc89d9e 7.67KB / 7.67KB
--> => sha256:979n9ad7c782f80f611cf7854088feu452b6569487c72ff666ad51a754f9006 1.72KB / 1.72KB
--> => sha256:ee77chcd7c1886cc802ad0cedeef3a8e1ea2701fb96162bf3d3d37108329b8dc 6.18KB / 6.18KB
--> => sha256:1e5a4d89ceec5bb20c509a9b6c4b66w01-96ed081837f430hd07ffad26702d3c 1.26MB / 1.26MB
--> => extracting sha256:f18232174bbc9171fd3da96d5011092101a072a97a388b79e99e69c2d5c870
--> => sha256:25ff2da924b19884fe5c374d880809d6b1b62ccfaab220b9ea7b890df52e0519 44KB / 44KB
--> => extracting sha256:dd77ddc034b5c203d162992c6b8991cb2309xe0u9aebc4ufe0a10112b553d0e
--> => extracting sha256:1e5a4d89ceec5bb20c509a9b6c4b66w01-96ed081837f430hd07ffad26702d3c
--> => extracting sha256:25ff2da03641988fc53a77d80049d61b62ccfaab220b9ea7b890df52e0519
--> CACHED [stage-1 1/2] FROM docker.io/library/httpd:2.4.65-alpine@sha256:07b2fab7029a0b8aeb2e0fd02651c28fe22c21c5b5a896df5b022791fcdb9e
--> [builder 2/3] WORKDIR /build
--> [builder 3/3] RUN mkdir -p dist && echo '<!DOCTYPE html>' > dist/index.html && echo '<html><head><title>Multi-stage Build</title></head>' >> dist/index.html && export -f image && export -f layers && export -f writing && writing Image sha256:f229f454ff0f258e3db6db7f60130efdbc84cbe093f1e7ff479d8d0b84ab2 && naming to docker.io/library/apache-multistage:v1.0
root@debian13:~/docker-apache-lab/dockerfile-multistage# |

[+] Running 3/3
--> [stage-1 2/2] COPY --from=builder /build/dist/ /usr/local/apache2/htdocs
--> exporting to image
--> exporting layers
--> writing Image sha256:f229f454ff0f258e3db6db7f60130efdbc84cbe093f1e7ff479d8d0b84ab2
--> naming to docker.io/library/apache-multistage:v1.0
0.0s
root@debian13:~/docker-apache-lab/dockerfile-multistage# docker run -d -p 8082:80 --name apache-multistage apache-multistage:v1.0
0ede3348c38be4c3189480dbf00513a5d1f7f8076f45f6bb6a648e4ad30aa0
root@debian13:~/docker-apache-lab/dockerfile-multistage# |

root@debian13:~/docker-apache-lab/dockerfile-multistage# docker images | grep apache
apache-multistage v1.0 f229f454ff0f 2 minutes ago 64.6MB
apache-custom v1.0 1fe0e9966833f 2 weeks ago 64.6MB
root@debian13:~/docker-apache-lab/dockerfile-multistage#

```

## Apache HTTP Server - Configuració Bàsica

```
root@debian13:~/docker-httpd-vr# docker exec 0ede3348c38b httpd -M
Loaded Modules:
core_module (static)
so_module (static)
http_module (static)
mpm_event_module (shared)
authn_file_module (shared)
authn_core_module (shared)
authz_host_module (shared)
authz_groupfile_module (shared)
authz_user_module (shared)
authz_core_module (shared)
access_compat_module (shared)
auth_basic_module (shared)
reqtimeout_module (shared)
filter_module (shared)
mime_module (shared)
log_config_module (shared)
env_module (shared)
headers_module (shared)
setenvif_module (shared)
version_module (shared)
unixd_module (shared)
status_module (shared)
autoindex_module (shared)
dir_module (shared)
alias_module (shared)
AH00558: httpd: Could not reliably determine the server's fully qualified domain name, using 172.17.0.2. Set the 'ServerName' directive globally to suppress
this message
root@debian13:~/docker-httpd-vr# |
```

**Windows PowerShell** × **debian13@debian13:** × + - ○ ×

GNU nano 8.4 conf/httpd-custom.conf \*

```
# Carrega els mòduls necessaris
LoadModule authz_core_module modules/mod_authz_core.so
LoadModule dir_module modules/mod_dir.so
LoadModule mime_module modules/mod_mime.so
LoadModule log_config_module modules/mod_log_config.so
LoadModule unixd_module modules/mod_unixd.so
LoadModule rewrite_module modules/mod_rewrite.so
LoadModule headers_module modules/mod_headers.so

# Configuració del servidor
ServerName localhost
Listen 80

# Usuari i grup (per defecte en la imatge oficial)
User daemon
Group daemon

# Document Root
DocumentRoot "/usr/local/apache2/htdocs"

<Directory "/usr/local/apache2/htdocs">
    # Permet seguir enllaços simbòlics
    Options Indexes FollowSymLinks
    # Permet l'ús de .htaccess
    AllowOverride All
    # Permet accés a tothom
    Require all granted
    # Activa el mod_rewrite per aquest directori
    RewriteEngine On
</Directory>

# Index per defecte
DirectoryIndex index.html index.htm
```

Help Exit Write Out Read File Where Is Replace Cut Paste Execute Justify Location Go To Line Undo Set Mark Copy To Bracket Where Was

(debian13) 10.0.20.231 — Konsole

Nueva pestaña Dividir vista

GNU nano 8.4 Dockerfile

```
FROM httpd:2.4.65-alpine

LABEL maintainer="vredel@sapalomera.cat"
LABEL description="Apache amb configuració personalitzada"

# Copia la configuració personalitzada
COPY conf/httpd-custom.conf /usr/local/apache2/conf/httpd.conf

# Copia el contingut web
COPY html/ /usr/local/apache2/htdocs/

EXPOSE 80

CMD ["httpd-foreground"]
```

```

GNU nano 8.4                               html/index.html *

<h1>Apache amb Configuració Personalitzada</h1>

<div class="config-box">
    <h3>Funcionalitats actives:</h3>
    <ul>
        <li>Mòdul Rewrite activat</li>
        <li>Capçaleres de seguretat configurades</li>
        <li>Logging personalitzat amb temps de resposta</li>
        <li>.htaccess permès (AllowOverride All)</li>
    </ul>
</div>

<p>Comprova els logs amb: <code>docker logs apache-configured</code></p>
</body>
</html>

```

```

root@debian13:~/docker-apache-lab/apache-config# nano html/index.html
root@debian13:~/docker-apache-lab/apache-config# docker build -t apache-configured:v1.0 .
docker run -d -p 8084:80 --name apache-configured \
-v "${pwd}/logs:/usr/local/apache2/logs" \
apache-configured:v1.0
[+] Building 2.4s (8/8) FINISHED
--> [internal] load build definition from Dockerfile          docker:default
--> => transferring dockerfile: 371B                         0.1s
--> [internal] load metadata for docker.io/library/httpd:2.4.65-alpine   0.0s
--> [internal] load .dockerignore                           0.9s
--> => transferring context: 2B                            0.1s
--> [2/3] FROM docker.io/library/httpd:2.4.65-alpine@sha256:07b2fabb7029a0b8aeb2e0fd02651c28fe22c21c5b5a59d6ff5b022791fcd89e  0.0s
--> [internal] load build context                         0.0s
--> => transferring context: 2.67KB                      0.1s
--> [2/3] COPY conf/httpd-custom.conf /usr/local/apache2/conf/httpd.conf  0.0s
--> [3/3] COPY html/ /usr/local/apache2/htdocs/           0.2s
--> exporting to image                                     0.2s
--> => exporting layers                                    0.3s
--> => writing image sha256:f571592f810adeb68d3e56a6d804be8f3d964a6ac9bb6aa01da548e5c2fec217  0.0s
--> => naming to docker.io/library/apache-configured:v1.0  0.0s
aee6350c6b1c31cce3563d8d19b713d6649326e441c14e15f1970c4128712847
root@debian13:~/docker-apache-lab/apache-config#

```

vaig tenir un problema a l'hora d'iniciar el Docker ho vaig arreglar amb aquesta línia a conf:

```

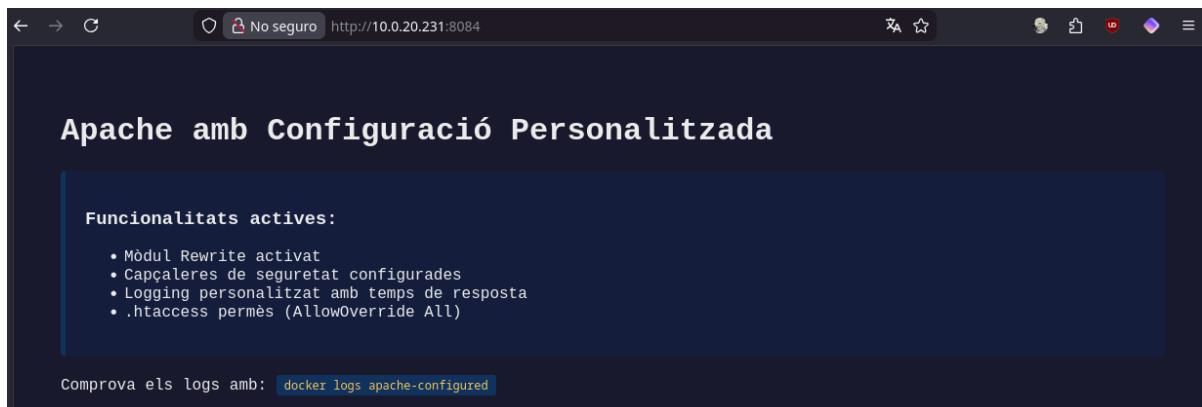
root@debian13:~# docker logs -t 775a9405c64c
2025-11-26T16:01:09.580531608Z AH00534: httpd: Configuration error: No MPM loaded.

```

```

GNU nano 8.4
# Carrega els mòduls necessaris
LoadModule authz_core_module modules/mod_authz_core.so
LoadModule dir_module modules/mod_dir.so
LoadModule mime_module modules/mod_mime.so
LoadModule log_config_module modules/mod_log_config.so
LoadModule unixd_module modules/mod_unixd.so
LoadModule rewrite_module modules/mod_rewrite.so
LoadModule headers_module modules/mod_headers.so
LoadModule mpm_event_module modules/mod_mpm_event.so

```



```
root@debian13:~/docker-apache-lab/apache-config# cat logs/access.log
10.0.10.0 - - [26/Nov/2025:17:09:56 +0000] "GET / HTTP/1.1" 200 1132 "-" "Mozilla/5.0 (X11; Linux x86_64; rv:145.0) Gecko/20100101 Firefox/145.0" 973
10.0.10.2 - - [26/Nov/2025:17:09:56 +0000] "GET /favicon.ico HTTP/1.1" 404 196 "http://10.0.20.231:8084/" "Mozilla/5.0 (X11; Linux x86_64; rv:145.0) Gecko/20100101 Firefox/145.0" 385
root@debian13:~/docker-apache-lab/apache-config# cat logs/error.log
[Wed Nov 26 17:09:41.902592 2025] [mpm_event:notice] [pid 1:tid 1] AH00489: Apache/2.4.65 (Unix) configured -- resuming normal operations
[Wed Nov 26 17:09:41.902698 2025] [core:notice] [pid 1:tid 1] AH00094: Command line: 'httpd -D FOREGROUND'
root@debian13:~/docker-apache-lab/apache-config#
```

```
GNU nano 8.4                                     html/.htaccess *
# Activar el motor de rewrite
RewriteEngine On

# Exemple: Redirigir .htm a .html
RewriteCond %{REQUEST_FILENAME}.html -f
RewriteRule ^(.*)$ $1.html [L]

# Protegir fitxers de configuració
<FilesMatch "\^.+>
    Require all denied
</FilesMatch>

# Capçalera personalitzada per indicar que s'està utilitzant .htaccess
Header set X-Powered-By "Apache-ASIX-Lab"

# Desactivar listatge de directoris (si no hi ha index.html)
Options -Indexes
```

```
root@debian13:~/docker-apache-lab/apache-config# docker stop apache-configured
apache-configured
root@debian13:~/docker-apache-lab/apache-config# docker rm apache-configured
apache-configured
root@debian13:~/docker-apache-lab/apache-config# docker build -t apache-configured:v1.1 .
[+] Building 1.7s (8/8) FINISHED
=> [internal] load build definition from Dockerfile
=> => transferring dockerfile: 371B
=> [internal] load metadata for docker.io/library/httpd:2.4.65-alpine
=> [internal] load .dockerignore
=> => transferring context: 2B
=> [1/3] FROM docker.io/library/httpd:2.4.65-alpine@sha256:07b2fabb7029a0b8aeb2e0fd02651c28fe22c21c5b5a59d6ff5b022791fcfd89e
=> [internal] load build context
=> => transferring context: 618B
=> CACHED [2/3] COPY conf/httpd-custom.conf /usr/local/apache2/conf/httpd.conf
=> [3/3] COPY html/ /usr/local/apache2/htdocs/
=> exporting to image
=> => exporting layers
=> => writing image sha256:ffc48d3739bc1ad117c8e984190fe82e09c802ce4f761d24eb45e1508cbb3142
=> => naming to docker.io/library/apache-configured:v1.1
root@debian13:~/docker-apache-lab/apache-config#
```

## Configuració avançada d'Apache

```
root@debian13:~# cd ~/docker-apache-lab
mkdir apache-vhosts
cd apache-vhosts
mkdir -p conf sites/site1 sites/site2 logs
root@debian13:~/docker-apache-lab/apache-vhosts#
```

```
GNU nano 8.4                                     sites/site1/index.html *
<!DOCTYPE html>
<html lang="ca">
<head>
<meta charset="UTF-8">
<title>Lloc 1 - Empresa Tech</title>
<style>
body {
    font-family: Arial, sans-serif;
    background: linear-gradient(135deg, #667eea 0%, #764ba2 100%);
    color: white;
    padding: 50px;
    text-align: center;
}
.logo { font-size: 4em; }
</style>
</head>
<body>
<div class="logo"> Empresa Tech Solutions </div>
<h1>Empresa Tech Solutions</h1>
<p>Virtual Host 1: site1.local</p>
<p>Desenvolupament de software i consultoria IT</p>
</body>
</html>
```

```
GNU nano 8.4                                     sites/site2/index.html
<!DOCTYPE html>
<html lang="ca">
<head>
<meta charset="UTF-8">
<title>Lloc 2 - Disseny Web</title>
<style>
body {
    font-family: 'Georgia', serif;
    background: linear-gradient(135deg, #f093fb 0%, #f5576c 100%);
    color: white;
    padding: 50px;
    text-align: center;
}
.logo { font-size: 4em; }
</style>
</head>
<body>
<div class="logo"> Creative Design Studio </div>
<h1>Creative Design Studio</h1>
<p>Virtual Host 2: site2.local</p>
<p>Disseny gràfic i experiència d'usuari</p>
</body>
</html>
```

```
GNU nano 8.4
# Carrega mòduls necessaris
LoadModule mpm_event_module modules/mod_mpm_event.so
LoadModule authz_core_module modules/mod_authz_core.so
LoadModule dir_module modules/mod_dir.so
LoadModule mime_module modules/mod_mime.so
LoadModule log_config_module modules/mod_log_config.so
LoadModule unixd_module modules/mod_unixd.so
LoadModule headers_module modules/mod_headers.so
LoadModule vhost_alias_module modules/mod_vhost_alias.so

# Configuració bàsica del servidor
ServerName localhost
Listen 80

User daemon
Group daemon

TypesConfig conf/mime.types
DirectoryIndex index.html

# Format de log
LogFormat "%v %h %l %u %t \"%r\" %>s %b" vhost_combined
ErrorLog "logs/error.log"

# Virtual Host per defecte (quan no coincideix cap altre)
<VirtualHost *:80>
    ServerName localhost
    DocumentRoot "/usr/local/apache2/htdocs"
    ErrorLog "logs/default-error.log"
    CustomLog "logs/default-access.log" vhost_combined

    <Directory "/usr/local/apache2/htdocs">
        Options Indexes FollowSymLinks
        AllowOverride All
        Require all granted
    </Directory>
</VirtualHost>

# Virtual Host 1: site1.local
<VirtualHost *:80>
    ServerName site1.local
    ServerAlias www.site1.local
    DocumentRoot "/usr/local/apache2/sites/site1"

    ErrorLog "logs/site1-error.log"
    CustomLog "logs/site1-access.log" vhost_combined

    <Directory "/usr/local/apache2/sites/site1">
        Options -Indexes +FollowSymLinks
        AllowOverride All
        Require all granted
    </Directory>

    # Capçalera personalitzada per identificar el virtual host
    Header always set X-VHost "Site1"
</VirtualHost>

# Virtual Host 2: site2.local
<VirtualHost *:80>
    ServerName site2.local
    ServerAlias www.site2.local
    DocumentRoot "/usr/local/apache2/sites/site2"

    ErrorLog "logs/site2-error.log"
    CustomLog "logs/site2-access.log" vhost_combined

    <Directory "/usr/local/apache2/sites/site2">
        Options -Indexes +FollowSymLinks
        AllowOverride All
    </Directory>

```

```
GNU nano 8.4
Dockerfile *

FROM httpd:2.4.65-alpine

LABEL maintainer="vredel@sapalomera.cat"
LABEL description="Apache amb Virtual Hosts"

# Copia la configuració
COPY conf/httpd-vhosts.conf /usr/local/apache2/conf/httpd.conf

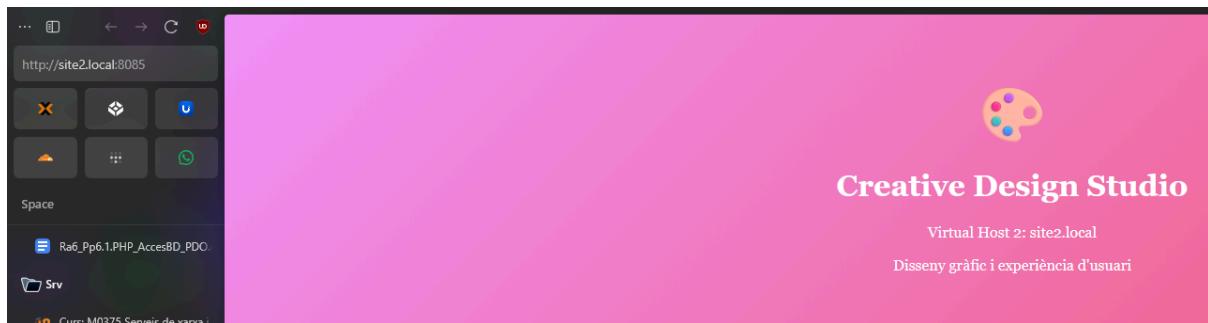
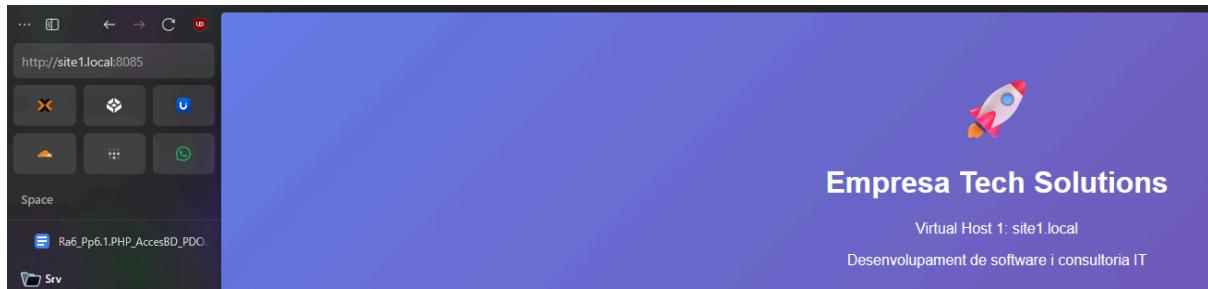
# Copia els llocs web
COPY sites/ /usr/local/apache2/sites/

EXPOSE 80

CMD ["httpd-foreground"]
```

```
root@debian13:~/docker-apache-lab/apache-vhosts# docker build -t apache-vhosts:v1.0 .
[+] Building 1.3s (8/8) FINISHED
--> [internal] load build definition from Dockerfile
--> => transferring dockerfile: 338B
--> [internal] load metadata for docker.io/library/httpd:2.4.65-alpine
--> [internal] load .dockerignore
--> => transferring context: 2B
--> [1/3] FROM docker.io/library/httpd:2.4.65-alpine@sha256:87b2fabb7029a0b8aeb2e0fd02651c28fe22c21c5b5a59d6ff5b0
--> [internal] load build context
--> => transferring context: 239B
--> CACHED [2/3] COPY conf/httpd-vhosts.conf /usr/local/apache2/conf/httpd.conf
--> CACHED [3/3] COPY sites/ /usr/local/apache2/sites/
--> exporting to image
--> => exporting layers
--> => writing image sha256:16ba8af100fe74e513a99fdf84ac1dc12e5dfd1559118f7cc91c158c62c56975
--> => naming to docker.io/library/apache-vhosts:v1.0
```

site1.local	DNS Host (A)	Resolve	-	-	Any	-	Any	Any	-
site2.local	DNS Host (A)	Resolve	-	-	Any	-	Any	Any	-



```
root@debian13:~/docker-apache-lab/apache-vhosts# tail -f logs/sitel-access.log
site1.local 10.0.10.2 -- [27/Nov/2025:14:21:25 +0000] "GET / HTTP/1.1" 200 591
site1.local 10.0.10.2 -- [27/Nov/2025:14:21:26 +0000] "GET /favicon.ico HTTP/1.1" 404 196

^C
root@debian13:~/docker-apache-lab/apache-vhosts# tail -f logs/site2-access.log
site2.local 10.0.10.2 -- [27/Nov/2025:14:21:33 +0000] "GET / HTTP/1.1" 200 584
site2.local 10.0.10.2 -- [27/Nov/2025:14:21:33 +0000] "GET /favicon.ico HTTP/1.1" 404 196
^C
```

```
root@debian13:~# cd ~/docker-apache-lab
mkdir apache-ssl
cd apache-ssl
mkdir -p conf certs html logs
root@debian13:~/docker-apache-lab/apache-ssl# |
```

```

GNU nano 8.4                                            Dockerfile *
FROM httpd:2.4.65-alpine

LABEL maintainer="vredel@sapalomera.cat"
LABEL description="Apache amb HTTPS/SSL"

# Instal·la OpenSSL (ja ve a Alpine, però assegurem dependències)
RUN apk add --no-cache openssl

# Crea el directori per als certificats
RUN mkdir -p /usr/local/apache2/certs

# Genera un certificat auto-signat
# Atenció: Això és NOMÉS per a desenvolupament! En producció usa Let's Encrypt o un CA oficial
RUN openssl req -x509 -nodes 365 -newkey rsa:2048 \
    -keyout /usr/local/apache2/certs/server.key \
    -out /usr/local/apache2/certs/server.crt \
    -subj "/C=ES/ST=Catalunya/L=Barcelona/O=ASIX Lab/OU=IT/CN=localhost"

# Ajusta permisos dels certificats
RUN chmod 600 /usr/local/apache2/certs/server.key && \
    chmod 644 /usr/local/apache2/certs/server.crt

# Copia la configuració d'Apache amb SSL
COPY conf/httpd-ssl.conf /usr/local/apache2/conf/httpd.conf

# Copia el contingut web
COPY html/ /usr/local/apache2/htdocs/

# Exposa els ports HTTP i HTTPS
EXPOSE 80 443

CMD ["httpd-foreground"]

```

---

```

GNU nano 8.4                                            conf/httpd-ssl.conf *
# Mòduls necessaris
LoadModule mpm_event module modules/mod_mpm_event.so
LoadModule authn_core module modules/mod_authn_core.so
LoadModule authz_core module modules/mod_authz_core.so
LoadModule dir_module module modules/mod_dir.so
LoadModule mime module modules/mod_mime.so
LoadModule log_config module modules/mod_log_config.so
LoadModule unixd_module modules/mod_unixd.so
LoadModule headers_module modules/mod_headers.so
LoadModule ssl_module modules/mod_ssl.so
LoadModule socache_shmcb module modules/mod_socache_shmcb.so
LoadModule rewrite_module modules/mod_rewrite.so

ServerName localhost
User daemon
Group daemon

TypesConfig conf/mime.types
DirectoryIndex index.html

# Configuració de logging
ErrorLog "logs/error.log"
LogLevel warn
LogFormat "%{$_GET}i %> %b \"%{Referer}i\" \"%{User-Agent}i\""
CustomLog "logs/access.log" combined

# Cache SSL per millorar el rendiment
SSLSessionCache "shmcb:/usr/local/apache2/logs/ssl_scache(512000)"
SSLSessionCacheTimeout 300

# Virtual Host HTTP (port 80) - Redirigeix a HTTPS
<VirtualHost *:80>
    ServerName localhost
    DocumentRoot "/usr/local/apache2/htdocs"

    # Redirigeix tot el tràfic HTTP a HTTPS
    RewriteEngine On
    RewriteCond %{HTTPS} off
    RewriteRule ^(.*)$ https://%(HTTP_HOST)$1 [R=301,L]

    ErrorLog "logs/http-error.log"
    CustomLog "logs/http-access.log" combined
</VirtualHost>

# Virtual Host HTTPS (port 443)
<VirtualHost *:443>
    ServerName localhost
    DocumentRoot "/usr/local/apache2/htdocs"

```

```

GNU nano 8.4
<!DOCTYPE html>
<html lang="ca">
<head>
  <meta charset="UTF-8">
  <title>Connexió Segura HTTPS</title>
  <style>
    body {
      font-family: 'Arial', sans-serif;
      background-color: linear-gradient(135deg, #11998e 0%, #38ef7d 100%);
      color: white;
      padding: 40px;
      text-align: center;
    }
    .secure-badge {
      background-color: rgba(255, 255, 255, 0.2);
      backdrop-filter: blur(10px);
      padding: 10px;
      border-radius: 20px;
      display: inline-block;
      margin: 30px 0;
    }
    .lock { font-size: 5em; margin: 20px 0; }
    .info {
      background-color: rgba(0, 0, 0, 0.2);
      padding: 20px;
      border-radius: 10px;
      margin: 20px auto;
      max-width: 600px;
      text-align: left;
    }
  </style>
</head>
<body>
  <div class="secure-badge">
    <div class="lock"></div>
    <h1>Connexió Segura HTTPS</h1>
    <p>Apache 2.4.65 amb SSL/TLS activat</p>
  </div>
  <div class="info">
    <h3>Informació SSL/TLS:</h3>
    <ul>
      <li>Protocol: TLS 1.2 o superior</li>
      <li>Certificat: Auto-signat (només desenvolupament)</li>
      <li>HSTS: Activat (31536000 segons)</li>
      <li>Redirecció HTTP → HTTPS: Activa</li>
    </ul>
  </div>
</body>

```

```

root@debian13:~/dockers/apache-lab/apache-ssl# docker build -t apache-ssl:v1.0 .
[+] Building 8.8s (12/12) FINISHED
--> [internal] load build definition from Dockerfile
--> [internal] load metadata for docker.io/library/httpd:2.4.65-alpine
--> [internal] load configuration
--> [internal] load .dockerignore
--> [internal] load dockerfile
--> [internal] load context
--> [internal] load build context
--> [internal] transfering context: 0.51kB
--> [2/7] RUN apk add --no-cache curl ca-certificates
--> [3/7] RUN /bin/sh -c 'curl -s https://curl.haxx.se/ca/certs/ca-bundle-trustee.crt >/etc/ssl/certs/ca-certificates.crt'
--> [4/7] RUN curl -s https://curl.haxx.se/ca/certs/server-key.pem >/etc/ssl/certs/server.key
--> [5/7] RUN curl -s https://curl.haxx.se/ca/certs/server-cert.pem >/etc/ssl/certs/server.crt
--> [6/7] COPY conf/httpd-ssl.conf /usr/local/apache2/conf/httpd.conf
--> [7/7] COPY html /usr/local/apache2/htdocs/
--> exporting to image
--> exporting layers
--> writing image sha256:07747f79edc07534ff0886b38ab3d73150ad800b65342210bf20c51980c4f8c6
root@debian13:~/dockers/apache-lab/apache-ssl# docker run -d -p 8086:80 -p 8443:443 --name apache-ssl v0586ea11086d98dbfd66627fd7c81cda5a8b4f5554184daaa89d7d6alc747af9

```

nota vaig tendra que retocar el fitxer perquè em funcioni la redirecció

**Listen 80**

```
# Virtual Host HTTP (port 80) - Redirigeix a HTTPS
<VirtualHost *:80>
    ServerName localhost
    DocumentRoot "/usr/local/apache2/htdocs"

    # Redirigeix tot el tràfic HTTP a HTTPS
    RewriteEngine On
    RewriteCond %{HTTPS} off
    # RewriteRule ^(.*)$ https:// %{HTTP_HOST}$1 [R=301,L]
    RewriteRule ^(.*)$ https://10.0.20.231:8443$1 [R=301,L]

    ErrorLog "logs/http-error.log"
    CustomLog "logs/http-access.log" combined
</VirtualHost>
```

The screenshot displays a web browser interface with a green header bar indicating a secure connection. The bar reads "Connexió Segura HTTPS" and "Apache 2.4.65 amb SSL/TLS activat". Below the bar, a network traffic analysis tool is shown, displaying a list of requests to port 80. One specific request is highlighted in red, showing details like the URL, initiator, type, transferred size, and duration. At the bottom of the screen, a terminal window is open, showing the command used to generate an SSL certificate using OpenSSL.

```
debiant3@debiant3: ~ x Windows PowerShell x + ~
docker exec apache-ssl openssl x509 -in /usr/local/apache2/certs/server.crt -text -noout
Certificate:
Data:
Version: 3 (0x2)
Serial Number:
    6c:a1:96:4d:13:9b:05:77:4d:e8:f2:f7:72:92:31:a4:74:b2:1e:00
Signature Algorithm: sha256WithRSAEncryption
Issuing C=ES, ST=Catalunya, L=Barcelona, O=ASIX Lab, OU=IT, CN=localhost
Validity
    Not Before: Nov 27 14:33:26 2025 GMT
    Not After : Nov 27 14:33:26 2026 GMT
Subject: C=ES, ST=Catalunya, L=Barcelona, O=ASIX Lab, OU=IT, CN=localhost
Subject Public Key Algorithm: rsaEncryption
        Public-Key: (2048 bit)
            Modulus:
                00:60:6a:8a:fc:97:bf:d3:0f:9b:bd:27:be:10:00:
                05:17:a3:72:09:ad:10:a7:8a:e8:9c:96:85:df:f3:
                64:03:59:63:0a:35:ea:54:0a:bd:80:66:5a:18:2e:
                f6:89:23:b9:c9:8d:47:be:2f:3d:a1:60:f2:80:50:
                05:53:3a:40:3a:10:0d:01:00:00:00:00:00:00:00:
                0e:c4:c9:83:f3:4e:b7:fd:0e:20:21:5a:79:89:27:
                c8:03:58:e2:71:9d:00:79:f9:28:60:0c:26:56:c7:
                4c:40:8e:fa:9d:99:36:d8:81:0e:bd:ca:c8:f8:
                f6:08:02:af:a1:12:8b:00:00:00:00:00:00:00:00:
                01:00:00:00:00:00:00:00:00:00:00:00:00:00:00:
                01:72:1f:0a:9a:9d:94:cc:a9:3c:26:17:4a:bc:be:
                13:2f:90:91:96:6d:91:ec:a6:85:3d:a1:da:77:87:
                79:73:2d:17:86:dc:83:4f:5d:ed:3d:de:0e:43:ef:
                04:43:30:00:00:00:00:00:00:00:00:00:00:00:00:
                c2:c5:1c:f2:55:c0:a2:2e:05:85:5f:77:c2:00:ec:
                0c:1c:5e:98:1e:07:e9:66:e3:51:d1:c5:7b:7d:28:
                04:1c:3:17:95:db:f7:c9:93:5d:ab:05:ef:10:fe:8c:
                04:00:00:00:00:00:00:00:00:00:00:00:00:00:00:
                Exponent: 65537 (0x10000)
X509v3 extensions:
X509v3 Subject Key Identifier:
    93:17:09:73:36:52:AE:10:72:09:A5:F5:47:15:27:BF:8C:F8:D5:CC
X509v3 Authority Key Identifier
    73:17:09:73:36:52:AE:10:72:09:A5:F5:47:15:27:BF:8C:F8:D5:CC
X509v3 Basic Constraints: critical
    CA:TRUE
Signature Algorithm: sha256WithRSAEncryption
Signature Value:
Se:ca:57:07:ba:d3:f6:f0:0e:16:07:12:ce:19:f8:46:fd:16:
09:ef:99:a5:f9:02:29:92:30:04:00:00:85:7c:0e:0e:6c:21:
00:00:00:00:00:00:00:00:00:00:00:00:00:00:00:00:00:00:
15:ad:02:11:ba:17:15:c3:c7:7b:3e:ee:bd:0a:bf:cd:b3:9c:3b:
69:6c:f1:06:f3:f4:68:07:6a:7e:c1:b1:8b:33:f1:01:e3:f0:
be:c7:79:38:f4:c7:f7:98:22:0a:ee:bd:3b:65:5e:c1:f1:37:
4c:00:00:00:00:00:00:00:00:00:00:00:00:00:00:00:00:00:
8d:e7:f1:e6:c1:71:8a:26:6b:98:36:09:25:97:ee:97:dd:0f:
8d:df:2f:00:9f:f6:fb:d8:5b:1b:36:63:42:26:e2:03:87:71:
e3:12:1a:57:9c:07:f4:45:c2:d2:98:34:2d:76:7a:ff:1b:07:
00:00:00:00:00:00:00:00:00:00:00:00:00:00:00:00:00:00:
b2:08:66:6c:98:63:eb:ad:98:9c:62:1c:4d:5d:9e:c1:01:87:
1d:95:14:b5:ab:d2:7f:53:92:fb:f6:0b:cc:71:66:9a:86:27:
```

```
GNU nano 8.4
RewriteEngine On

# 1. Redirecció de www a no-www (o viceversa)
RewriteCond %{HTTP_HOST} ^www\.(.*$) [NC]
RewriteRule ^(.*)$ https://%1/$1 [R=301,L]

# 2. URLs amigables: /product/123 → /product.php?id=123
RewriteRule ^product/([0-9]+)$ product.php?id=$1 [L,QSA]

# 3. Eliminar l'extensió .php de les URLs
RewriteCond %{REQUEST_FILENAME} !-d
RewriteCond %{REQUEST_FILENAME}.php -f
RewriteRule ^(.+)$ $1.php [L]

# 4. Redirecció d'URLs antigues a noves
RewriteRule ^old-blog/(.*)$ /new-blog/$1 [R=301,L]

# 5. Forçar HTTPS per a certes pàgines
RewriteCond %{HTTPS} off
RewriteCond %{REQUEST_URI} ^/admin [OR]
RewriteCond %{REQUEST_URI} ^/login
RewriteRule ^(.*)$ https:// %{HTTP_HOST}/$1 [R=301,L]

# 6. Bloquejar accés basat en User-Agent (anti-bots)
RewriteCond %{HTTP_USER_AGENT} ^.*(bot|spider|crawler).*$ [NC]
RewriteRule ^api/ - [F,L]

# 7. Redirecció basada en la IP del client (geolocalització bàsica)
# Exemple: Si la IP comença per 192.168, redirigeix a versió local
RewriteCond %{REMOTE_ADDR} ^192\.168\.
RewriteRule ^$ /local-version.html [L]
```

```
GNU nano 2.1
SSLProtocol all -SSLv3 -TLSv1 -TLSv1.1
# Cipher suites segures (prioritza algoritmes moderns)
SSLCipherSuite HIGH:!ANULL:!MD5:!RC4
SSLCipherOrder on

# Capçaleres de seguretat HTTP
Header always set Strict-Transport-Security "max-age=31536000; includeSubDomains"
Header always set X-Content-Type-Options "nosniff"
Header always set X-XSS-Protection "1; mode=block"

<Directory "/usr/local/apache2/htdocs">
    Options +Indexes +FollowSymLinks
    AllowOverride All
    Require all granted
</Directory>

ErrorLog "logs/https-error.log"
CustomLog "logs/https-access.log" combined
</VirtualHost>

#LOGS

# Format de log estàndard
LogFormat "%h %l %u %t \"%r\" %>s %b \"%{Referer}i\" \"%{User-Agent}i\"" combined

# Format de log amb temps de resposta en microsegons
LogFormat "%h %l %u %t \"%r\" %>s %b %D" with_response_time

# Format de log amb informació SSL
LogFormat "%h %l %u %t \"%r\" %>s %b \"%{SSL_PROTOCOL}x\" \"%{SSL_CIPHER}x\" ssl_combined

# Format JSON per a processament automàtic
LogFormat "{\"timestamp\": \"%{Y-m-dTH:m:s%z}t\", \"client\": \"%h\", \"request\": \"%r\", \"status\": %>s, \"bytes\": %b, \"referer\": \"%{Referer}i\", \"user_agent\": \"%{User-Agent}i\", \"response_time\": %D}" json

# Logging condicional: només regista errors 4xx i 5xx
CustomLog "logs/errors-only.log" combined env=REQUEST_STATUS >= 400

# Logging de tipus de petició
SetEnvIf Request_URI \.jpg$ image-request
SetEnvIf Request_URI \.png$ image-request
SetEnvIf Request_URI \.gif$ image-request
CustomLog "logs/images.log" combined env:image-request

# Exclou certes peticions del log (com healthchecks)
SetEnvIf Request_URI */health* dontlog
CustomLog "logs/access.log" combined env:dontlog
```

## DOCKER COMPOSE - ORQUESTRACIÓ DE CONTENIDORS

```
● debian13@debian13:~$ cd ~/docker-apache-lab
  mkdir docker-compose-stack
  cd docker-compose-stack
  mkdir -p apache/html apache/conf logs mysql-data
● debian13@debian13:~/docker-apache-lab/docker-compose-stack$ ls
  apache  logs  mysql-data
○ debian13@debian13:~/docker-apache-lab/docker-compose-stack$ █
```

```
docker-apache-lab > docker-compose-stack > apache > Dockerfile > ...
1  FROM php:8.2-apache
2
3  LABEL maintainer="v.redel@sapalomera.cat"
4  LABEL description="Apache amb PHP i extensió MySQL"
5
6  # Instal·la l'extensió mysqli per connectar a MySQL
7  RUN docker-php-ext-install mysqli && docker-php-ext-enable mysqli
8
9  # Activa mod_rewrite
10 RUN a2enmod rewrite
11
12 # Copia el contingut web
13 COPY html/ /var/www/html/
14
15 # Exposa el port 80
16 EXPOSE 80
```

```
docker-apache-lab > docker-compose-stack > apache > html > index.php
1  <!DOCTYPE html>
2  <html lang="ca">
3  <head>
4      <meta charset="UTF-8">
5      <title>Stack LAMP amb Docker Compose</title>
6      <style>
7          body {
8              font-family: 'Segoe UI', Tahoma, Geneva, Verdana, sans-serif;
9              background: linear-gradient(135deg, #667eea 0%, #764ba2 100%);
10             color: white;
11             padding: 40px;
12             margin: 0;
13         }
14         .container {
15             max-width: 800px;
16             margin: 0 auto;
17             background: rgba(255, 255, 255, 0.1);
18             backdrop-filter: blur(10px);
19             padding: 40px;
20             border-radius: 20px;
21         }
22         .status {
23             padding: 20px;
24             margin: 20px 0;
25             border-radius: 10px;
26             background: rgba(255, 255, 255, 0.2);
27         }
28         .success { border-left: 5px solid #2ecc71; }
29         .error { border-left: 5px solid #e74c3c; }
30         code {
31             background: rgba(0, 0, 0, 0.3);
32             padding: 2px 8px;
33             border-radius: 3px;
34         }
35         table {
36             width: 100%;
37             margin: 20px 0;
38             border-collapse: collapse;
39         }
40         th, td {
41             padding: 12px;
42             text-align: left;
43             border-bottom: 1px solid rgba(255, 255, 255, 0.2);
44         }
45         th { background: rgba(0, 0, 0, 0.3); }
46     </style>
47 </head>
48 <body>
49     <div class="container">
50         <h1> Docker Compose: Apache + MySQL + phpMyAdmin</h1>
51
52         <?php
53             // Configuració de la connexió a MySQL
54             $host = 'mysql'; // Nom del servei en docker-compose.yml
55             $user = 'root';
```



```
docker-apache-lab > docker-compose-stack > docker-compose.yml
 1  # Versió de Docker Compose (opcional en versions recents)
 2  version: '3.9'
 3
 4  # Definició dels serveis (contenidors)
 5  >Run All Services
 6  services:
 7
 8    # Servei Apache amb PHP
 9    >Run Service
10    apache:
11      # Construeix la imatge des del Dockerfile
12      build:
13        context: ./apache
14        dockerfile: Dockerfile
15
16      # Nom del contenidor
17      container_name: lamp-apache
18
19      # Reinicia automàticament si el contenidor falla
20      restart: unless-stopped
21
22      # Mapatge de ports: host:container
23      ports:
24        - "8090:80"
25
26      # Volums: persistència i desenvolupament
27      volumes:
28        - ./apache/html:/var/www/html # Codi PHP (bind mount)
29        - ./logs:/var/log/apache2     # Logs d'Apache
30
31      # Variables d'entorn
32      environment:
33        - TZ=Europe/Madrid
34
35      # Depèn del servei MySQL (s'inicia després)
36      depends_on:
37        - mysql
38
39      # Xarxa per comunicar-se amb altres serveis
40      networks:
41        - lamp-network
42
43      # Límits de recursos (opcional però recomanat)
44      deploy:
45        resources:
46          limits:
47            cpus: '1.0'
48            memory: 512M
49
50    # Servei MySQL
51    >Run Service
52    mysql:
53      # Imatge oficial de MySQL (versió específica, no "latest")
54      image: mysql:8.0.35
55
56      container_name: lamp-mysql
```

```
debian13@debian13:~/docker-apache-lab/docker-compose-stack$ docker compose up -d
WARN[0000] /home/debian13/docker-apache-lab/docker-compose-stack/docker-compose.yml: the attribute `version` is obsolete, it will be ignored, please remove it to avoid potential confusio
● n
[+] Running 13/34
  mysql [          ] Pulling                                6.8s
    └─ 558b7d69a2e5 Waiting                                4.2s
    └─ bb2ede9724f3 Waiting                                4.2s
    └─ 8c46e56c4974 Waiting                                4.2s
    └─ 379d2ee58a8b Waiting                                4.2s
    └─ 60a2ddae3eed Waiting                                4.2s
    └─ 9c8240b5bfd2 Waiting                                4.2s
    └─ 8a1ed96f802c Waiting                                4.2s
    └─ cc0e7675236c Waiting                                4.2s
    └─ 48e76090f013 Waiting                                4.2s
    └─ 5d100781ccf9 Waiting                                4.2s
    └─ 011afdd7e19a Waiting                                4.2s
  phpmyadmin [███████████] Pulling                                6.8s
    ✓ 0e4bc2bd6656 Pull complete                          3.6s
    ✓ 5ff292d92bef Pull complete                          3.6s
    └─ 30d3fccd4e77 Extracting 11.14MB/117.8MB           4.2s
    ✓ 2e42a5718777 Download complete                      1.1s
    ✓ 1786c40e6ef6 Download complete                      1.7s
    ✓ d546c1d12a7f Download complete                      1.8s
    ✓ 64709930f968 Download complete                      2.3s
    ✓ d1a33af9a2e4 Download complete                      2.6s
    ✓ b95356b5f483 Download complete                      2.8s
    ✓ 8e3cf1a078fa Download complete                      3.2s
    ✓ dba783666fd7 Download complete                      3.1s
    ✓ 387c70da0b5e Download complete                      3.5s
    └─ f3c8c18e18ce Verifying Checksum                   4.2s
    ✓ 2da9ad8b7fb7 Download complete                      3.8s
    ✓ 4f4fb700ef54 Download complete                      4.0s
    └─ 0fac0bcf8d86 Downloading 4.78MB/6.113MB           4.2s
    └─ e204e9e23e38 Waiting                                4.2s
    └─ 550686f3da95 Waiting                                4.2s
    └─ 1318664ee0c4 Waiting                                4.2s
    └─ 2968b7ead3c6 Waiting                                4.2s
    └─ 9f406e1c8188 Waiting                                4.2s
```

```
debian13@debian13:~/docker-apache-lab$ docker compose logs
WARN[0000] /home/debian13/docker-apache-lab/docker-compose-stack$ docker compose logs
lamp-apache | AH00558: apache2: Could not really determine the server's fully qualified domain name, using 172.18.0.4. Set the 'ServerName' directive globally to suppress this message
lamp-phpmyadmin | AH00558: apache2: Could not really determine the server's fully qualified domain name, using 172.18.0.3. Set the 'ServerName' directive globally to suppress this message
lamp-phpmyadmin | AH00558: apache2: Could not really determine the server's fully qualified domain name, using 172.18.0.3. Set the 'ServerName' directive globally to suppress this message
lamp-phpmyadmin | AH00558: apache2: Could not really determine the server's fully qualified domain name, using 172.18.0.3. Set the 'ServerName' directive globally to suppress this message
lamp-phpmyadmin | AH00558: apache2: Could not really determine the server's fully qualified domain name, using 172.18.0.3. Set the 'ServerName' directive globally to suppress this message
lamp-phpmyadmin | AH00558: apache2: Could not really determine the server's fully qualified domain name, using 172.18.0.3. Set the 'ServerName' directive globally to suppress this message
lamp-phpmyadmin | AH00558: apache2: Could not really determine the server's fully qualified domain name, using 172.18.0.3. Set the 'ServerName' directive globally to suppress this message
lamp-phpmyadmin | AH00558: apache2: Could not really determine the server's fully qualified domain name, using 172.18.0.3. Set the 'ServerName' directive globally to suppress this message
lamp-phpmyadmin | AH00558: apache2: Could not really determine the server's fully qualified domain name, using 172.18.0.3. Set the 'ServerName' directive globally to suppress this message
lamp-mysql | [Thu Dec 04 21:34:56.267912 2025] [mpm-workerforknotes] [pid 1:tid 1] AH00106: Apache/2.4.6 (Debian) PHP/8.3.28 configured -- resuming normal operations
lamp-mysql | [Thu Dec 04 21:34:56.267912 2025] [core:notice] [pid 1:tid 1] AH00094: Command line: "apache2 -D PHP foreground"
lamp-mysql | 2025-12-04 22:34:39+01:00 [Note] [Entrypoint]: Entrypoint script for MySQL Server 8.0.35-le18 started
lamp-mysql | 2025-12-04 22:34:39+01:00 [Note] [Entrypoint]: Switching to dedicated user 'mysql'
lamp-mysql | 2025-12-04 22:34:39+01:00 [Note] [Entrypoint]: Entrypoint script for MySQL Server 8.0.35-le18 started.
lamp-mysql | 2025-12-04 22:34:39+01:00 [Note] [Entrypoint]: Initializing database files
lamp-mysql | 2025-12-04T21:34:39.853720Z [0] [Warning] [MY-011068] [Server] The syntax '--skip-host-cache' is deprecated and will be removed in a future release. Please use SET GLOBAL host_cache_size=0 instead.
lamp-mysql | 2025-12-04T21:34:39.853742Z [0] [System] [MY-010408] [Server] /usr/sbin/mysqld (mysqld 8.0.35) initializing of server in progress as process 80
lamp-mysql | 2025-12-04T21:34:39.853743Z [0] [System] [MY-010408] [InnoDB] InnoDB initialization has started.
lamp-mysql | 2025-12-04T21:34:39.853751Z [0] [System] [MY-010408] [InnoDB] InnoDB initialization has ended.
lamp-mysql | 2025-12-04T21:34:45.312142Z [6] [Warning] [MY-010453] [Server] root@localhost is created with an empty password ! Please consider switching off the --initialize-insecure option.
debian13@debian13:~/docker-apache-lab$ docker compose logs
```

Docker Compose: Apache + MySQL + phpMyAdmin

Connexió a MySQL establerta correctament

Servidor: mysql

Base de dades: testdb

Versió MySQL: 8.0.35

Últimes 5 visites registrades:

ID	Data i hora	IP
4	2025-12-04 22:36:41	172.18.0.1
3	2025-12-04 22:36:40	172.18.0.1
2	2025-12-04 22:36:01	172.18.0.1
1	2025-12-04 22:35:45	172.18.0.1

Enllaços útils:

- phpMyAdmin (usuari root, contrasenya: rootpassword)

Info del sistema:

- PHP versió: 8.2.29
- Apache versió: Apache/2.4.65 (Debian)
- Contenedor: 289346f6fb03

Conceptes demostrats:

- Multi-contendor amb Docker Compose
- Variables d'entorn i entorns de treball via xarxa Docker
- Volums persistents per a MySQL
- Variables d'entorn per a configuració
- Dependències entre serveis (depends\_on)

phpMyAdmin

Show query box

Showing rows 0 - 3 (4 total). Query took 0.0004 seconds.

SELECT \* FROM visits;

Profile | Edit view | Explain SQL | Create PHP code | Refresh

visits

	id	timestamp	ip_address
<input type="checkbox"/>	1	2025-12-04 22:36:45	172.18.0.1
<input type="checkbox"/>	2	2025-12-04 22:36:01	172.18.0.1
<input type="checkbox"/>	3	2025-12-04 22:36:40	172.18.0.1
<input type="checkbox"/>	4	2025-12-04 22:36:41	172.18.0.1

Query results operations

Print | Copy to clipboard | Export | Display chart | Create view

```
● debian13@debian13:~/docker-apache-lab/docker-compose-stack$ ping mysql
PING mysql (10.0.20.18) 56(84) bytes of data.
64 bytes from mysql (10.0.20.18): icmp_seq=1 ttl=64 time=0.263 ms
64 bytes from mysql (10.0.20.18): icmp_seq=2 ttl=64 time=0.323 ms
64 bytes from mysql (10.0.20.18): icmp_seq=3 ttl=64 time=0.218 ms
64 bytes from mysql (10.0.20.18): icmp_seq=4 ttl=64 time=0.165 ms
^C
--- mysql ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3027ms
rtt min/avg/max/mdev = 0.165/0.242/0.323/0.058 ms
```

```
● debian13@debian13:~/docker-apache-lab/docker-compose-stack$ docker volume ls
DRIVER      VOLUME NAME
local      docker-compose-stack_mysql-data
● debian13@debian13:~/docker-apache-lab/docker-compose-stack$ docker volume inspect docker-compose-stack_mysql-data
[
    {
        "CreatedAt": "2025-12-04T15:34:34-06:00",
        "Driver": "local",
        "Labels": {
            "com.docker.compose.config-hash": "ebba52cf252a4c546fa26daff0064a1091d10f11049c0760a286aed36e82587d",
            "com.docker.compose.project": "docker-compose-stack",
            "com.docker.compose.version": "2.40.3",
            "com.docker.compose.volume": "mysql-data"
        },
        "Mountpoint": "/home/debian13/.local/share/docker/volumes/docker-compose-stack_mysql-data/_data",
        "Name": "docker-compose-stack_mysql-data",
        "Options": null,
        "Scope": "local"
    }
]
● debian13@debian13:~/docker-apache-lab/docker-compose-stack$ docker volume prune
WARNING! This will remove anonymous local volumes not used by at least one container.
Are you sure you want to continue? [y/N] y
Total reclaimed space: 0B
● debian13@debian13:~/docker-apache-lab/docker-compose-stack$ docker run --rm -v docker-compose-stack_mysql-data:/data -v $(pwd)
./backup alpine tar czf /backup/mysql-backup.tar.gz -C /data .
Unable to find image 'alpine:latest' locally
latest: Pulling from library/alpine
014e56e61396: Pull complete
Digest: sha256:51183f2cfa6320055da30872f211093f9ff1d3cf06f39a0bdb212314c5dc7375
Status: Downloaded newer image for alpine:latest
○ debian13@debian13:~/docker-apache-lab/docker-compose-stack$ █
```