



Universidad  
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CONOCIMIENTO Y CULTURA PARA EL DESARROLLO HUMANO

# *Load Balanced Wordpress*

*with Galera DB and Haproxy*

Materia: Computo de alto desempeño

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## Introducción

Esta guía explica cómo usar Docker y HAProxy para crear dos grupos de servidores que sigan funcionando aunque haya fallos. Un grupo es para MariaDB (con 3 servidores que se copian información entre sí para evitar problemas) y el otro para WordPress (con 3 "mini-servidores" que comparten el trabajo para que la página web vaya más rápido). HAProxy se encarga de dirigir el tráfico a estos grupos de forma inteligente.

## Software

- Ubuntu
- Docker
- Wordpress
- Vs code

## Procedimiento

Clonamos el repositorio de github “galera-docker”

```
alecio@alecio:/mnt/c/Users/richa/OneDrive/Documentos/HP Computo/Contenedores$ git clone https://github.com/hweidner/galera-docker
Cloning into 'galera-docker'...
remote: Enumerating objects: 32, done.
remote: Counting objects: 100% (4/4), done.
remote: Compressing objects: 100% (4/4), done.
remote: Total 32 (delta 0), reused 1 (delta 0), pack-reused 28 (from 1)
Receiving objects: 100% (32/32), 8.85 KiB | 106.00 KiB/s, done.
Resolving deltas: 100% (12/12), done.
alecio@alecio:/mnt/c/Users/richa/OneDrive/Documentos/HP Computo/Contenedores$ ls
```

Corremos el docker build

```
alecio@Alecio:/mnt/c/Users/richa/OneDrive/Documentos/HP Computo/Contenedores$ cd galera-docker/
alecio@Alecio:/mnt/c/Users/richa/OneDrive/Documentos/HP Computo/Contenedores/galera-docker$ docker build -t mycluster/galera .
[+] Building 81.2s (9/9) FINISHED                                docker:default
=> [internal] load build definition from Dockerfile              0.1s
=> => transferring dockerfile: 296B                             0.0s
=> [internal] load metadata for docker.io/library/mariadb:10.6 2.4s
=> [internal] load .dockerignore                                0.1s
=> => transferring context: 2B                                    0.0s
=> [1/4] FROM docker.io/library/mariadb:10.6@sha256:ec79aa7a81a7667885cb69b6dc0415e032f22520bd5aca77927faffca43 74.8s
=> => resolve docker.io/library/mariadb:10.6@sha256:ec79aa7a81a7667885cb69b6dc0415e032f22520bd5aca77927faffca432 0.0s
=> => sha256:9ba04180eb73666d85aae623f21ae2af74920509fe4f63a5d442c54e9b3c9f08 8.22kB / 8.22kB 0.2s
=> => sha256:bd7c8454e7132ba24fdc22fd1559b18d8e426c3102006bab7a159efc125d61b9 4.02kB / 4.02kB 0.3s
=> => sha256:69fd8973c35eb4e314aa533a679008d79759a189a4bea0ca40270a8f15592606 86.18MB / 86.18MB 68.8s
=> => sha256:4ed4d4e0fdab8e0a9d2452c23b1cb477d70539918d4684908e8c45c4d2f4d2ff 333B / 333B 0.5s
=> => sha256:94c5f1bc995c1d1b1e58e0690c7824c7bdc65c139697336d87f438990fcd6d43 114B / 114B 0.9s
=> => sha256:041c4f82201d46b54e2d8e05905afaa38bf578c8d3adb31a1d754945e4dd02ed 7.18MB / 7.18MB 40.1s
=> => sha256:2f8e43d24be4124e2ab8fe9e578607e9381e18edc2bc7915b6d7fb3130a487cf 0B / 1.72kB 77.8s
=> => sha256:d9802f032d6798e2086607424bfe88cb8ecd6f116e11cd99592dcafd261e9cd2 27.51MB / 27.51MB 33.6s
=> => extracting sha256:d9802f032d6798e2086607424bfe88cb8ecd6f116e11cd99592dcafd261e9cd2 3.7s
=> => extracting sha256:2f8e43d24be4124e2ab8fe9e578607e9381e18edc2bc7915b6d7fb3130a487cf 0.1s
=> => extracting sha256:041c4f82201d46b54e2d8e05905afaa38bf578c8d3adb31a1d754945e4dd02ed 2.5s
=> => extracting sha256:94c5f1bc995c1d1b1e58e0690c7824c7bdc65c139697336d87f438990fcd6d43 0.1s
=> => extracting sha256:4ed4d4e0fdab8e0a9d2452c23b1cb477d70539918d4684908e8c45c4d2f4d2ff 0.1s
=> => extracting sha256:69fd8973c35eb4e314aa533a679008d79759a189a4bea0ca40270a8f15592606 5.6s
=> => extracting sha256:bd7c8454e7132ba24fdc22fd1559b18d8e426c3102006bab7a159efc125d61b9 0.0s
=> => extracting sha256:9ba04180eb73666d85aae623f21ae2af74920509fe4f63a5d442c54e9b3c9f08 0.0s
=> [internal] load build context                                0.1s
=> => transferring context: 505B                                  0.1s
=> [2/4] RUN touch /tmp/.wsrep-new-cluster && chown -R mysql:mysql /tmp/.wsrep-new-cluster 0.9s
```

Revisamos las imagenes del docker

```
alecio@Alecio:/mnt/c/Users/richa/OneDrive/Documentos/HP Computo/Contenedores/galera-docker$ docker images
REPOSITORY          TAG                 IMAGE ID            CREATED             SIZE
mycluster/galera    latest             5ae4df856710       About a minute ago 539MB
custom-nginx        latest             94ed8bc9ba7c       4 months ago       279MB
python              latest             bc78d3c007f8       5 months ago       1.47GB
ubuntu              latest             278628f08d49       5 months ago       117MB
my-nginx            v1                 bc5eac5eafc5       6 months ago       279MB
nginx               latest             bc5eac5eafc5       6 months ago       279MB
alpine              latest             1e42bbe25081       7 months ago       12.1MB
hello-world         latest             305243c73457       23 months ago      24.4kB
appropriate/curl    latest             c8bf5bbec639       7 years ago         9.86MB
```

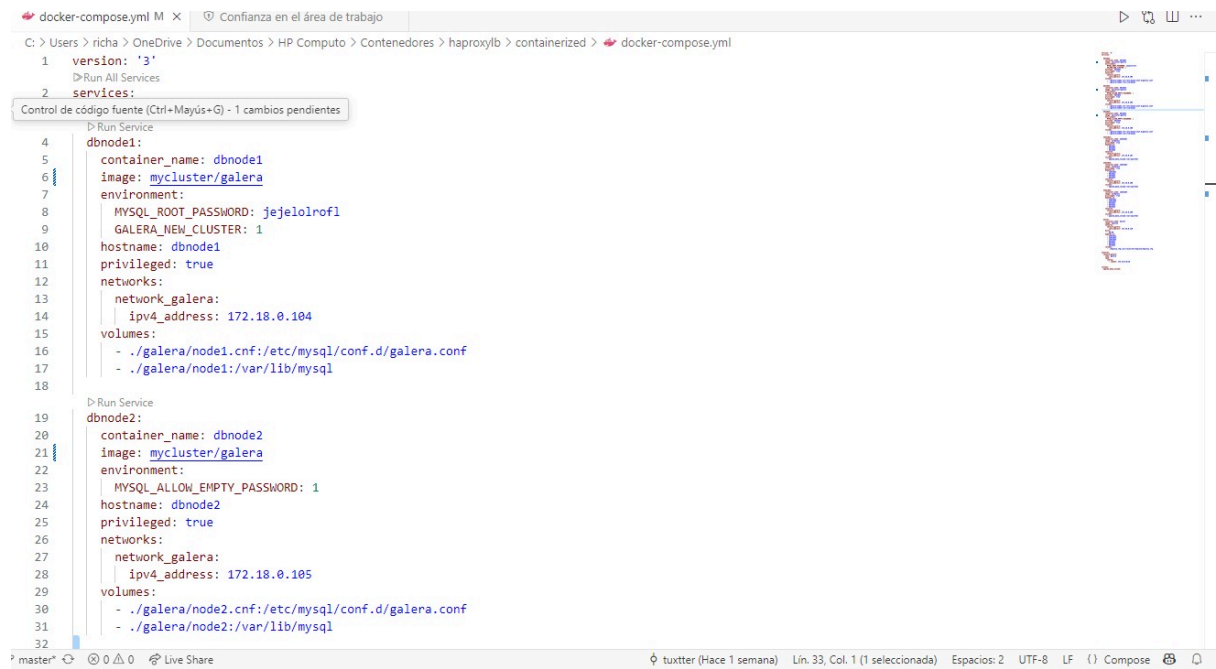
validamos la imagen

```
alecio@Alecio:/mnt/c/Users/richa/OneDrive/Documentos/HP Computo/Contenedores/galera-docker$ docker images | grep galera
mycluster/galera latest 5ae4df856710 3 minutes ago 539MB
```

Clonamos el nuevo repo con el docker-compose

```
alecio@Alecio:/mnt/c/Users/richa/OneDrive/Documentos/HP Computo/Contenedores$ git clone https://github.com/tuxtter/haproxylib
Cloning into 'haproxylib'...
remote: Enumerating objects: 84, done.
remote: Counting objects: 100% (9/9), done.
remote: Compressing objects: 100% (7/7), done.
remote: Total 84 (delta 2), reused 8 (delta 2), pack-reused 75 (from 1)
Receiving objects: 100% (84/84), 22.92 KiB | 419.00 KiB/s, done.
Resolving deltas: 100% (43/43), done.
```

en el archivo .yml cambiamos el nombre imagen a la que creamos anteriormente y en este caso tambien las direcciones IP



```
1 version: '3'
2 services:
3
4 dbnode1:
5   container_name: dbnode1
6   image: mycluster/galera
7   environment:
8     MYSQL_ROOT_PASSWORD: jejelolrof1
9     GALERA_NEW_CLUSTER: 1
10  hostname: dbnode1
11  privileged: true
12  networks:
13    network_galera:
14      ipv4_address: 172.18.0.104
15  volumes:
16    - ./galera/node1.cnf:/etc/mysql/conf.d/galera.cnf
17    - ./galera/node1:/var/lib/mysql
18
19 dbnode2:
20   container_name: dbnode2
21   image: mycluster/galera
22   environment:
23     MYSQL_ALLOW_EMPTY_PASSWORD: 1
24   hostname: dbnode2
25   privileged: true
26   networks:
27     network_galera:
28       ipv4_address: 172.18.0.105
29   volumes:
30     - ./galera/node2.cnf:/etc/mysql/conf.d/galera.cnf
31     - ./galera/node2:/var/lib/mysql
32
```

repetimos el paso en los 3 nodos

▷ Run Service

dbnode1:

```
container_name: dbnode1
image: mycluster/galera
environment:
  MYSQL_ROOT_PASSWORD: jejelolrof1
  GALERA_NEW_CLUSTER: 1
hostname: dbnode1
privileged: true
networks:
  network_galera:
    ipv4_address: 172.10.0.101
volumes:
  - ./galera/node1.cnf:/etc/mysql/conf.d/galera.conf
  - ./galera/node1:/var/lib/mysql
```

▷ Run Service

dbnode2:

```
container_name: dbnode2
image: mycluster/galera
environment:
  MYSQL_ALLOW_EMPTY_PASSWORD: 1
hostname: dbnode2
privileged: true
networks:
  network_galera:
    ipv4_address: 172.10.0.102
volumes:
  - ./galera/node2.cnf:/etc/mysql/conf.d/galera.conf
  - ./galera/node2:/var/lib/mysql
```

```

32  ▸ Run Service
33  dbnode3:
34      container_name: dbnode3
35      image: mycluster/galera
36      environment:
37      |   MYSQL_ALLOW_EMPTY_PASSWORD: 1
38      hostname: dbnode3
39      privileged: true
40      networks:
41      |   network_galera:
42      |   |   ipv4_address: 172.10.0.103
43      volumes:
44      |   - ./galera/node3.cnf:/etc/mysql/conf.d/galera.conf
45      |   - ./galera/node3:/var/lib/mysql

```

```

46  ▸ Run Service
47  webnode1:
48      container_name: webnode1
49      image: wordpress
50      privileged: true
51      depends_on:
52      |   - dbnode1
53      |   - dbnode2
54      |   - dbnode3
55      networks:
56      |   network_galera:
57      |   |   ipv4_address: 172.10.0.104
58      volumes:
59      |   - apache_data_volume:/var/www/html

```

```

60  ▸ Run Service
61  webnode2:
62      container_name: webnode2
63      image: wordpress
64      privileged: true
65      depends_on:
66      |   - webnode1
67      |   - dbnode1
68      |   - dbnode2
69      |   - dbnode3
70      networks:
71      |   network_galera:
72      |   |   ipv4_address: 172.10.0.105
73      volumes:
74      |   - apache_data_volume:/var/www/html

```

```

75  ▸ Run Service
76  webnode3:
77      container_name: webnode3
78      image: wordpress
79      privileged: true
80      depends_on:
81      |   - webnode1
82      |   - webnode2
83      |   - dbnode1
84      |   - dbnode2
85      |   - dbnode3
86      networks:
87      |   network_galera:
88      |   |   ipv4_address: 172.10.0.106
89      volumes:
90      |   - apache_data_volume:/var/www/html

```

```

  ▸ Run Service
  master:
    container_name: master
    image: haproxy
    networks:
      network_galera:
        ipv4_address: 172.10.0.107
    ports:
      - 80:80
    depends_on:
      - webnode1
      - webnode2
      - webnode3
      - dbnode1
      - dbnode2
      - dbnode3
    volumes:
      - ./haproxy.cfg:/usr/local/etc/haproxy/haproxy.cfg

  networks:
    network_galera:
      name: galera
      ipam:
        config:
          - subnet: 172.10.0.0/16

```

Revisamos la estructura de las carpetas

```

apache_data_volume:alecio@Alecio:/mnt/c/Users/richa/OneDrive/Documentos/HP Computo/Contenedores/haproxy/b/containerized$ ls -al
total 4
drwxrwxrwx 1 alecio alecio 4096 Apr  6 20:30 .
drwxrwxrwx 1 alecio alecio 4096 Apr  6 20:30 ..
-rwxrwxrwx 1 alecio alecio 2425 Apr  6 20:30 docker-compose.yml
drwxrwxrwx 1 alecio alecio 4096 Apr  6 20:30 galera
-rwxrwxrwx 1 alecio alecio 564 Apr  6 20:30 haproxy.cfg
alecio@Alecio:/mnt/c/Users/richa/OneDrive/Documentos/HP Computo/Contenedores/haproxy/b/containerized$ ls -al galera/
total 0
drwxrwxrwx 1 alecio alecio 4096 Apr  6 20:30 .
drwxrwxrwx 1 alecio alecio 4096 Apr  6 20:30 ..
-rwxrwxrwx 1 alecio alecio 193 Apr  6 20:30 node1.cnf
-rwxrwxrwx 1 alecio alecio 193 Apr  6 20:30 node2.cnf
-rwxrwxrwx 1 alecio alecio 193 Apr  6 20:30 node3.cnf
alecio@Alecio:/mnt/c/Users/richa/OneDrive/Documentos/HP Computo/Contenedores/haproxy/b/containerized$

```

creamos una carpeta para cada nodo

```

alecio@Alecio:/mnt/c/Users/richa/OneDrive/Documentos/HP Computo/Contenedores/haproxy/b/containerized$ mkdir -p galera/node{1,2,3}
alecio@Alecio:/mnt/c/Users/richa/OneDrive/Documentos/HP Computo/Contenedores/haproxy/b/containerized$ ls -al galera
total 0
drwxrwxrwx 1 alecio alecio 4096 Apr  6 21:04 .
drwxrwxrwx 1 alecio alecio 4096 Apr  6 20:30 ..
drwxrwxrwx 1 alecio alecio 4096 Apr  6 21:04 node1
-rwxrwxrwx 1 alecio alecio 193 Apr  6 20:30 node1.cnf
drwxrwxrwx 1 alecio alecio 4096 Apr  6 21:04 node2
-rwxrwxrwx 1 alecio alecio 193 Apr  6 20:30 node2.cnf
drwxrwxrwx 1 alecio alecio 4096 Apr  6 21:04 node3
-rwxrwxrwx 1 alecio alecio 193 Apr  6 20:30 node3.cnf

```

cambiamos los permisos de las carpetas

```

alecio@Alecio:/mnt/c/Users/richa/OneDrive/Documentos/HP Computo/Contenedores/haproxy/b/containerized$ sudo chown 999:999 galera/node{1,2,3}
[sudo] password for alecio:

```

validamos con netstat

```
alecio@Alecio:/mnt/c/Users/richa/OneDrive/Documentos/HP Computo/Contenedores/haproxylib/containerized$ netstat -tlnp
(No info could be read for "-p": geteuid()=1000 but you should be root.)
Active Internet connections (only servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State       PID/Program name
tcp        0      0 0.0.0.0:54:53          0.0.0.0:*               LISTEN      -
tcp        0      0 0.0.0.0:53:53         0.0.0.0:*               LISTEN      -
```

revisamos la lista de contenedores

```
alecio@Alecio:/mnt/c/Users/richa/OneDrive/Documentos/HP Computo/Contenedores/haproxylib/containerized$ docker ps -a
CONTAINER ID   IMAGE      COMMAND                  CREATED        STATUS        PORTS                               NAMES
e9aa325a52c3   ubuntu:latest "sleep infinity"        4 months ago   Exited (255)  2 hours ago                       my_container
c5bfeb405751   nginx     "/docker-entrypoint.s..." 4 months ago   Exited (255)  2 hours ago   80/tcp                         service2
7d0152f0252    nginx     "/docker-entrypoint.s..." 4 months ago   Exited (255)  2 hours ago   80/tcp                         service1
18d3380300f8   alpine    "sleep infinity"        4 months ago   Exited (255)  2 hours ago                       isolated-container
eaa91c1f7039   nginx     "/docker-entrypoint.s..." 4 months ago   Exited (1)    4 months ago   host-container
c5e21f0ff9cd   nginx     "/docker-entrypoint.s..." 4 months ago   Exited (255)  2 hours ago   80/tcp                         container3
7e0cd4f175c3   nginx     "/docker-entrypoint.s..." 4 months ago   Exited (255)  2 hours ago   host-networked
f1a675b9531b   nginx     "/docker-entrypoint.s..." 4 months ago   Created                               exposed-container
0a992336e52b   nginx     "/docker-entrypoint.s..." 4 months ago   Exited (255)  2 hours ago   80/tcp                         container2
a651a80f5b29   nginx     "/docker-entrypoint.s..." 4 months ago   Exited (255)  2 hours ago   80/tcp                         container1
63f92cc7c6a8   nginx     "/docker-entrypoint.s..." 4 months ago   Up 2 hours    80/tcp                         nginx-restart
faeb8d9917b4   nginx     "/docker-entrypoint.s..." 4 months ago   Exited (255)  2 hours ago   80/tcp                         nginx-networked
7ceae465ce7b   nginx     "/docker-entrypoint.s..." 4 months ago   Exited (255)  2 hours ago   80/tcp                         nginx-limited
2c238aa0531    nginx     "/docker-entrypoint.s..." 4 months ago   Exited (255)  2 hours ago   80/tcp                         nginx-env
fa16f60cefe5   nginx     "/docker-entrypoint.s..." 4 months ago   Exited (255)  2 hours ago   0.0.0.0:8081->80/tcp          nginx-volume
5a9803761761   nginx     "/docker-entrypoint.s..." 4 months ago   Created                               nginx-mapped
9e21ba63e589   nginx     "/docker-entrypoint.s..." 4 months ago   Exited (255)  2 hours ago   80/tcp                         my-nginx
117ce870dbce   nginx     "/docker-entrypoint.s..." 4 months ago   Exited (0)    4 months ago                       great_kalam
95a6bd809761   nginx     "/docker-entrypoint.s..." 4 months ago   Exited (255)  2 hours ago   80/tcp                         limited-nginx
7acdda3b5835   ubuntu    "sleep infinity"        4 months ago   Exited (255)  2 hours ago                       env-file-test
0aa1aa4bdlbc   ubuntu    "sleep infinity"        4 months ago   Exited (255)  2 hours ago                       env-test
ad234f19edd8   nginx     "/docker-entrypoint.s..." 4 months ago   Exited (255)  2 hours ago   0.0.0.0:8080->80/tcp          nginx-with-port
7a7d3d40e23    nginx     "/docker-entrypoint.s..." 4 months ago   Exited (255)  2 hours ago   80/tcp                         nginx-detached
```

levantamos el docker-compose

```
alecio@Alecio:/mnt/c/Users/richa/OneDrive/Documentos/HP Computo/Contenedores/haproxylib/containerized$ docker-compose up
[*] Running 8/8
[+] Network galera Created 0.2s
[+] Container dbnode3 Created 1.1s
[+] Container dbnode1 Created 1.1s
[+] Container dbnode2 Created 1.1s
[+] Container webnode1 Created 0.9s
[+] Container webnode2 Created 0.6s
[+] Container webnode3 Created 1.0s
[+] Container master Created 1.0s
Attaching to dbnode1, dbnode2, dbnode3, master, webnode1, webnode2, webnode3
dbnode2 | 2025-04-07 04:02:43+00:00 [Note] [Entrypoint]: Entry point script for MariaDB Server 1:10.6.21+maria-ubu2004 started.
dbnode3 | 2025-04-07 04:02:43+00:00 [Note] [Entrypoint]: Entry point script for MariaDB Server 1:10.6.21+maria-ubu2004 started.
dbnode1 | 2025-04-07 04:02:43+00:00 [Note] [Entrypoint]: Entry point script for MariaDB Server 1:10.6.21+maria-ubu2004 started.
dbnode3 | 2025-04-07 04:02:45+00:00 [Note] [Entrypoint]: Initializing database files
dbnode3 | Warning: World-writable config file '/etc/mysql/conf.d/01-galera.cnf' is ignored
dbnode2 | 2025-04-07 04:02:45+00:00 [Note] [Entrypoint]: Initializing database files
dbnode1 | 2025-04-07 04:02:45+00:00 [Note] [Entrypoint]: Initializing database files
dbnode2 | Warning: World-writable config file '/etc/mysql/conf.d/01-galera.cnf' is ignored
dbnode1 | Warning: World-writable config file '/etc/mysql/conf.d/01-galera.cnf' is ignored
dbnode3 | Warning: World-writable config file '/etc/mysql/conf.d/01-galera.cnf' is ignored
dbnode2 | Warning: World-writable config file '/etc/mysql/conf.d/01-galera.cnf' is ignored
dbnode1 | Warning: World-writable config file '/etc/mysql/conf.d/01-galera.cnf' is ignored
webnode1 | WordPress not found in /var/www/html - copying now...
webnode2 | WordPress not found in /var/www/html - copying now...
webnode3 | WordPress not found in /var/www/html - copying now...
```

Revisamos con el ps

```
alecio@Alecio:/mnt/c/Users/richa/OneDrive/Documentos/HP Computo/Contenedores/haproxylib/containerized$ docker ps
CONTAINER ID   IMAGE      COMMAND                  CREATED        STATUS        PORTS                               NAMES
ad07b1395bf6   haproxy    "docker-entrypoint.s..." 18 seconds ago   Up 9 seconds    0.0.0.0:80->80/tcp          master
06feababd655   wordpress  "docker-entrypoint.s..." 18 seconds ago   Up 10 seconds    80/tcp                      webnode3
6f99481ab488   wordpress  "docker-entrypoint.s..." 19 seconds ago   Up 12 seconds    80/tcp                      webnode2
8ac5f7f4e7a4   wordpress  "docker-entrypoint.s..." 20 seconds ago   Up 13 seconds    80/tcp                      webnode1
ff5352b21b14   mycluster/galera "docker-entrypoint.s..." 21 seconds ago   Up 15 seconds    3306/tcp                   dbnode3
16a8de2016c2   mycluster/galera "docker-entrypoint.s..." 21 seconds ago   Up 15 seconds    3306/tcp                   dbnode1
e5164116fafc   mycluster/galera "docker-entrypoint.s..." 21 seconds ago   Up 15 seconds    3306/tcp                   dbnode2
63f92cc7c6a8   nginx     "/docker-entrypoint.s..." 4 months ago     Up 4 hours      80/tcp                      nginx-restart
```

Revisamos que el LISTEN este en el puerto 80

```
alecio@Alecio:/mnt/c/Users/richa/OneDrive/Documentos/HP Computo/Contenedores/haproxylib/containerized$ netstat -tlnp
(No info could be read for "-p": geteuid()=1000 but you should be root.)
Active Internet connections (only servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State       PID/Program name
tcp        0      0 0.0.0.0:54:53          0.0.0.0:*               LISTEN      -
tcp        0      0 0.0.0.0:53:53         0.0.0.0:*               LISTEN      -
tcp6       0      0 :::80                  :::*                    LISTEN      -
alecio@Alecio:/mnt/c/Users/richa/OneDrive/Documentos/HP Computo/Contenedores/haproxylib/containerized$
```



Nos vamos al navegador ponemos “Localhost” y configuramos el wordpress

A continuación tendrás que introducir los detalles de tu conexión con la base de datos. Si no estás seguro de ellos, contacta con tu proveedor de hosting.

**Nombre de la base de datos**   
El nombre de la base de datos que quieres usar con WordPress.

**Nombre de usuario**   
El nombre de usuario de tu base de datos.

**Contraseña**  [Mostrar](#)  
La contraseña de tu base de datos.

**Servidor de la base de datos**   
Si localhost no funciona, deberías poder obtener esta información de tu proveedor de hosting.

**Prefijo de tabla**   
Si quieres ejecutar varias instalaciones de WordPress en una sola base de datos cambia esto.

[Enviar](#)

revisamos las bases de datos

```
alecio@Alecio: ~/mnt0/Users/ricna/OneDrive/Documentos/HP Computo/contenedores/haproxyib/containerized
Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [(none)]> show database;
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MariaDB server version for the right syntax to use near 'database' a
t line 1
MariaDB [(none)]> show database
->
[1]- Stopped          mysql -u root -p
mysql@dbnode2:/$ mysql -u root -p
Warning: World-writable config file '/etc/mysql/conf.d/01-galera.cnf' is ignored
Warning: World-writable config file '/etc/mysql/conf.d/galera.cnf' is ignored
Enter password:
ERROR 1045 (28000): Access denied for user 'root'@'localhost' (using password: YES)
mysql@dbnode2:/$ mysql -u root -p
Warning: World-writable config file '/etc/mysql/conf.d/01-galera.cnf' is ignored
Warning: World-writable config file '/etc/mysql/conf.d/galera.cnf' is ignored
Enter password:
ERROR 1045 (28000): Access denied for user 'root'@'localhost' (using password: YES)
mysql@dbnode2:/$ mysql -u root -p
Warning: World-writable config file '/etc/mysql/conf.d/01-galera.cnf' is ignored
Warning: World-writable config file '/etc/mysql/conf.d/galera.cnf' is ignored
Enter password:
ERROR 1045 (28000): Access denied for user 'root'@'localhost' (using password: YES)
mysql@dbnode2:/$ mysql -u root
Warning: World-writable config file '/etc/mysql/conf.d/01-galera.cnf' is ignored
Warning: World-writable config file '/etc/mysql/conf.d/galera.cnf' is ignored
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 11
Server version: 10.6.21-MariaDB-ubu2004 mariadb.org binary distribution

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [(none)]> show DATABASES;
+-----+
| Database |
+-----+
| information_schema |
| mysql |
| performance_schema |
| sys |
+-----+
```

creamos la base de datos wordpress

```
MariaDB [(none)]> create database wordpress;
Query OK, 1 row affected (0.019 sec)

MariaDB [(none)]>
```

```
MariaDB [(none)]> show DATABASES;
+-----+
| Database |
+-----+
| information_schema |
| mysql       |
| performance_schema |
| sys         |
| wordpress   |
+-----+
```

configuramos el wordpress

Información necesaria

Por favor, proporciona la siguiente información. No te preocupes, siempre podrás cambiar estos ajustes más tarde.

Titulo del sitio: BDalecio

Nombre de usuario: admin

Contraseña: Alecio28 (Débil) [Ocultar]

Importante: Necesitas esta contraseña para acceder. Por favor, guárdala en un lugar seguro.

Confirma la contraseña: ☒ Confirma el uso de una contraseña débil.

Tu correo electrónico: [Empty field]

Comprueba bien tu dirección de correo electrónico antes de continuar.

Visibilidad en los motores de búsqueda: ☐ Disuade a los motores de búsqueda de indexar este sitio. Depende de los motores de búsqueda atender esta petición o no.

[Instalar WordPress](#)

**Presentamos Twenty Twenty-Five**

**Posibilidades infinitas sin complejidad**

Twenty Twenty-Five ofrece un tema flexible y centrado en el diseño que te permite crear sitios asombrosos con facilidad. Adapta tu estética con una gran variedad de opciones de estilo, patrones de bloques y paletas de colores. Reducido a lo esencial, es un tema que realmente puede crecer contigo.

**Tell your story**

```

^Z
[7]+ Stopped      siege -c 20 localhost
alecio@alecio:/mnt/c/Users/richa/OneDrive/Documentos/HP Computo/contenedores/haproxy/b/containerized$ siege -c 5 localhost
^Z
[8]+ Stopped      siege -c 5 localhost
alecio@alecio:/mnt/c/Users/richa/OneDrive/Documentos/HP Computo/contenedores/haproxy/b/containerized$ siege -c 5 t1m -i -b http://localhost
^Z
[9]+ Stopped      siege -c 5 t1m -i -b http://localhost
alecio@alecio:/mnt/c/Users/richa/OneDrive/Documentos/HP Computo/contenedores/haproxy/b/containerized$ siege -c 5 t1m -i -b http://localhost
^Z
[10]+ Stopped     siege -c 5 t1m -i -b http://localhost
alecio@alecio:/mnt/c/Users/richa/OneDrive/Documentos/HP Computo/contenedores/haproxy/b/containerized$ ab
ab: wrong number of arguments
Usage: ab [options] [http[s]://]hostname[:port]/path
Options are:

```

```

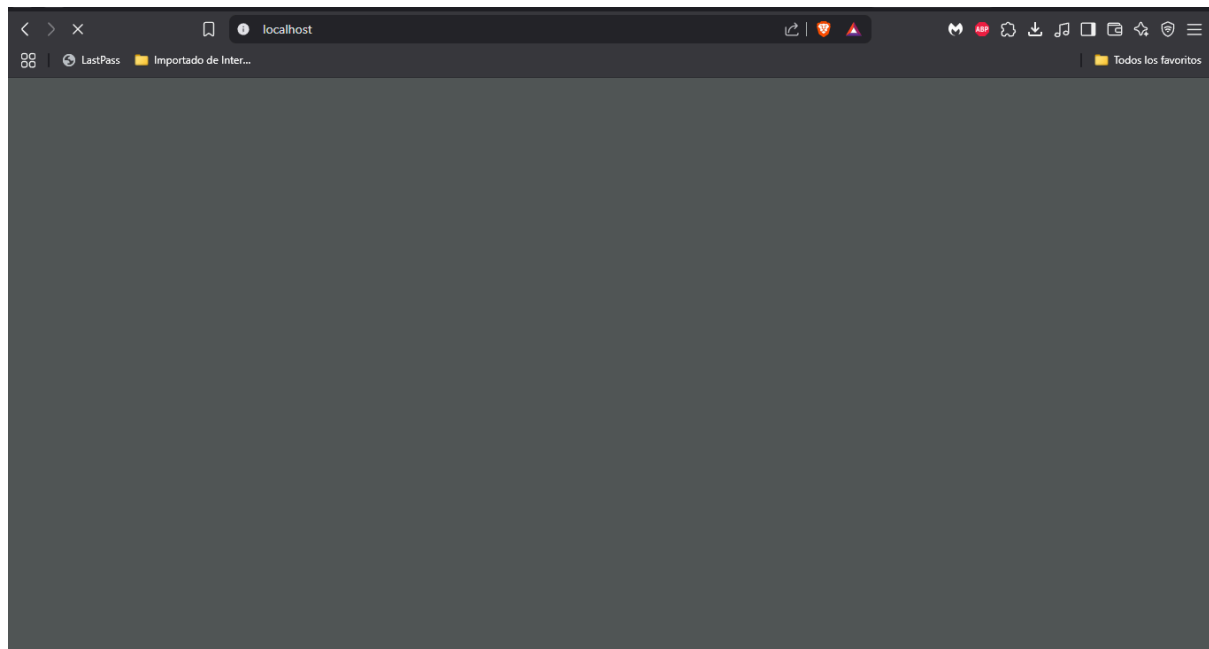
-c certfile Specify optional client certificate chain and private key
alecio@alecio:/mnt/c/Users/richa/OneDrive/Documentos/HP Computo/contenedores/haproxy/b/containerized$ ab -n requests 10 localhost
Invalid number of requests

alecio@alecio:/mnt/c/Users/richa/OneDrive/Documentos/HP Computo/contenedores/haproxy/b/containerized$ ab -n requests 5 localhost
Invalid number of requests

alecio@alecio:/mnt/c/Users/richa/OneDrive/Documentos/HP Computo/contenedores/haproxy/b/containerized$ ab -n requests 10 localhost
Invalid number of requests

alecio@alecio:/mnt/c/Users/richa/OneDrive/Documentos/HP Computo/contenedores/haproxy/b/containerized$ siege
SIEGE 4.0.7
Usage: siege [options]
       siege [options] URL
       siege -g URL

```



## Conclusión

Esta práctica tuvo como objetivo implementar una infraestructura basada en Docker y HAProxy, utilizando clústers de bases de datos MariaDB (Galera) compuesto por tres nodos replicados, y un conjunto distribuido de tres instancias de WordPress balanceadas mediante HAProxy. Este último fue configurado como el balanceador de carga principal, encargado de redirigir el tráfico entrante de manera eficiente y tolerante a fallos.

Durante el proceso se lograron avances significativos: los contenedores fueron desplegados exitosamente, se configuraron los archivos requeridos y los servicios se levantaron sin errores críticos al inicio. Sin embargo, las pruebas de carga realizadas con herramientas como *siege* y *ab* no arrojaron resultados concluyentes, lo cual impidió validar adecuadamente el comportamiento del entorno bajo condiciones de estrés.

Los principales desafíos surgieron en la formación del clúster Galera, particularmente en lo referente a problemas de permisos y sincronización que impidieron la replicación efectiva entre los nodos. Adicionalmente, a pesar de que los contenedores de WordPress y HAProxy se mantenían activos, el tráfico HTTP no fue redirigido correctamente. Esto indica posibles fallos tanto en la configuración de HAProxy como en la disponibilidad real de los servicios backend.

Si bien la guía que nos proporcionó el profesor fue sólida, la experiencia evidenció que la resiliencia real de un sistema distribuido no radica únicamente en el número de nodos desplegados, sino en la precisión con la que estos se integran, configuran y monitorean. Corregir detalladamente los errores de replicación en MariaDB, asegurar el enrutamiento efectivo de HAProxy y confirmar la disponibilidad operativa de cada instancia son tareas fundamentales que deben anteceder cualquier evaluación de rendimiento o escalabilidad.