How to Create a Docker Image?

written by sysadmin | 5 November 2025

Previously, you often used a Docker image that you downloaded from Docker Hub. But now, you want to create a Docker image for your own application needs.

Problem

How to create a Docker image?

Solution

To create a Docker image, you must create a Dockerfile.

A. Dockerfile

Dockerfile is a script that contains a set of instructions used to create a Docker image using the format:

```
#comment
INSTRUCTION arguments
```

You should know that Docker runs Dockerfile files sequentially from top to bottom, and this file does not have a file extension, so just write Dockerfile. To make things easier, it is best to place this Dockerfile in the same location as the files needed to create a Docker image, so that it is easier to create. That way, to create a Docker image, just run the command:

```
docker build -t image_name .
```

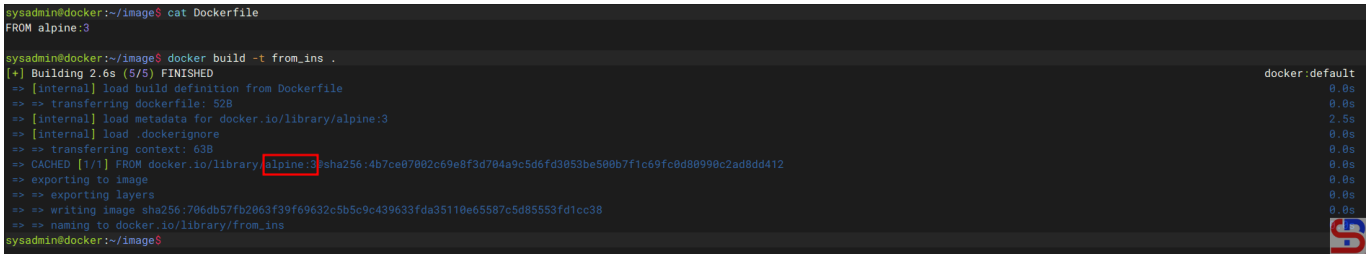
B. Instructions

The following are the standard Dockerfile instructions:

1. FROM instruction

This instruction is the first command to perform a build stage in the Dockerfile with the example below:

```
FROM alpine:3
```

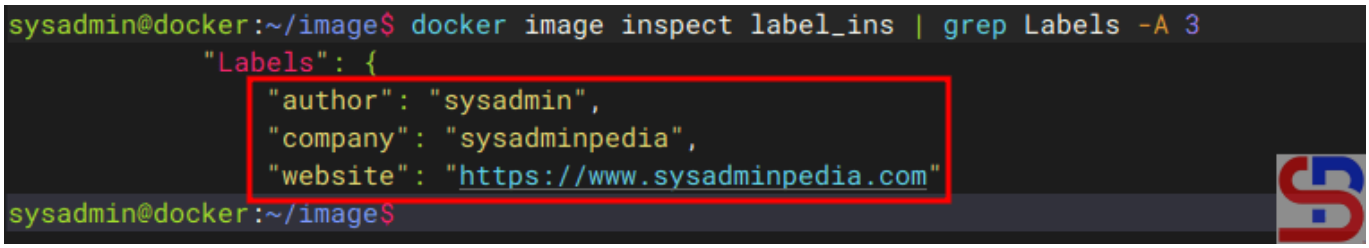


Using the FROM instruction

2. LABEL instruction

To add metadata to the Docker image you create, where the metadata is additional information, such as the name of the application, creator, website, and so on.

```
FROM alpine:3

LABEL author="sysadmin"
LABEL company="sysadminpedia" website="https://www.sysadminpedia.com"
```



Using the LABEL instruction

3. WORKING DIRECTORY instruction

This instruction specifies directories/folders to execute instructions in the container. By default, if there is no working directory, then the container will go to the / folder automatically. If the workdir does not exist, the directory will automatically be created, and then, after we determine the location of the workdir, the directory will be used as a place to execute the next instruction. If the workdir's location is a relative path, then it will

automatically enter the directory of the previous workdir. Workdir can also be used as a path for the first location when it enters the container.

```
FROM alpine:3

LABEL author="sysadmin"
LABEL company="sysadminpedia" website="https://www.sysadminpedia.com"

WORKDIR /app
```

```
sysadmin@docker:~/image$ docker run --rm -it workdir_ins
/app # pwd
/app
/app #
```

Using the WORKDIR instruction

4. RUN instruction

This instruction is a command in the image during the build stage, where the results of the RUN command will be committed to changes to the image, so that the RUN command will only be executed during the Docker build process, and this command will not be executed again and when you run the docker container from the image the RUN command will not be executed.

```
FROM alpine:3

LABEL author="sysadmin"
LABEL company="sysadminpedia" website="https://www.sysadminpedia.com"

WORKDIR /app

RUN mkdir hello
RUN echo "Hello World" > "hello/world.txt"
```

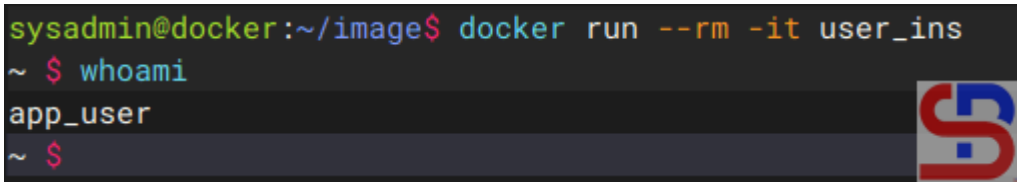
```
sysadmin@docker:~/image$ docker run --rm -it run_ins
/app # cat hello/world.txt
Hello World
/app #
```

Using the RUN instruction

5. USER instruction

To change the user or user group when Docker images are run, because by default, Docker will use the root user, and we can change it by using the user instruction, with the note that the user must be created first.

```
FROM alpine:3

LABEL author="sysadmin"
LABEL company="sysadminpedia" website="https://www.sysadminpedia.com"

WORKDIR /app

RUN mkdir hello
RUN echo "Hello World" > "hello/world.txt"

RUN addgroup -S app_group
RUN adduser -S -D -h /app app_user app_group
RUN chown -R app_user:app_group /app
USER app_user
```



Using the USER instruction

6. ENTRYPOINT instruction

An instruction in the Dockerfile specifies the main command that is executed when the container is started, and this is the main process of the container.

```
FROM alpine:3

LABEL author="sysadmin"
LABEL company="sysadminpedia" website="https://www.sysadminpedia.com"


WORKDIR /app

RUN mkdir hello
RUN echo "Hello World" > "hello/world.txt"

RUN addgroup -S app_group
RUN adduser -S -D -h /app app_user app_group
RUN chown -R app_user:app_group /app
```

```
USER app_user

ENTRYPOINT ["cat", "hello/world.txt"]
```

```
sysadmin@docker:~/image$ docker run --rm -it entrypoint_ins
Hello World
sysadmin@docker:~/image$
```

Using the ENTRYPOINT instruction

7. COMMAND instruction

An instruction that is used when the Docker container is running and will not be executed during the build image process. You cannot add more than one CMD instruction in an image, and if there is more than one instruction in an image, then the last CMD instruction will be executed. If there is an ENTRYPOINT instruction, then the CMD instruction becomes an argument from the ENTRYPOINT instruction. Examples of its use are as below:

```
FROM alpine:3

LABEL author="sysadmin"
LABEL company="sysadminpedia" website="https://www.sysadminpedia.com"

WORKDIR /app

RUN mkdir hello
RUN echo "Hello World" > hello/world.txt

RUN addgroup -S app_group
RUN adduser -S -D -h /app app_user app_group
RUN chown -R app_user:app_group /app
USER app_user

ENTRYPOINT ["cat"]

CMD ["hello/world.txt"]
```

The Dockerfile file above seems to be the command cat hello/world.txt, as in the picture below:

```
sysadmin@docker:~/image$ docker run --rm -it cmd_ins
Hello World
sysadmin@docker:~/image$
```

Using the CMD instruction

If there is no ENTRYPOINT, the CMD itself can be executed directly as a container command, as in the Dockerfile file below:

```
FROM alpine:3

LABEL author="sysadmin"
LABEL company="sysadminpedia" website="https://www.sysadminpedia.com"

WORKDIR /app

RUN mkdir hello
RUN echo "Hello World" > hello/world.txt

RUN addgroup -S app_group
RUN adduser -S -D -h /app app_user app_group
RUN chown -R app_user:app_group /app
USER app_user

CMD ["cat", "hello/world.txt"]
```

8. COPY instruction

To add files from the source to the destination folder in a Docker image folder. For example, if you want to copy all files with the extension .txt from a folder on the server, put them in the hello folder in the Docker image.

```
FROM alpine:3

LABEL author="sysadmin"
LABEL company="sysadminpedia" website="https://www.sysadminpedia.com"

WORKDIR /app

RUN mkdir hello
RUN echo "Hello World" > "hello/world.txt"

RUN addgroup -S app_group
RUN adduser -S -D -h /app app_user app_group
RUN chown -R app_user:app_group /app
USER app_user

COPY *.txt hello
```

```
CMD ["cat", "hello/world.txt"]
```

```
sysadmin@docker:~/image$ ls
Dockerfile  etc.tar.gz  hello.txt  nginx.conf  test.txt
sysadmin@docker:~/image$ docker run --rm -it copy_ins sh
~ $ ls hello/
hello.txt  test.txt  world.txt
~ $
```

Using the COPY instruction

You can see in the image that in the folder on the server, there is an nginx.conf file and a tar.gz file, but the files that are copied are only files with the extension .txt, such as the COPY command in the Dockerfile file.

9. ADD instruction

To add files from the source to the destination folder in the Docker image, and this command can detect if a source file is a compressed file, such as gzip, and will automatically extract it in the destination folder, and can also support adding multiple files at once. The difference with COPY is that COPY can only copy files, while ADD, in addition to copying, can also download the source from the URL and automatically extract compressed files. The best way to practice is to use COPY as much as possible, but if you really need to extract compressed files, then use the ADD command.

```
FROM alpine:3

LABEL author="sysadmin"
LABEL company="sysadminpedia" website="https://www.sysadminpedia.com"

WORKDIR /app

RUN mkdir hello
RUN echo "Hello World" > "hello/world.txt"

RUN addgroup -S app_group
RUN adduser -S -D -h /app app_user app_group
RUN chown -R app_user:app_group /app
USER app_user

COPY *.txt hello
```

```
ADD *.gz hello

CMD ["cat", "hello/world.txt"]
```

```
sysadmin@docker:~/image$ ls
Dockerfile  etc.tar.gz  hello.txt  nginx.conf  test.txt
sysadmin@docker:~/image$ docker run --rm -it add_ins sh
~ $ ls hello/
crontab    hello.txt  hosts      test.txt   world.txt
~ $
```

Using the ADD instruction

The crontab and hosts files are extracted from the etc.tar.gz file, and this explains that when you use the COPY instruction to copy a compressed file, the file will be extracted automatically in the container.

10. .dockerignore File

To specify which file(s) or folder(s) we ignore when the process of copying or adding file(s) or folder(s) to the Docker image. Because when doing the copy or add process, Docker will read the file named .dockerignore first. Create a **.dockerignore** file and then fill it with example.txt and qwerty.txt. Then, create the files example.txt and qwerty.txt in that folder, and they should not be copied to the folder in the Docker image.

```
sysadmin@docker:~/image$ touch example.txt qwerty.txt
sysadmin@docker:~/image$ ls -a
.  ..  Dockerfile  .dockerignore  etc.tar.gz  example.txt  hello.txt  nginx.conf  qwerty.txt  test.txt
sysadmin@docker:~/image$ cat .dockerignore
example.txt
qwerty.txt
sysadmin@docker:~/image$ docker run --rm -it ignore_ins sh
~ $ ls hello/
crontab    hello.txt  hosts      test.txt   world.txt
~ $
```

Using the .dockerignore file

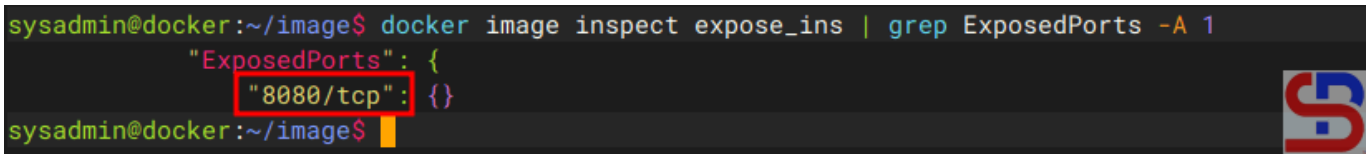
11. EXPOSE instruction

To tell the container which port to listen port on a specific number and protocol. Actually, EXPOSE will not publish any ports, but is only for documentation to inform the creator of the Docker container that this Docker image will use a specific port when run in a Docker container. For

example, as below:

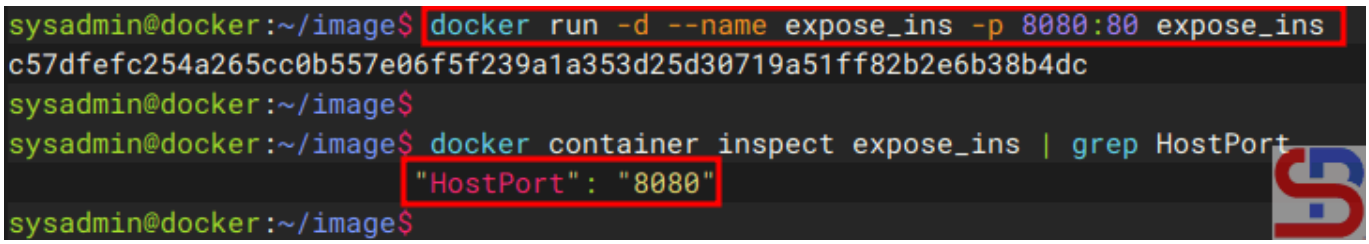
```
FROM alpine:3

LABEL author="sysadmin"
LABEL company="sysadminpedia" website="https://www.sysadminpedia.com"

WORKDIR /app

RUN mkdir hello
RUN echo "Hello World" > "hello/world.txt"

RUN addgroup -S app_group
RUN adduser -S -D -h /app app_user app_group
RUN chown -R app_user:app_group /app
USER app_user

ADD *.txt hello

COPY *.gz hello

EXPOSE 8080

CMD ["cat", "hello/world.txt"]
```

To see the open ports on this Docker image, use the command as shown in the image below:



Using the EXPOSE instruction

To create a container using this Docker image and see the open ports on this container, use the command as shown in the image below:



Display the EXPOSE instruction in the container

12. ENVIRONMENT VARIABLE instruction

To change the environment variables either during the build stage or when running in a Docker Container. The ENV defined in the Dockerfile can be reused using the ${ENV_NAME} syntax.

```
FROM alpine:3

LABEL author="sysadmin"
LABEL company="sysadminpedia" website="https://www.sysadminpedia.com"

WORKDIR /app

RUN mkdir hello
RUN echo "Hello World" > "hello/world.txt"

RUN addgroup -S app_group
RUN adduser -S -D -h /app app_user app_group
RUN chown -R app_user:app_group /app
USER app_user

COPY *.txt hello

ADD *.gz hello

EXPOSE 8080

ENV APP_PORT=8080
EXPOSE ${APP_PORT}

CMD ["cat", "hello/world.txt"]
```

The Environment Variable created using the ENV instruction is stored in the Docker image and can be viewed using the docker image inspect command.

```
sysadmin@docker:~/image$ docker image inspect env_ins | grep Env -A 3
            "Env": [
                "PATH=/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin",
                "APP_PORT=8080"
            ],
sysadmin@docker:~/image$
```

Using the ENV instruction

Environment variables can be changed in value when creating

a Docker container with the docker command using the **–env-key=value** option. So if you use the Dockerfile above, which uses APP_PORT=8080, but you want to use APP_PORT=9090, then you can use the command:

```
docker container create --name env_ins --env APP_PORT=9090 -p 9090:80 env_ins
```

```
sysadmin@docker:~/image$ docker container create --name env_ins --env APP_PORT=9090 -p 9090:80 env_ins
1d645f103fb2905cb31be5f772349e5d6ca86b7165396b1a115db759d555fecc
sysadmin@docker:~/image$
sysadmin@docker:~/image$ docker container inspect env_ins | grep APP_PORT
                "APP_PORT=9090",
sysadmin@docker:~/image$
```

Using the ENV instruction when creating a container

13. VOLUME instruction

To create the volume automatically when creating the container, and all the files contained in the volume are automatically copied to the Docker Volume, even though we didn’t create the Docker Volume when creating the Docker Container. It is suitable for cases when the application stores data in a file, so that the data can be automatically and safely stored in the Docker Volume.

```
FROM alpine:3

LABEL author="sysadmin"
LABEL company="sysadminpedia" website="https://www.sysadminpedia.com"

WORKDIR /app

RUN mkdir hello
RUN echo "Hello World" > "hello/world.txt"

RUN addgroup -S app_group
RUN adduser -S -D -h /app app_user app_group
RUN chown -R app_user:app_group /app
USER app_user

COPY *.txt hello

ADD *.gz hello

ENV APP_PORT=8080
EXPOSE ${APP_PORT}

ENV APP_DATA=/logs
```

```
VOLUME ${APP_DATA}

CMD ["cat", "hello/world.txt"]
```

```
sysadmin@docker:~/image$ docker image inspect vol_ins | grep Volume -A2
            "Volumes": {
                "/logs": {}
            },
sysadmin@docker:~/image$
```

Using the VOL instruction

Then, create a container from the Docker image and inspect it with the keyword Mounts. List the volume on the server, and it should be the same as in the image below:

```
sysadmin@docker:~/image$ docker container create --name vol_ins --env APP_PORT=9090 -p 9090:80 vol_ins
33cc9ecac5b30529feccf8f6ddce7bbd0c6edf97b70496976df40100a0de1f48
sysadmin@docker:~/image$
sysadmin@docker:~/image$ docker container inspect vol_ins | grep Mounts -A6
        "Mounts": [
            {
                "Type": "volume",
                "Name": "fef469d23766c072f239a44829516d0219ee1b98a2c71ef13a8516cb2f8763a2",
                "Source": "/var/lib/docker/volumes/fef469d23766c072f239a44829516d0219ee1b98a2c71ef13a8516cb2f8763a2/_data",
                "Destination": "/logs",
                "Driver": "local",
sysadmin@docker:~/image$
sysadmin@docker:~/image$ docker volume ls
DRIVER    VOLUME NAME
local     a685e9b17ea6c499d743dfd35d2fb799706b2f278d7d09bddfa5f0e377a86229
local     fef469d23766c072f239a44829516d0219ee1b98a2c71ef13a8516cb2f8763a2
sysadmin@docker:~/image$
```

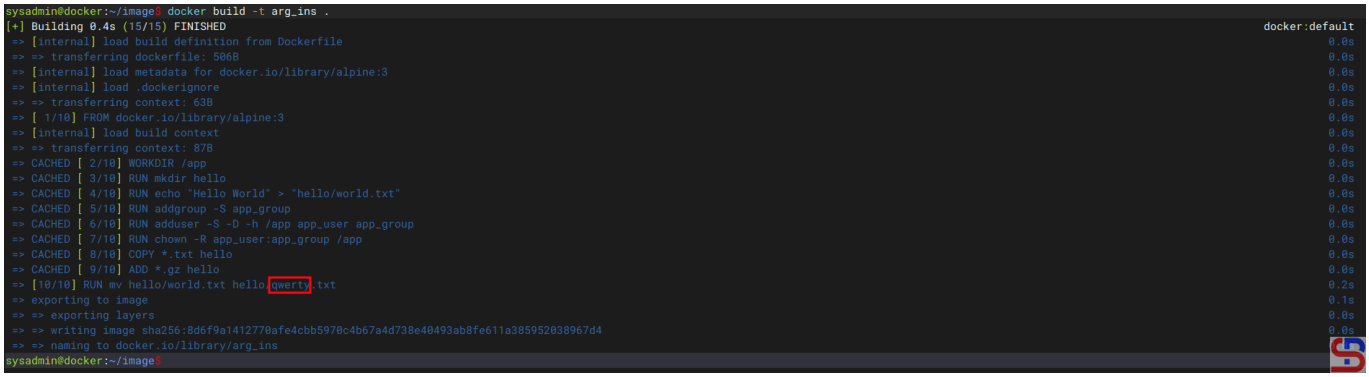
Display the volume

14. ARGUMENT instruction

To define variables that can be used by the user to send when performing a Docker build process, use the **–build-arg key=value** command. This instruction is only used during the build time process, which means that when running in a Docker container, this instruction will not be used any differently from the ENV used. Accessing variables from ARG is the same as accessing variables from ENV using ${variable_name}.

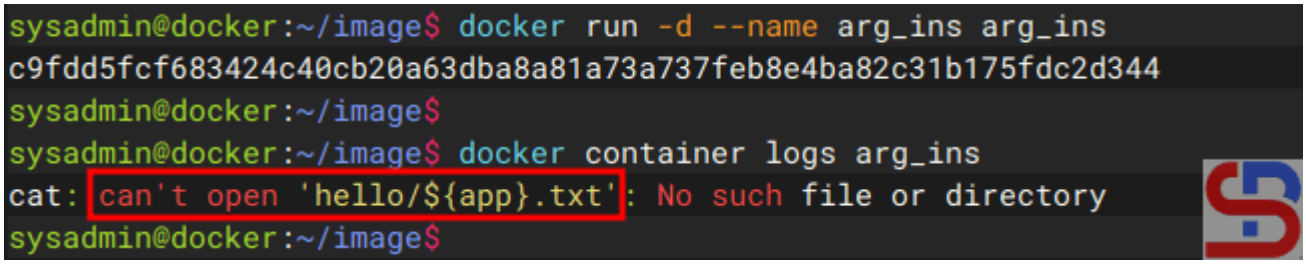
```
FROM alpine:3

LABEL author="sysadmin"
LABEL company="sysadminpedia" website="https://www.sysadminpedia.com"

WORKDIR /app
```

```
RUN mkdir hello
RUN echo "Hello World" > "hello/world.txt"

RUN addgroup -S app_group
RUN adduser -S -D -h /app app_user app_group
RUN chown -R app_user:app_group /app
USER app_user

COPY *.txt hello

ADD *.gz hello

ENV APP_PORT=8080
EXPOSE ${APP_PORT}

ARG app=qwerty
RUN mv hello/world.txt hello/${app}.txt

CMD ["cat", "hello/${app}.txt"]
```



Using the ARG instruction

As you can see in the image above, the file name changes to qwerty.txt, which corresponds to the arguments you wrote in Docker. If you want to change the argument when creating a Docker image, then you can change it by adding the **–build-arg app=pass** option so that the file becomes pass.txt, as shown in the image below:



Using the ARG when creating a Docker image

Based on the image above, you can see that the file name has changed to pass.txt. However, you have to know that when you run the container and run the log command, it will display as shown in the picture below:

```
sysadmin@docker:~/image$ docker run -d --name arg_ins arg_ins
c9fdd5fcf683424c40cb20a63dba8a81a73a737feb8e4ba82c31b175fdc2d344
sysadmin@docker:~/image$
sysadmin@docker:~/image$ docker container logs arg_ins
cat: can't open 'hello/${app}.txt': No such file or directory
sysadmin@docker:~/image$
```

Error when opening the log

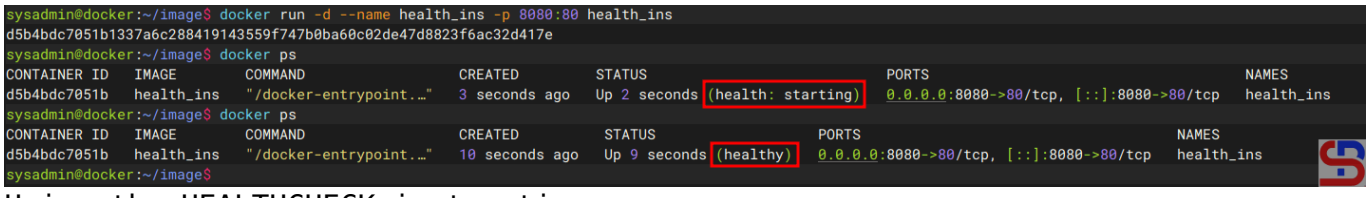
You can see in the image above that there is an error in the container log. This is because ARGs can only be accessed at build time, while CMDs are executed at runtime, so if you want to use ARG at runtime, then you need to insert the ARG into ENV, and your Dockerfile will be as below:

```
FROM alpine:3

LABEL author="sysadmin"
LABEL company="sysadminpedia" website="https://www.sysadminpedia.com"

WORKDIR /app

RUN mkdir hello
RUN echo "Hello World" > "hello/world.txt"

RUN addgroup -S app_group
RUN adduser -S -D -h /app app_user app_group
RUN chown -R app_user:app_group /app
USER app_user

COPY *.txt hello

ADD *.gz hello

ENV APP_PORT=8080
EXPOSE ${APP_PORT}

ARG app=qwerty
RUN mv hello/world.txt hello/${app}.txt

CMD ["cat", "hello/${app}.txt"]
```

15. Health CHECK instruction

To tell Docker if the container is still running properly or not. If there is a HEALTHCHECK, the container will automatically have a health status from the beginning with a starting value. If successful, it has a healthy value, and if it fails, it has an unhealthy value.

```
FROM nginx:alpine

RUN addgroup -S app_group \
    && adduser -S -G app_group -h /app app_user

RUN mkdir -p /app /var/cache/nginx /var/log/nginx /run \
    && chown -R app_user:app_group /app /var/cache/nginx /var/log/nginx /run

RUN echo "OK" > /app/healthz.html

RUN cat <<'EOF' > /etc/nginx/conf.d/default.conf
server {
    listen 80;

    location /healthz {
        root /app;
        try_files /healthz.html =404;
    }

    location / {
        return 200 "Hello from Nginx! Everything works fine.\n";
    }
}
EOF

USER app_user

# Healthcheck
HEALTHCHECK --interval=30s --timeout=5s --start-period=5s --retries=3 \
  CMD wget --no-verbose --tries=1 --spider http://127.0.0.1/healthz || exit 1

CMD ["nginx", "-g", "daemon off;"]
```



Using the HEALTHCHECK instruction

Note

Actually, it was the developers who created the Dockerfile as an image for their applications to run on Docker. However, as a sysadmin, you should also understand the instructions in the Dockerfile so that you can help developers if there is an error in their Docker, or maybe also to create a Docker image for sysadmin purposes.

References

youtube.dimas-maryanto.com
youtube.com
stackify.com
devopscube.com
geeksforgeeks.org

How to Share a Folder Between Container Hosts?

written by sysadmin | 5 November 2025

The previous articles have explained storage connections using volume and bind mount. This article will describe how to share a folder so that containers on other hosts can access it.

Problem

How to share a data folder between container hosts?

Solution

In this article, I use 3 servers where 1 server runs an NFS server with an IP of 192.168.56.12, and 2 servers run Docker with IPs 192.168.56.2 (docker1) and 192.168.56.102

(docker2). You can go to this article about NFS, and I use the **/var/nfs** folder as a data folder for all containers. After installing NFS on the server, type the following commands to configure NFS in the NFS server:

```
sudo mkdir /var/nfs
sudo chmod -R 777 /var/nfs
sudo echo "/var/nfs 192.168.56.0/24(rw,sync,no_subtree_check,no_root_squash)"
| sudo tee /etc/exports
sudo exportfs -r
sudo touch /var/nfs/test.txt
sudo bash -c 'echo "This is from NFS server" > /var/nfs/test.txt'
```

Warning

I think you should know the version of NFS you are using by typing the command **nfsstat -s** so that when creating the container for the **nfsvers** option, you can fill the option with that version of NFS.

On 2 other Docker hosts, type the command below to make a volume Docker:

```
docker volume create --driver local \
  --opt type=nfs \
  --opt o=addr=192.168.56.12,rw,nfsvers=4,noatime,nodev,nosuid \
  --opt device=:/var/nfs \
  nfs_volume
```

After that, type the command below on those 2 Docker hosts to run the container connected to your NFS server:

```
docker run --rm -it -u root --workdir /root \
  --mount source=nfs_volume,target=/root \
  alpine ash
```

INFO

The docker **run --rm -it image_name shell** command is used to run a container, and then you go to the folder / in the container. Add the **--workdir /root** option if you want to directly access the /root folder automatically after the container is formed. And if you exit from the container, the container is deleted instantly.

The image below is an example of when a container from docker1 host (192.168.56.2) accesses the NFS server:

```
sysadmin@docker1:~$ docker volume create --driver local \
  --opt type=nfs \
  --opt o=addr=192.168.56.12,rw,nfsvers=4,noatime,nodev,nosuid \
  --opt device=:/var/nfs \
  nfs_volume
nfs_volume
sysadmin@docker1:~$ docker run --rm -it -u root --workdir /root \
  --mount source=nfs_volume,target=/root \
  alpine ash
~ # ls
test.txt
~ # cat test.txt
This is from NFS server
~ # echo "This is from docker1" >> test.txt
~ #
```

Access the NFS folder from the docker1 host

The image below is an example of when a container from the docker2 host (192.168.56.102) accesses the NFS server:

```
[sysadmin@docker2 ~]$ docker volume create --driver local \
  --opt type=nfs \
  --opt o=addr=192.168.56.12,rw,nfsvers=4,noatime,nodev,nosuid \
  --opt device=:/var/nfs \
  nfs_volume
nfs_volume
[sysadmin@docker2 ~]$ docker run --rm -it -u root --workdir /root \
  --mount source=nfs_volume,target=/root \
  alpine ash
~ # ls
test.txt
~ # cat test.txt
This is from NFS server
This is from docker1
~ # echo "This is from docker2" >> test.txt
~ # cat test.txt
This is from NFS server
This is from docker1
This is from docker2
~ #
```

Access the NFS folder from docker2 host

As you can see in the images above, all containers can access the NFS server and can change the files on the NFS server.

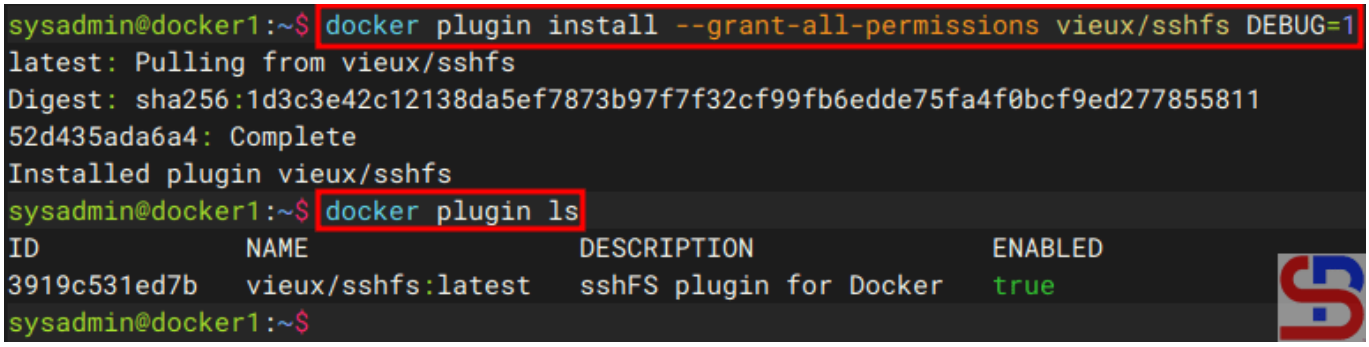
Note

On the internet, some developers make a Docker plugin to access NFS servers from containers, such as plugins [docker-volume-netshare](), [nfs- volume-plugin, nfsvol](), and so on. I have tried the first 3 plugins, but I always failed when accessing the NFS server using the plugins. But, there is a Docker plugin called [docker-volume-sshfs]() that can access a folder, but the connection does not use NFS; but uses SSH, so you don't need to install and configure NFS. As long as the folder can still be accessed using SSH, then this Docker plugin can still be used. For example, I create **/home/sysadmin/data** as a data folder in IP 192.168.56.12, so I use the commands below to create the folder:

```
mkdir /home/sysadmin/data
cd /home/sysadmin/data
echo "This is from server" > test.txt
```

On the 2 Docker hosts, use the command below to install the Docker plugin:

```
docker plugin install --grant-all-permissions vieux/sshfs DEBUG=1
docker plugin ls
```



Install Docker plugin vieux/sshfs

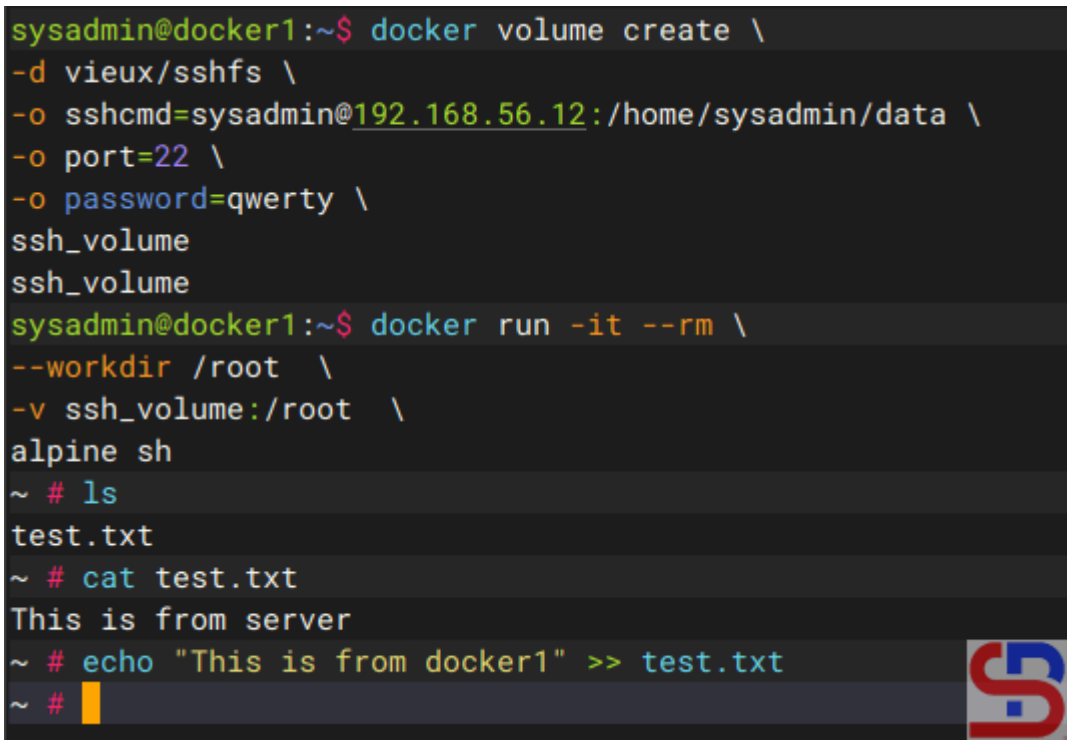
Use the command below to create a volume in Docker:

```
docker volume create \
-d vieux/sshfs \
-o sshcmd=sysadmin@192.168.56.12:/home/sysadmin/data \
-o port=22 \
-o password=qwerty \
ssh_volume
```

After that, use the command below to run the container to connect to the folder:

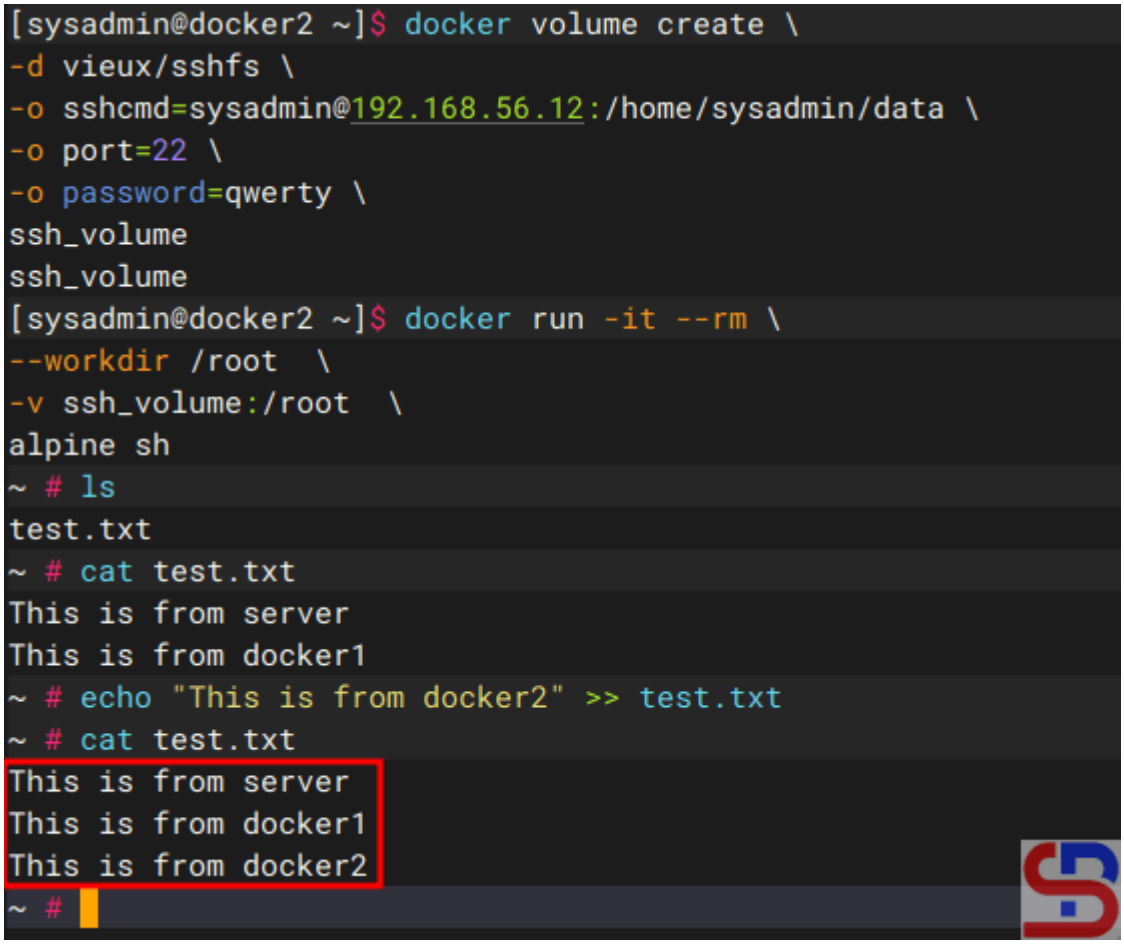
```
docker run -it --rm \
--workdir /root  \
-v ssh_volume:/root  \
alpine sh
```

The image below is an example of when a container from docker1 host (192.168.56.2) accesses the data folder:



Access the data folder from docker1 host

The image below is an example of when a container from docker2 host (192.168.56.102) accesses the data folder:



Access the data folder from docker2 host

As you can see in the images above, all containers can access the data folder and can change the files in the folder.

References

youtube.dimas-maryanto.com
docs.docker.com

How to Run a Container Automatically After the Server Reboots?

written by sysadmin | 5 November 2025

By default, if a server containing Docker reboots, all

Docker containers on that server will shut down. If the server has a lot of containers, you will have to manually turn them on, which is highly exhausting.

Problem

How to run a container automatically after the server reboots?

Solution

In Docker, the restart policy specifies when and how the Docker container will be automatically restarted in the event of a system failure, shutdown, or reboot. There are 4 types of restart policies that you can use:

Restart Policy in Docker

Option	Description
no	Never restarts automatically and this is a default policy
on-failure	Restart only if the exit code ≠ 0 (fail). Can be added to the maximum restart (on-failingure: 5).
always	Always restart the container, unless it is stopped manually (docker stop), including when rebooting the server.
unless-stopped	Similar to the always option, but it won't restart if the container is stopped manually, even after a reboot.

By default, Docker uses the no option for the restart policy so that the container won’t turn on when the server boots. There are several methods to automatically turn on containers after the server reboots:

Warning

Make sure that Docker on your server is enabled because all containers on that server won't run automatically after restarting the server if you haven't enabled Docker.

1. If your container is still not running

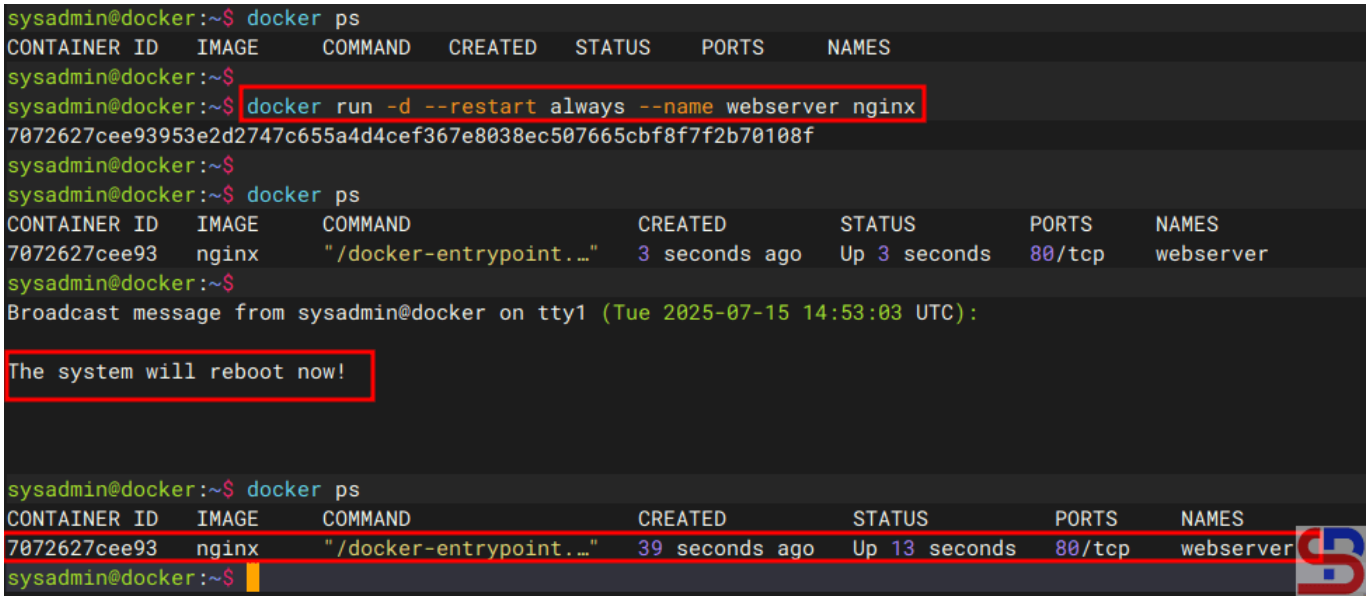
Use the format below if you run a container and you want it to turn on automatically after restarting the server:

```
docker run -d --restart restart_option your_docker_image
```

If your container name is a webserver that uses the nginx image and you want the container to run automatically after the server reboots, you can use the command below:

```
docker run -d --restart always --name webserver nginx
```

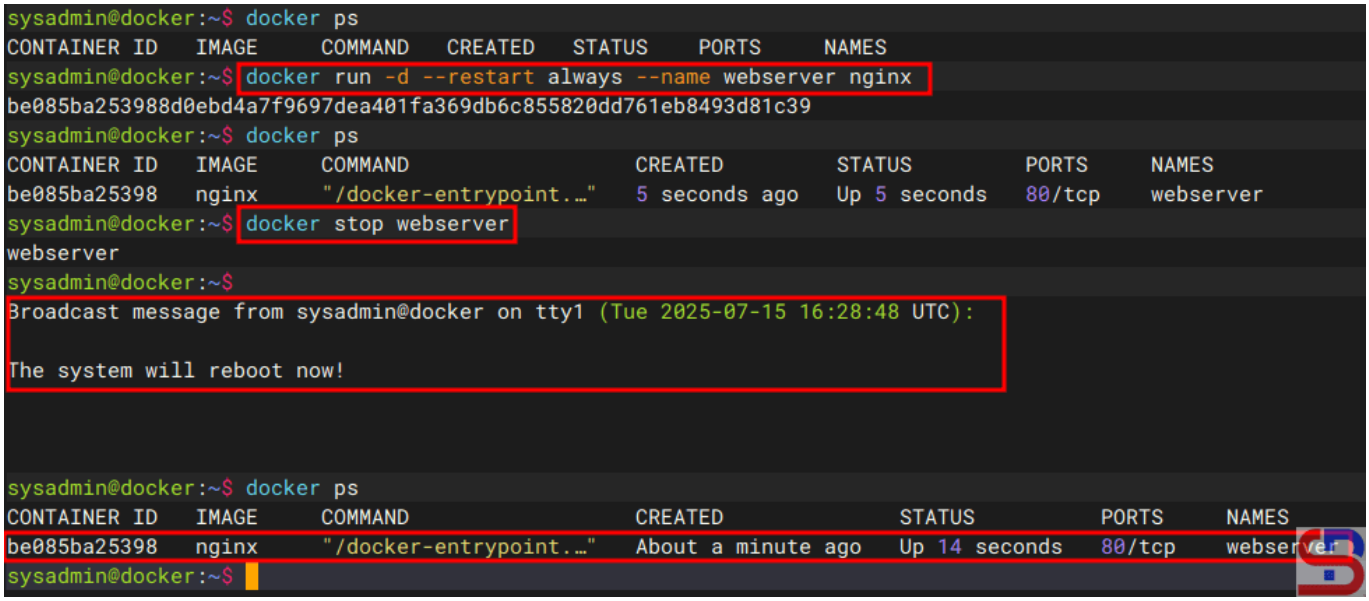
Once the container is running, try restarting the server, and it should continue to run automatically after the server restart, like in the image below:



The container runs automatically after the server restarts using the always option

Now, try to stop the container and restart the server, and then the container should still run automatically after the

server restarts, like in the image below:



The container still runs automatically after the server restarts using the always option

2. If your container is running

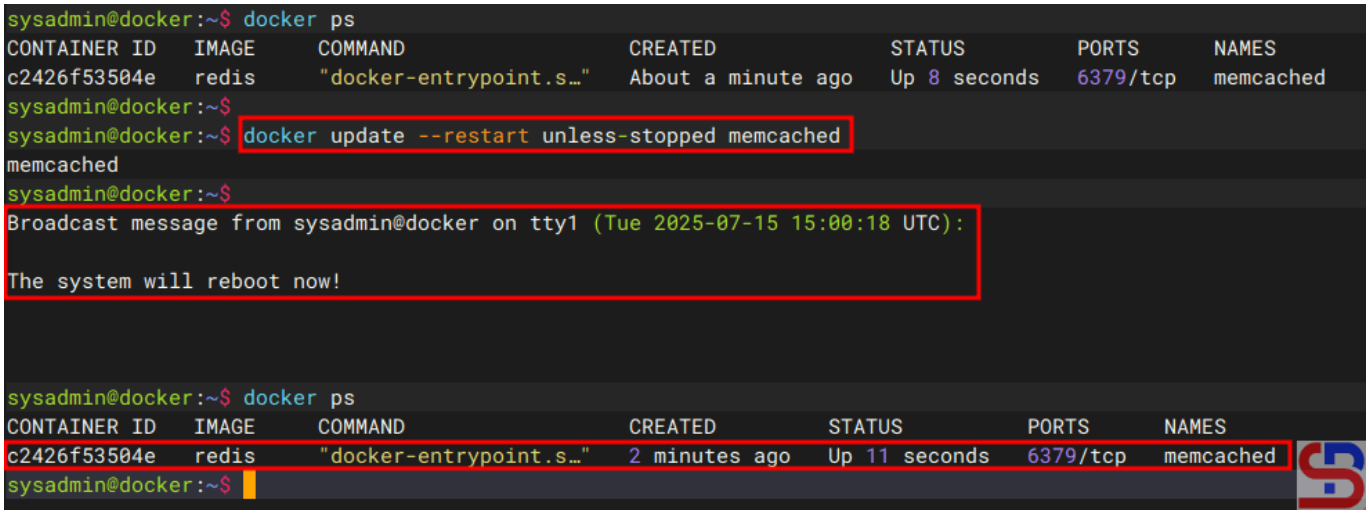
If a container is running but has not used the restart option, you can use the format below so that the container can run automatically after the server restarts:

```
docker update --restart unless-stopped container_name_or_id
```

For example, you see a memcached container that uses a redis image is already running on the server, but has not used the restart option. Use the command below if you want the container to keep running after the server restarts, but if the container previously stopped, then at the time of the server restart, the container still won’t run:

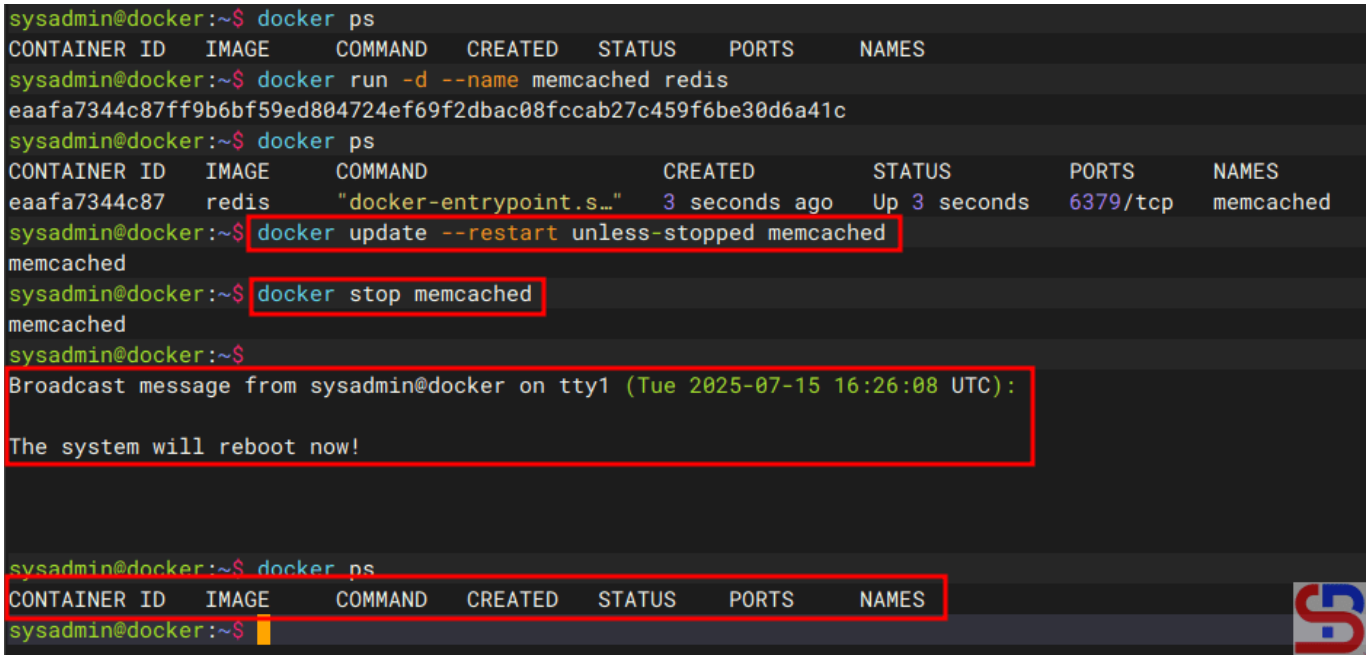
```
docker update --restart unless-stopped memcached
```

Now, try restarting the server while the container is running, and then the container should still run automatically if the server reboots, like in the image below:



The container runs automatically after the server restarts using the unless-stopped option

Now, try to stop the container and then restart the server; the container should still not run after the server restarts, like in the image below:



The container is still not running after the server restarts using the unless-stopped option

3. Using crontab

The third method of using crontab is to enter the following formats into crontab:

```
@reboot /usr/bin/docker start container_name_or_id
```

For example, you want to run the webserver container automatically after restarting the server, so insert the script below into the crontab :

```
@reboot /usr/bin/docker start webserver
```

If a container uses a crontab to keep it running after restarting the server, it will continue to run after restarting the server, even if it uses the unless-stopped option and the container is not running before the server is restarted.

Note

If you want a container to run automatically after restarting the server, it is important to note the distinction between using the always and unless-stopped parameters. If the container is a very important application, such as a webserver or database, use the always option for the container, but use the unless-stopped option if the container is a non-essential application.

References

docs.docker.com
stackoverflow.com
betterstack.com
baeldung.com

How to Storage Mount Using Bind Mount on Docker?

written by sysadmin | 5 November 2025

The previous article explained how to make storage using volume in Docker. This article will explain how to make storage using Bind Mount.

Problem

How to storage mount using bind mount on Docker?

Solution

A bind mount is a method of hosting a directory or file that is directly mounted into a container. Since they aren't isolated by Docker, both non-Docker processes on the host and container processes can modify the mounted files simultaneously. So, you can change the data from the host, and those changes will be reflected in the container. This method is useful for development environments where code must be updated and tested in real-time. There are 2 ways when use bind mount:

A. using -v option

This option (using **-v** or **--volume**) uses three fields, separated by colon characters (:). The fields must be in the correct order, and the meaning of each field is not immediately obvious. To use this option, use the format below:

```
docker run -d –name container_name -v
/path/folder/in/server:/path/folder/in/container[:opts]
image_name:tag
```

INFO

opts is the abbreviation for options like readonly, private, z, Z, and so on. The third field is optional, and is separated by colon characters. You can see the options and their descriptions on this page.

To see more detailed information about mounting a container, use the format below:

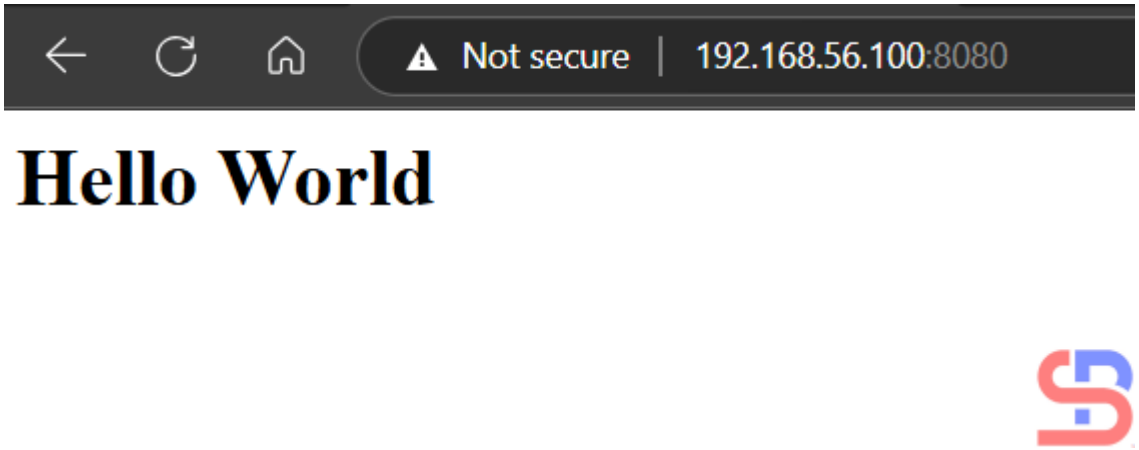
```
docker inspect container_name -f "{{json .Mounts}}" | python3 -m json.tool
```

For example, you want to create a container with a nginx webserver that can be accessed with port **8080** with sources in folder **/home/sysadmin/web** and destination to the folder **/usr/share/nginx/html** on container, so first make a web folder in the server, and create a simple site then create a container using the command below:

```
mkdir /home/sysadmin/web
echo "<h1>Hello World</h1>" > web/index.html
docker run -d --name webapp1 -p 8080:80 -v
/home/sysadmin/web:/usr/share/nginx/html nginx
docker inspect webapp1 -f "{{json .Mounts}}" | python3 -m json.tool
docker exec webapp1 cat /usr/share/nginx/html/index.html
```

Execute the commands

You can see from the image above that the index.html file in the container only displays the hello world sentence, so when you open the browser then the displays in the browser as shown below:



The display of the website

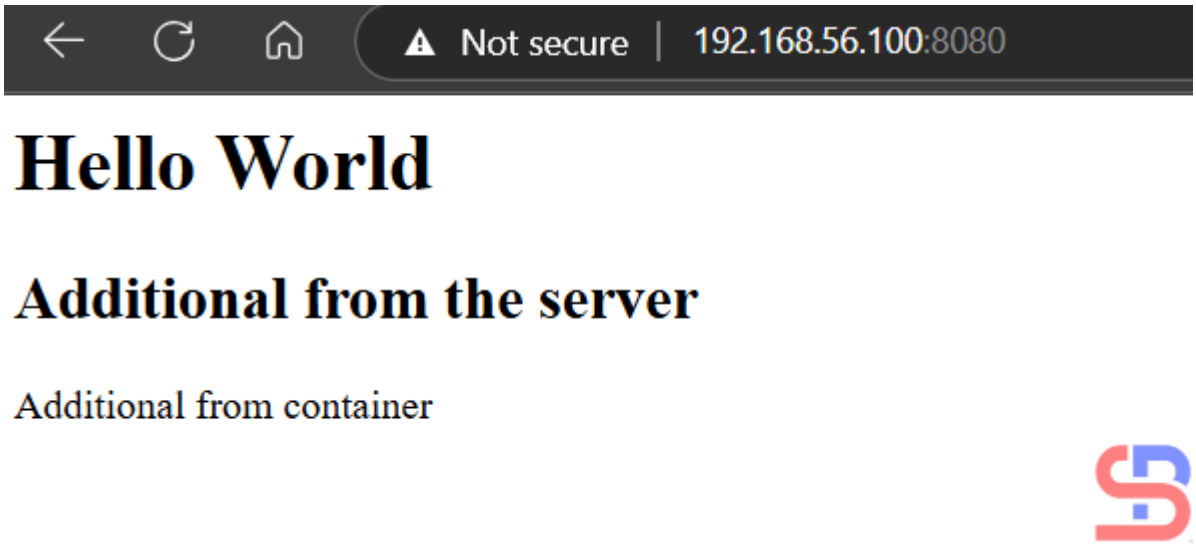
You can change the appearance of the website in the index.html file on the server or in the container. For example, you add the script below to the file on the server:

```
echo "<h2>Additional from server</h2>" >> web/index.html
```

Likewise, if you add the script below to the container:

```
docker exec webapp1 bash -c "echo Additional from container >>
/usr/share/nginx/html/index.html"
```

Both scripts will be included in the index.html file and will be displayed on the website as shown below:



Display of the website after additional scripts

B. Using --mount Option

In general, these options are more explicit and verbose. This option consists of multiple key-value pairs, separated by commas, and each consisting of a **<key>=<value>** tuple. The biggest difference is that the -v syntax combines all the options in one field, while the –mount syntax separates them. The –mount syntax is more verbose than -v or –volume, but the order of the keys is not significant, and it is easier to understand. To use this option, use the format below:

```
docker run -d --name container_name --mount
type=type_mount,source=/path/folder/in/server,destination=/path/folder/in/con
tainer[,<key>=<value>...] image_name:tag
```

INFO

The third field is optional, and is separated by commas like readonly, bind-propagation, and so on. You can see the options and their descriptions on this page.

For example, you want to create a container with an Apache web server that can be accessed on port **8081** with sources in the folder **/home/sysadmin/mount** and destination to the folder **/usr/local/apache2/htdocs** on the container, so first make the mount folder in the server, then make the container using the command below:

```
mkdir /home/sysadmin/mount
echo "<h1>Learn --mount option</h1>" > mount/index.html
docker run -d --name webapp2 -p 8081:80 --mount
type=bind,source=/home/sysadmin/mount,destination=/usr/local/apache2/htdocs
httpd
docker inspect webapp2 -f "{{json .Mounts}}" | python3 -m json.tool
docker exec webapp2 cat /usr/local/apache2/htdocs/index.html
```

```
sysadmin@docker:~$ mkdir /home/sysadmin/mount
sysadmin@docker:~$ echo "<h1>Learn --mount option</h1>" > mount/index.html
sysadmin@docker:~$ docker run -d --name webapp2 -p 8081:80 --mount type=bind,source=/home/sysadmin/mount,destination=/usr/local/apache2/htdocs httpd
5376279999b798a6f70f4ced5de48b07e387202984327421936d682a0fdcbb35
sysadmin@docker:~$ docker inspect webapp2 -f "{{json .Mounts}}" | python3 -m json.tool
[
    {
        "Type": "bind",
        "Source": "/home/sysadmin/mount",
        "Destination": "/usr/local/apache2/htdocs",
        "Mode": "",
        "RW": true,
        "Propagation": "rprivate"
    }
]
sysadmin@docker:~$ docker exec webapp2 cat /usr/local/apache2/htdocs/index.html
<h1>Learn --mount option</h1>
sysadmin@docker:~$
```

Execute the commands

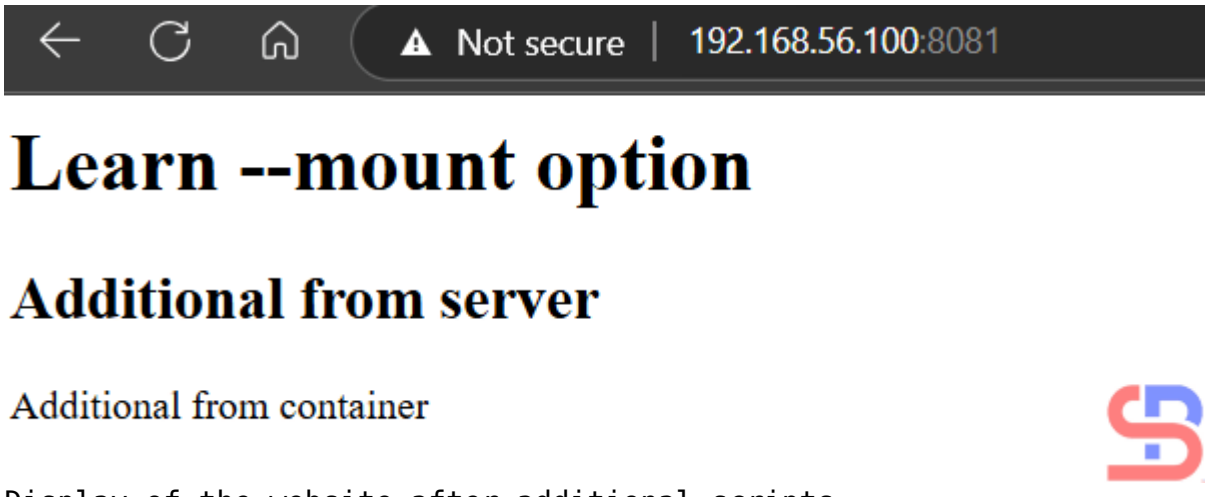
Like using the **-v** option, you can change the appearance of the website in the index.html file on the server or in the container. For example, you add the script below to the file on the server:

```
echo "<h2>Additional from server</h2>" >> mount/index.html
```

Likewise, if you add the script below to the container:

```
docker exec webapp2 bash -c "echo Additional from container >> /usr/local/apache2/htdocs/index.html"
```

Both scripts will be included in the index.html file and will be displayed on the website as shown below:



Display of the website after additional scripts

Note

The only difference between the two options above is how the commands are executed; otherwise, the results would be identical.

References

youtube.dimas-maryanto.com
youtube.com
docs.docker.com
docker.com
linkedin.com

How to Connect Storage Mount Using Volume Mount on Docker?

written by sysadmin | 5 November 2025

The previous article explained how to access the database installed in a container. But you must know that if you delete the container, it will automatically delete the database too. Therefore, you must create a storage to store a database so that if you delete the container, either intentionally or unintentionally, the database will remain. By default, Docker supports the following types of storage mounts for storing data outside of the container's writable layer: volume mounts, bind mounts, and tmpfs mounts, each with its unique characteristics and use cases. This article will explain how to connect storage mount using volume mount. You can see a summary of the three types of storage here.

Problem

How to connect storage mount using volume mount on Docker?

Solution

Volumes are persistent storage mechanisms managed by the Docker daemon. It is stored in the filesystem on the host in **/var/lib/docker/volumes** folder, but to interact with the data in the volume, you must mount the volume to a container. Volumes are ideal for performance-critical data processing and long-term storage needs and are also suitable for sharing data between containers since volumes can be attached to multiple containers.

A. List, remove and create the volume

To see the volume on the server, use the command below:

```
docker volume ls
```

To remove a volume, use the command below:

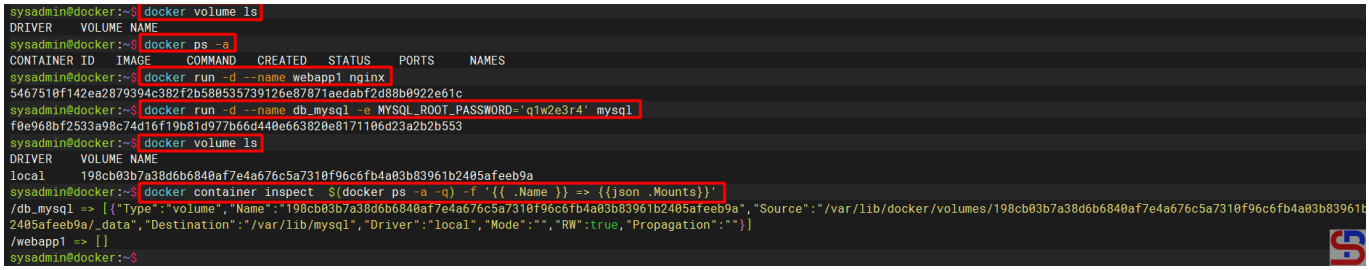
```
docker volume rm volume_name
```

Use the command below to remove all unused volumes:

```
docker volume prune
```

By default, there is no volume if there is no container on the server. But if there is a container that uses storage like a container that uses a database image, the volume will form automatically. To see which containers that use volume can use the command below:

```
docker container inspect webapp postgresdb mysqldb -f '{{ .Name }} => {{json .Mounts}}'
```



Display the container that uses volume

You can create a new volume using the format below:

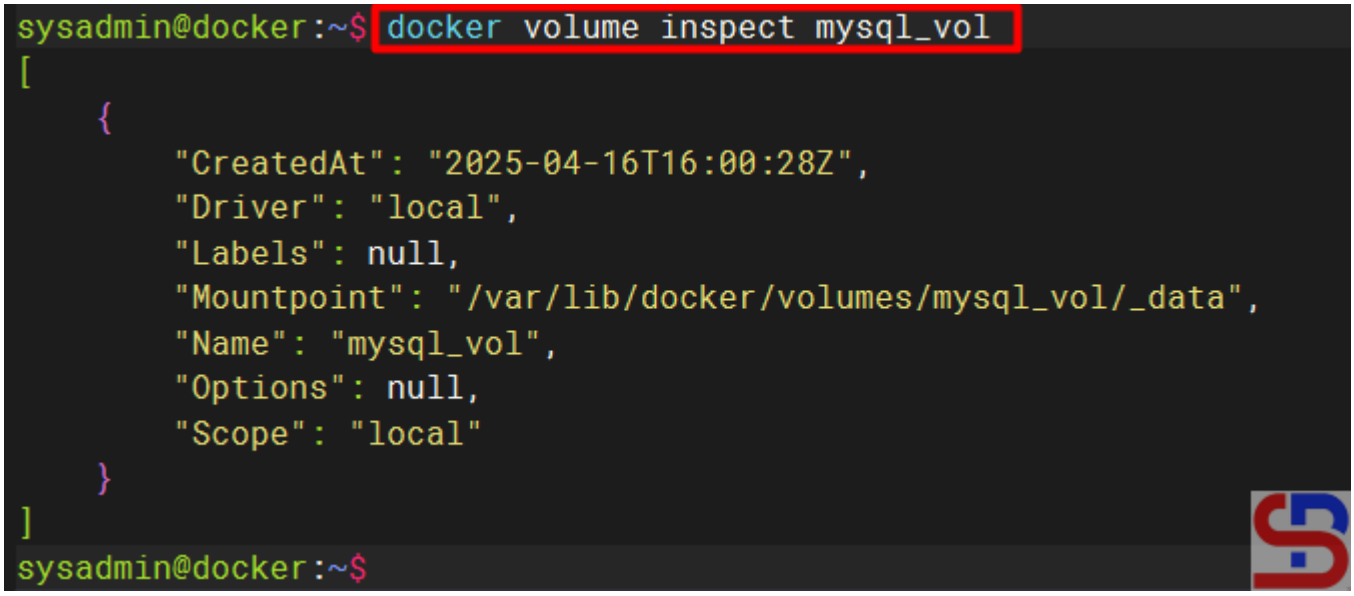
```
docker volume create volume_name
```

Use the command below if you want to create a mysql_vol volume:

```
docker volume create mysql_vol
```

To see this volume information in detail, use the command below:

```
docker volume inspect mysql_vol
```



Inspect the volume

B. Connect storage mount to a container

After that, make a new container where the container mounts

to the volume you created using the format below:

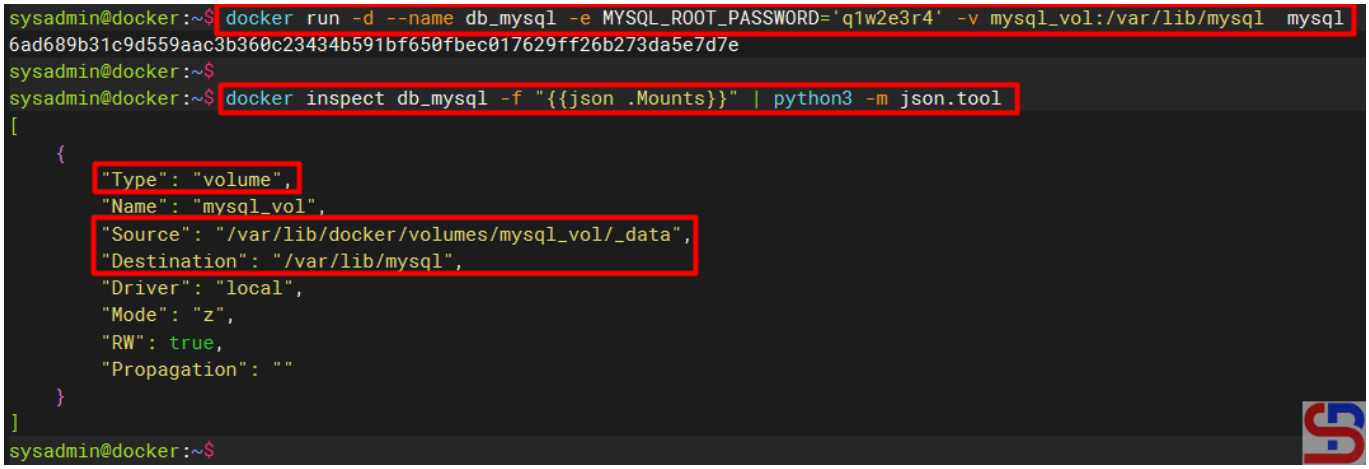
```
docker run -d --name container_name -v volume_name:/path/folder/in/container image_name
```

You can see more detailed information on mounting a container, using the format below:

```
docker inspect container_name -f "{{json .Mounts}}" | python3 -m json.tool
```

For example, use the command below if you want to create a db_mysql container with a password q1w2e3r4 using mysql_vol volume in the folder /var/lib/mysql :

```
docker run -d --name db_mysql -e MYSQL_ROOT_PASSWORD='q1w2e3r4' -v mysql_vol:/var/lib/mysql  mysql
docker inspect db_mysql -f "{{json .Mounts}}" | python3 -m json.tool
```



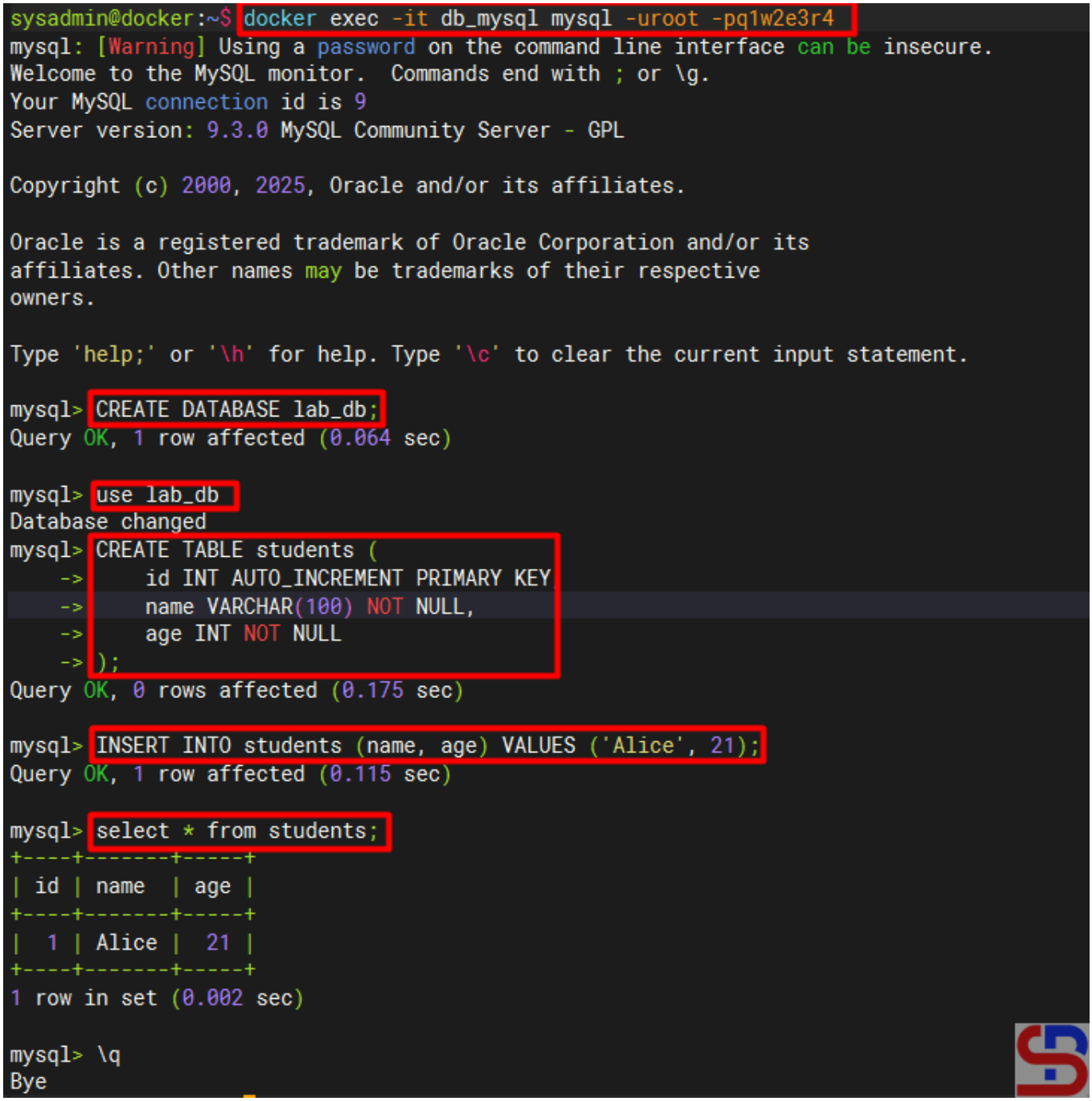
Run the container and check the mount

C. Simulate remove the container

After that, try to enter the container by using the command below:

```
docker exec -it db_mysql mysql -uroot -pq1w2e3r4
```

Create a database and fill it as shown in the image below:



Create a database

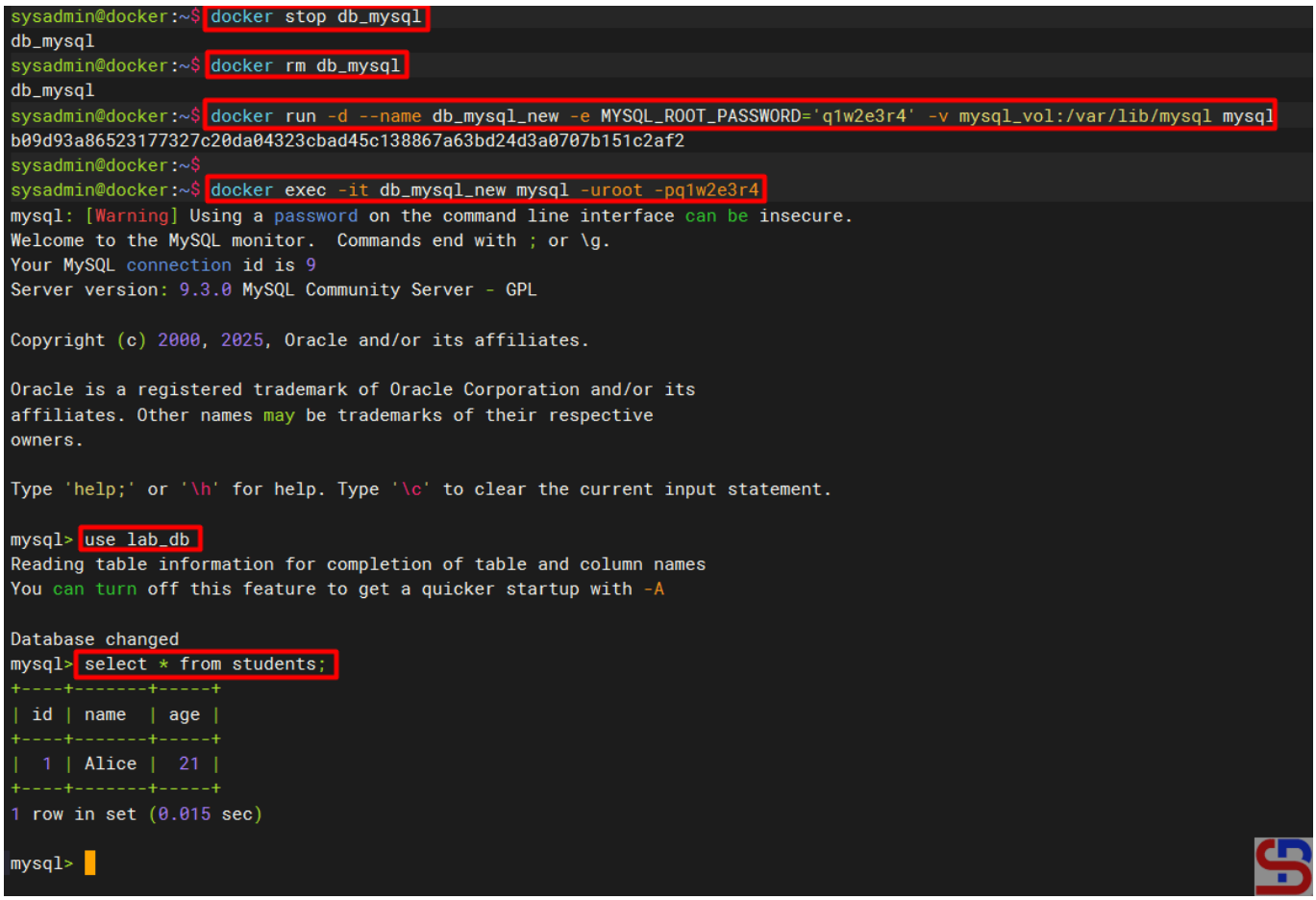
Then, try to simulate by deleting the container and creating a new container where the data is put into the mysql_vol volume in the /var/lib/mysql folder using the command below:

```
docker stop db_mysql
docker rm db_mysql
docker run -d --name db_mysql_new -e MYSQL_ROOT_PASSWORD='q1w2e3r4' -v
mysql_vol:/var/lib/mysql mysql
```

Access the container by using the command:

```
docker exec -it db_mysql_new mysql -uroot -pq1w2e3r4
```

The lab_db database should still be accessible using the container you just created, as shown in the image below:



The database can still be accessed

D. Share data in the volume among containers

Let’s do a simulation to share the data that is in the volume with more than one container on a single server. In this article, 2 containers will be created that are connected to a mysql_vol volume. Type the command below to make 2 containers:

```
docker run -d --name db_mysql1 -e MYSQL_ROOT_PASSWORD='q1w2e3r4' -v
mysql_volume:/var/lib/mysql  mysql
docker run -d --name db_mysql2 -e MYSQL_ROOT_PASSWORD='q1w2e3r4' -v
mysql_volume:/var/lib/mysql  mysql
docker ps
```

```
sysadmin@docker:~$ docker run -d --name db_mysql1 -e MYSQL_ROOT_PASSWORD='q1w2e3r4' -v mysql_vol:/var/lib/mysql  mysql
c1ea3cf4e789f13b3d9ccd5df8e4f08e11f26209ca68752c1559a09fae276938
sysadmin@docker:~$
sysadmin@docker:~$ docker run -d --name db_mysql2 -e MYSQL_ROOT_PASSWORD='q1w2e3r4' -v mysql_vol:/var/lib/mysql  mysql
62e62f11319726962f8c697a2b0bd9ba361331e516f6a85078f08cc465c4855a
sysadmin@docker:~$
sysadmin@docker:~$ docker ps
CONTAINER ID   IMAGE     COMMAND                  CREATED          STATUS          PORTS                 NAMES
62e62f113197   mysql     "docker-entrypoint.s…"   9 seconds ago    Up 8 seconds    3306/tcp, 33060/tcp   db_mysql2
c1ea3cf4e789   mysql     "docker-entrypoint.s…"   21 seconds ago   Up 21 seconds   3306/tcp, 33060/tcp   db_mysql1
sysadmin@docker:~$
```

Create 2 containers

After that, type the command below to create a database and insert the data via container db_mysql1:

```
docker exec db_mysql bash -c "mysql -uroot -pq1w2e3r4 -e \"CREATE DATABASE db_school; USE db_school; CREATE TABLE students (id INT AUTO_INCREMENT PRIMARY KEY, name VARCHAR(100) NOT NULL, age INT NOT NULL); INSERT INTO students (name, age) VALUES ('bob', 21), ('John', 22);select * from students;\""
```

Then there will be a display below:

```
sysadmin@docker:~$ docker exec db_mysql1 bash -c "mysql -uroot -pq1w2e3r4 -e \"CREATE DATABASE db_school; USE db_school; CREATE TABLE students (id INT AUTO_INCREMENT PRIMARY KEY, name VARCHAR(100) NOT NULL, age INT NOT NULL); INSERT INTO students (name, age) VALUES ('bob', 21), ('John', 22);select * from students;\""
mysql: [Warning] Using a password on the command line interface can be insecure.
id      name    age
1       bob     21
2       John    22
sysadmin@docker:~$
```

Execute the command to create a database and insert data

From the picture above, there are 2 data in the student table in the db_school database. Type the command below to add data to the table from container db_mysql2:

```
docker exec db_mysql1 bash -c "mysql -uroot -pq1w2e3r4 -e \"USE db_school; INSERT INTO students (name, age) VALUES ('Laura', 20), ('Andrew', 23);select * from students;\""
```

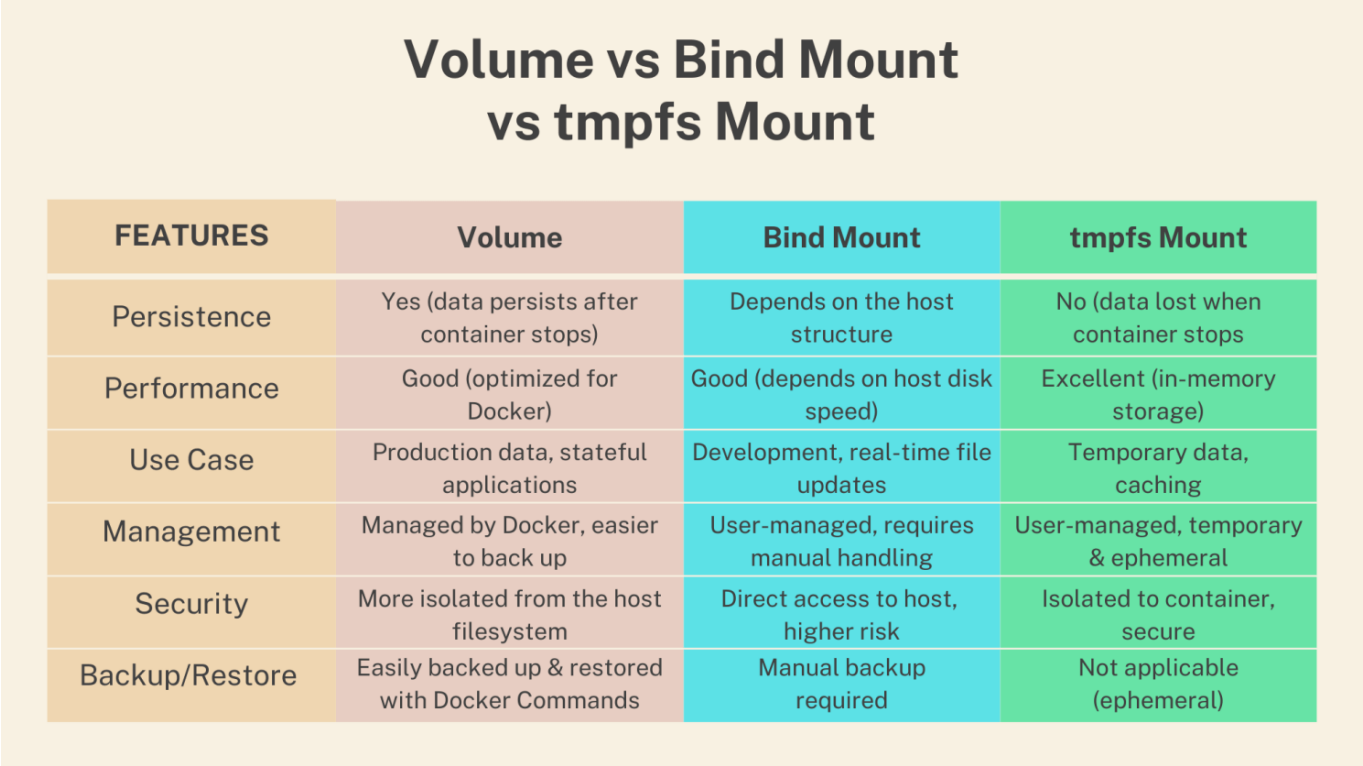
```
sysadmin@docker:~$ docker exec db_mysql1 bash -c "mysql -uroot -pq1w2e3r4 -e \"USE db_school; INSERT INTO students (name, age) VALUES ('Laura', 20), ('Andrew', 23);select * from students;\""
mysql: [Warning] Using a password on the command line interface can be insecure.
id      name    age
1       bob     21
2       John    22
3       Laura   20
4       Andrew  23
sysadmin@docker:~$
```

Execute the command to add data

In the picture above, there are 4 data in the student table so that the Docker volume data can be shared between containers on a server well.

Note

You can see the picture below to see the difference between the three storage:



Types of storage in Docker (Image credit from linkedin.com)

References

docs.docker.com
medium.com
linkedin.com
hub.docker.com
youtube.com

How to Manage Networking in Docker?

written by sysadmin | 5 November 2025

Docker has a network system to regulate communication between one container and another container, your Docker host(server), and the outside world.

Problem

How to manage networking in Docker?

Solution

Docker provides six network drivers that you can use, as shown in the image below:

Driver	Description
`bridge`	The default network driver.
`host`	Remove network isolation between the container and the Docker host.
`none`	Completely isolate a container from the host and other containers.
`overlay`	Overlay networks connect multiple Docker daemons together.
`ipvlan`	IPvlan networks provide full control over both IPv4 and IPv6 addressing.
`macvlan`	Assign a MAC address to a container.

The six network drivers in Docker (Image credit for docs.docker.com)

You can see from the image above that the bridge is a default network driver, so if you do not specify a driver, then this type of network is created. To see the types of network drivers on your server, use the command below:

```
docker network ls
```

```
sysadmin@docker:~$ docker network ls
NETWORK ID     NAME      DRIVER    SCOPE
e1d4ed8ee8af   bridge    bridge    local
3fe9d2c18c30   host      host      local
e4e911392a2c   none      null      local
sysadmin@docker:~$
```

List the network drivers in Docker on your server

To see the configuration details of each network driver, use the command below:

```
docker network inspect bridge host none
```

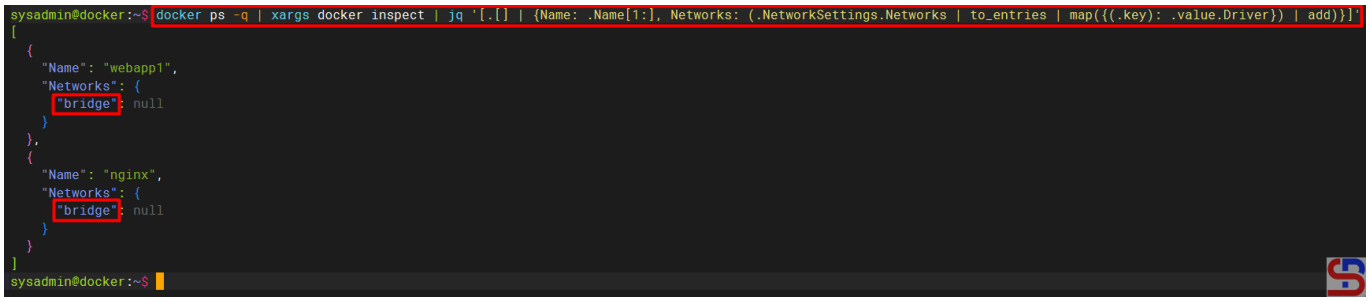
```
sysadmin@docker:~$ docker network inspect bridge host none
[
    {
        "Name": "bridge",
        "Id": "cf222e15cb997e14f4031803146097fa437d0b48f9286ab8933bb8ef3de27927",
        "Created": "2025-04-15T15:55:17.718291848Z",
        "Scope": "local",
        "Driver": "bridge",
        "EnableIPv6": false,
        "IPAM": {
            "Driver": "default",
            "Options": null,
            "Config": [
                {
                    "Subnet": "172.17.0.0/16",
                    "Gateway": "172.17.0.1"
                }
            ]
        },
        "Internal": false,
        "Attachable": false,
        "Ingress": false,
        "ConfigFrom": {
            "Network": ""
        },
        "ConfigOnly": false,
        "Containers": {
            "2a4eadafffcd4899dce3201f8e110489e77d5c0f6d4a9bac8af91f48a06adf35": {
                "Name": "webapp1",
                "EndpointID": "2221b3ad69895615cec2fe8214bbb4e44155a153d8429710ce8cb720ea5300a9",
                "MacAddress": "02:42:ac:11:00:02",
                "IPv4Address": "172.17.0.2/16",
                "IPv6Address": ""
```

Display detailed information about the network on each network driver

To see the type of driver network used in each container, use the command below:

```
docker ps -q | xargs docker inspect | jq '[.[] | {Name: .Name[1:], Networks:
```

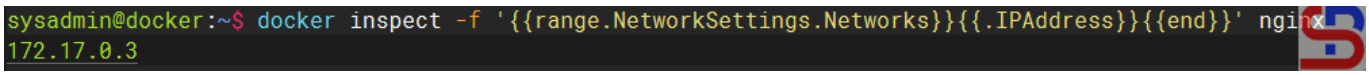
```
(.NetworkSettings.Networks | to_entries | map({(.key): .value.Driver}) |
add)}]'
```



Display the network drivers in each container

To see the IP of each container, for example, in the nginx container, use the command below:

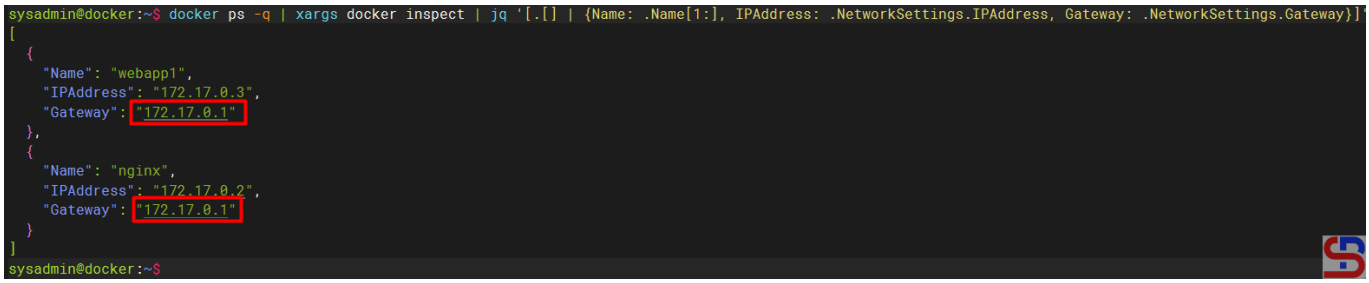
```
docker inspect -f '{{range.NetworkSettings.Networks}}{{.IPAddress}}{{end}}'
nginx
```



Display of the IP of a container

To communicate between one container with another container, both containers must have the same gateway. For example, you have made two containers, so by default, the two containers will use a network bridge driver so that it has the same gateway. Use the command below to see the two container IPs:

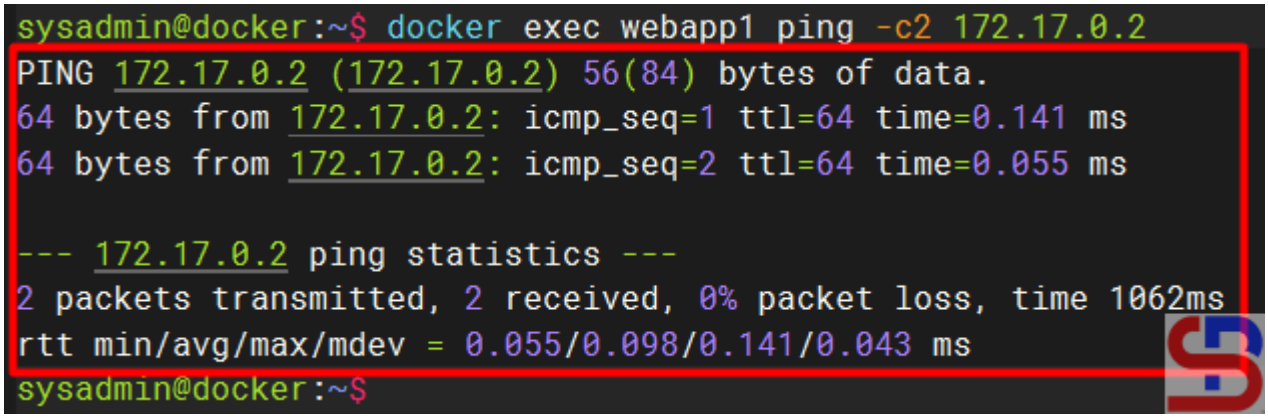
```
docker ps -q | xargs docker inspect | jq '[.[] | {Name: .Name[1:], IPAddress:
.NetworkSettings.IPAddress, Gateway: .NetworkSettings.Gateway}]'
```



Display all the IPs in each container

Then try to enter one of the containers and ping to another container using the command:

```
docker exec webapp1 ping -c2 172.17.0.2
```



Ping between containers

And the containers should be able to communicate with each other like the image above.

WARNING
If you can't ping on your container, then you have to install ping in your container by accessing one of your containers and installing the ping package. If your container uses Ubuntu, then you can install it using the command:
apt update;apt install iputils-ping

A. Create a new network

You can create a new network on the server for your own needs using the format below:

```
docker network create network_name --driver driver_name
```

For example, you want to create an app-network network using a bridge driver, then use the command below:

```
docker network create app-network --driver bridge
```

```
sysadmin@docker:~$ docker network create app-network --driver bridge
8ec63b0ea106fe3afce45e0b13164dd96050089a7cd7be03cfaa931b289cb641
sysadmin@docker:~$
sysadmin@docker:~$ docker network ls
NETWORK ID     NAME          DRIVER    SCOPE
8ec63b0ea106   app-network   bridge    local
cf222e15cb99   bridge        bridge    local
3fe9d2c18c30   host          host      local
e4e911392a2c   none          null      local
sysadmin@docker:~$
```

Create a new network

INFO

You may not write the option --driver if you want to create a new network using a bridge driver because bridge is a default network driver in Docker.

After that, try to use the command below to see the detailed information of the app-network:

```
docker network inspect app-network
```

You can see from the picture above that the IP and Gateway from the app-network have been made automatically. You can make an IP and a Gateway according to what you want. For example, you want to create a new network with the name db-network, which has a range of IP 10.10.1.0/24 and Subnet 10.10.0.0/16 and Gateway 10.10.1.254, then use the command below:

```
docker network create -d bridge db-network \
--subnet=10.10.0.0/16 \
--ip-range=10.10.1.0/24 \
--gateway=10.10.1.254
```

```
sysadmin@docker:~$ docker network inspect app-network
[
    {
        "Name": "app-network",
        "Id": "5953916e1c5328a18728eca908f8a51ae1098fc68979e1dcd2cf2cdba9a4ca56",
        "Created": "2025-04-15T16:45:54.466051473Z",
        "Scope": "local",
        "Driver": "bridge",
        "EnableIPv6": false,
        "IPAM": {
            "Driver": "default",
            "Options": {},
            "Config": [
                {
                    "Subnet": "172.18.0.0/16",
                    "Gateway": "172.18.0.1"
                }
            ]
        },
        "Internal": false,
        "Attachable": false,
        "Ingress": false,
        "ConfigFrom": {
            "Network": ""
        },
        "ConfigOnly": false,
        "Containers": {},
        "Options": {},
        "Labels": {}
    }
]
sysadmin@docker:~$
```

Create a new network with the custom values

Use the command below to display network information details easily:

```
docker network inspect db-network -f '{{json .IPAM}}' | python3 -m json.tool
```

```
sysadmin@docker:~$ docker network inspect db-network -f '{{json .IPAM}}' | python3 -m json.tool
{
    "Driver": "default",
    "Options": {},
    "Config": [
        {
            "Subnet": "10.10.0.0/16",
            "IPRange": "10.10.1.0/24",
            "Gateway": "10.10.1.254"
        }
    ]
}
sysadmin@docker:~$
```

Display the value of the network in a container

From the image above, you can see that the IP, Subnet, and Gateway on the network are the same as what you want.

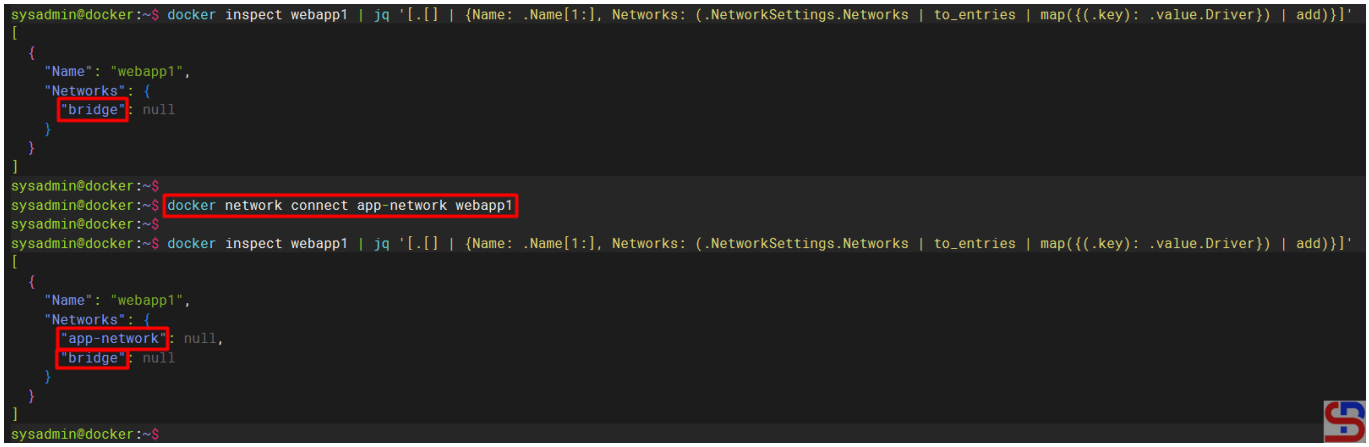
B. Connecting a network to a container

If you connect the current container to a network, use the format below:

```
docker network connect network-name container-name
```

For example, if you want to connect the webapp1 container to the app-network network, use the command below:

```
docker network connect app-network webapp1
```



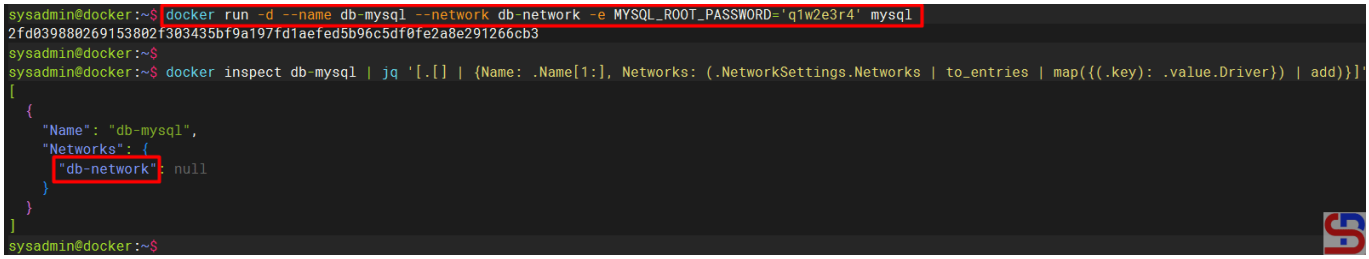
Connecting a network to a container

If you want to create a new container by directly connecting to a network, use the format below:

```
docker container run --name container_name --network network_name image:tag
```

For example, if you want to create a db-mysql container on the db-network network, use the command below:

```
docker run -d --name db-mysql --network db-network -e
MYSQL_ROOT_PASSWORD='q1w2e3r4' mysql
```



Connecting a network when creating a new container

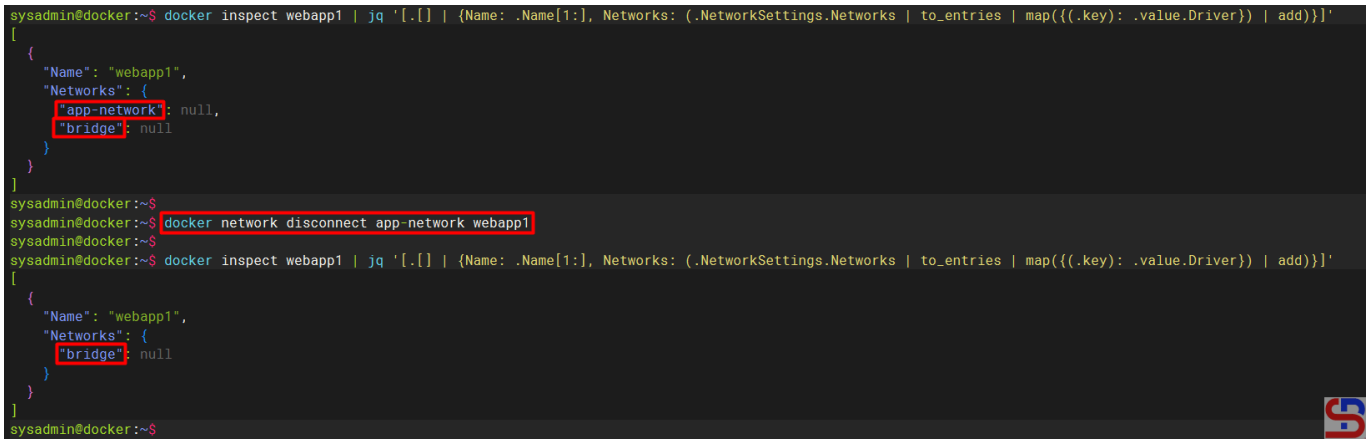
C. Disconnect a network in the container

To disconnect a network in the container, use the format below:

```
docker network disconnect network_name container_name
```

For example, if you want to break the app-network network from the webapp1 container, use the format below:

```
docker network disconnect network1 webapp1
```



Disconnect a network from a container

D. Removing a network

To remove a network, use the format below:

```
docker network rm network_name
```

For example, I want to delete the app-network network, use the command below:

```
docker network rm app-network
```

```
sysadmin@docker:~$ docker network ls
NETWORK ID     NAME          DRIVER    SCOPE
8ec63b0ea106   app-network   bridge    local
f36fe308a5e6   bridge        bridge    local
a292d347df19   db-network    bridge    local
3fe9d2c18c30   host          host      local
e4e911392a2c   none          null      local
sysadmin@docker:~$
sysadmin@docker:~$ docker network rm app-network
app-network
sysadmin@docker:~$
sysadmin@docker:~$ docker network ls
NETWORK ID     NAME          DRIVER    SCOPE
f36fe308a5e6   bridge        bridge    local
a292d347df19   db-network    bridge    local
3fe9d2c18c30   host          host      local
e4e911392a2c   none          null      local
sysadmin@docker:~$
```

Remove a network

WARNING
You cannot remove a network if the network is still connected to a container. First, disconnect the network connection from the container, and then you can delete the network.

Note

You must be careful when setting the network in Docker because if you set the wrong network, one or several containers will not be connected, which causes the application that runs on the Docker will be disturbed.

References

docs.docker.com
spacelift.io
youtube.dimas-maryanto.com
stackoverflow.com
youtube.com

How to Move a File/Folder From the Server to the Container And Vice Versa?

written by sysadmin | 5 November 2025

The previous article explained how to access a container in Docker. Now, I need to move a file/folder from the server to the container and vice versa.

Problem

How to move a file/folder from the server to the container and vice versa?

Solution

These are how to move a file/folder from the server to the container and vice versa:

A. Move from the server to the container

To move a file from the server to the container, use the format below:

```
docker cp src_path container:dest_path
```

For example, I want to move the nginx.tgz file from the server to the webapp1 container in the folder /home, so I use the command below:

```
docker cp nginx.tgz webapp1:/home
```

And the file will move to the /home folder in the container, like in the image below:

```
sysadmin@docker:~$ ls
all_images.tar  all_images.tgz  get-docker.sh  mysql.env  nginx.tar  nginx.tgz
sysadmin@docker:~$
sysadmin@docker:~$ docker ps
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS        PORTS                                   NAMES
2a4eadafffcd   nginx     "/docker-entrypoint.…"   9 hours ago    Up 4 hours    0.0.0.0:8080->80/tcp, [::]:8080->80/tcp   webapp1
e6d61413d2af   nginx     "/docker-entrypoint.…"   10 hours ago   Up 10 hours   80/tcp                                  nginx
sysadmin@docker:~$
sysadmin@docker:~$ docker cp nginx.tgz webapp1:/home
Successfully copied 70.8MB to webapp1:/home
sysadmin@docker:~$
sysadmin@docker:~$ docker exec webapp1 ls /home
nginx.tgz
sysadmin@docker:~$
```

Move the file from the server to the container

B. Move from the container to the server

To move a file from the server to the container, use the format below:

```
docker cp container:src_path dest_path
```

For example, you want to move the docker-entrypoint.sh file in the container to the server in the folder /tmp, use the command below to move the file:

```
docker cp webapp1:docker-entrypoint.sh /tmp
```

And the file should be transferred to the folder /tmp on the server as shown below:

```
sysadmin@docker:~$ docker cp webapp1:docker-entrypoint.sh /tmp
Successfully copied 3.58kB to /tmp
sysadmin@docker:~$
sysadmin@docker:~$ ls /tmp/
docker-entrypoint.sh                                                  systemd-private-90daf0a2835c40f4ab88a0e704616579-systemd-logind.service-Tm3bjn
snap-private-tmp                                                      systemd-private-90daf0a2835c40f4ab88a0e704616579-systemd-resolved.service-YiaR6x
systemd-private-90daf0a2835c40f4ab88a0e704616579-fwupd.service-ucY5vF  systemd-private-90daf0a2835c40f4ab88a0e704616579-systemd-timesyncd.service-xp4K0I
systemd-private-90daf0a2835c40f4ab88a0e704616579-ModemManager.service-7Tcd3J  systemd-private-90daf0a2835c40f4ab88a0e704616579-upower.service-HtlJcL
systemd-private-90daf0a2835c40f4ab88a0e704616579-polkit.service-DFuXcx
sysadmin@docker:~$
```

Move the file from the container to the server

Note

You can move the folder and its contents from the server to the container and vice versa by using the format above without the need to add the **-r** option, as shown in the image below:

```
sysadmin@docker:~$ ls
all_images.tar  all_images.tgz  get-docker.sh  mysql.env  nginx.tar  nginx.tgz  test
sysadmin@docker:~$
sysadmin@docker:~$ docker cp test/ webapp1:/
Successfully copied 24.6kB to webapp1:/
sysadmin@docker:~$
sysadmin@docker:~$ docker exec webapp1 ls
bin
boot
dev
docker-entrypoint.d
docker-entrypoint.sh
etc
home
lib
lib64
media
mnt
opt
proc
root
run
sbin
srv
sys
test
tmp
usr
var
sysadmin@docker:~$
sysadmin@docker:~$ docker exec webapp1 ls /test
get-docker.sh
sysadmin@docker:~$
```

Move the folder into and out of the container

WARNING

You cannot move more than one file or folder from the server to the container or vice versa.

References

youtube.dimas-maryanto.com
docs.docker.com
mkyong.com