

Docker Volume: -

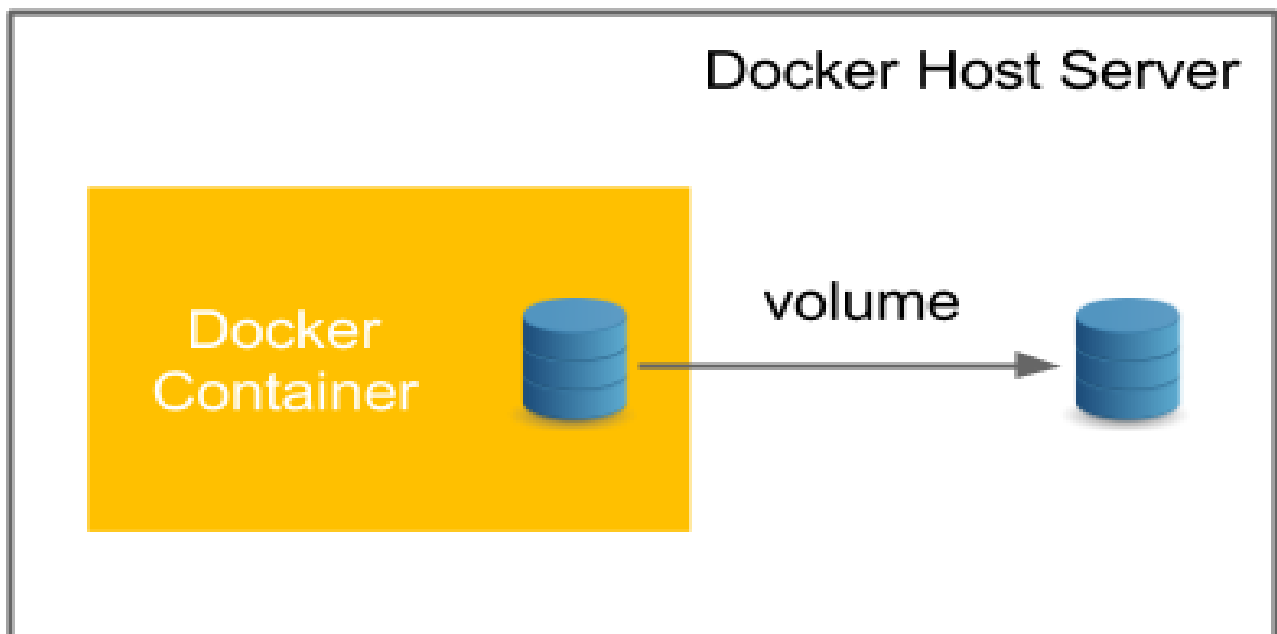
By default, all files created inside a container are stored on a writable container layer. This means that:

- The data doesn't persist when that container is no longer running, and it can be difficult to get the data out of the container if another process needs it.
- A container's writable layer is tightly coupled to the host machine where the container is running. You can't easily move the data somewhere else.
- Writing into a container's writable layer requires a [storage driver](#) to manage the filesystem. The storage driver provides a union filesystem, using the Linux kernel. This extra abstraction reduces performance as compared to using *data volumes*, which write directly to the host filesystem.

Docker has two options for containers to store files in the host machine, so that the files are persisted even after the container stops

- **volumes**
- **bind mounts**

Volumes are the preferred mechanism for persisting data generated by and used by Docker containers.



We can create the Volumes by using docker volume command

```
docker volume create my-vol
```

docker volume create command always creates the volume under `/var/lib/docker/volumes/<vol-name>` directory however we can create a docker volume to any path and we need to use `-v` command during creation of docker container.

```
docker run -itd -P -v /tmp/test/:/usr/share/nginx/html nginx
```

here /tmp/test is the path of our host machine and /usr/share/nginx/html is the path of the container which will be created, so in simple word we can say a soft link will be created between these two paths, whatever we will modify in one path will reflect in another path vice versa.

A volume named my-vol will be created under /var/lib/docker/volumes as shown in snap below: -

```
[root@ip-172-31-28-41 ~]# cd /var/lib/docker
[root@ip-172-31-28-41 docker]# ls
containers image network overlay plugins swarm tmp tmp-old trust volumes
[root@ip-172-31-28-41 docker]# cd volumes/
[root@ip-172-31-28-41 volumes]# ls
metadata.db
[root@ip-172-31-28-41 volumes]# docker volume create devops_g
devops_g
[root@ip-172-31-28-41 volumes]# ls
devops_g metadata.db
[root@ip-172-31-28-41 volumes]# cd devops_g/
[root@ip-172-31-28-41 devops_g]# ls
data
[root@ip-172-31-28-41 devops_g]#
```

We can map this volume to our container, so that: -

- ➔ our container can write any data on to our host operating system
- ➔ can pick any configuration file from your volume required for your app

In below snap I had created a docker volume

```
[root@ip-172-31-28-41 ~]# docker images
REPOSITORY          TAG             IMAGE ID        CREATED         SIZE
nginx                latest          719cd2e3ed04   5 days ago     109MB
ubuntu              latest          7698f282e524   4 weeks ago    69.9MB
[root@ip-172-31-28-41 ~]# mkdir volume_test
[root@ip-172-31-28-41 ~]# ls
anaconda-ks.cfg  DevOps G  original-ks.cfg  ubuntu.tar  volume_test
[root@ip-172-31-28-41 ~]# docker run -itd -v -P /root/volume_test:/var/www/html nginx
docker: invalid reference format.
See 'docker run --help'.
[root@ip-172-31-28-41 ~]# docker run -itd -P -v /root/volume test:/var/www/html nginx
83360a0b43ea7b3bc284da700efba870369a022ad460807246e40af322afcc48
[root@ip-172-31-28-41 ~]# #notice here, sequence of -v also matters, in previous example
[root@ip-172-31-28-41 ~]# #i had given -v before -P so i got invalid reference error
[root@ip-172-31-28-41 ~]# docker ps
CONTAINER ID        IMAGE          COMMAND                  CREATED            STATUS              PORTS
83360a0b43ea       nginx         "nginx -g 'daemon ...'" 50 seconds ago    Up 49 seconds      0.0.0.0:32775->80/tcp
[root@ip-172-31-28-41 ~]# docker exec -it 83360a0b43ea bash
root@83360a0b43ea:/# cd /var/www/html
root@83360a0b43ea:/var/www/html# ls
root@83360a0b43ea:/var/www/html# vim index.html
```

```
root@83360a0b43ea:/var/www/html# ls
root@83360a0b43ea:/var/www/html# vim index.html
root@83360a0b43ea:/var/www/html# cat index.html
<html><h1>This is Volume concept</h1></html>
root@83360a0b43ea:/var/www/html# #now pressing ctrl+p+q
root@83360a0b43ea:/var/www/html# [root@ip-172-31-28-41 ~]#
[root@ip-172-31-28-41 ~]# cd volume test/
[root@ip-172-31-28-41 volume_test]# ls
index.html
[root@ip-172-31-28-41 volume_test]# cat index.html
<html><h1>This is Volume concept</h1></html>
```