volumes-bindmounts

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Persistant Data with Continaers:

  Docker containers are designed so that their internal storage can be
easily destroyed. However, sometimes you might need more permanent
data. Docker volumes and bind mounts allow you to attach external
storage to containers.

Bind Mounts vs. Volumes:
  When mounting external storage to a container, you can use either a
bind mount or a volume.
  We can use --mount OR --volume syntax to attache external storage to
a container.

Bind mounts:
  1) Mount a specific path on the host machine to the container.
  2) Not portable, dependant on the host machine's file system and
directory structure.
Volumes:
  1) Stores data on the host file system, but the storage location is
managed by Docker.
  2) More portable.
  3) Can mount the same volume to multiple containers.
  4) Work in more scenarios.

we can create both volumes/bind mounts using either of the syntax.
  i.e. we can create a "bind mount" using --mount syntax as well with --
volume syntax similarly
      we can create a "volume" using --mount syntax as well with --
volumes syntax.

--mount syntax:
  docker run --mount key=value,key=value..

  type: bind (bind mount), volume, or tmpfs (temporary in-memory
storage)
  source,src: Volume name or bind mount path.
  destination,dst,target: Path to mount inside the container.
  readonly: Make the volume or bind mount read-only.

  Example:
     cd ~/
     mkdir message
     echo Hey, You! > message/message.txt

     Mount the directory to a container with a bind mount.
         docker run --mount type=bind,source=/home/cloud_user/message,
destination=/root,readonly busybox cat /root/message.txt
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    Run a container with a mounted volume.
        docker run --mount type=volume,source=my-volume,destination=
/root busybox sh -c 'echo hello > /root/message.txt && cat /root
/message.txt'

-v syntax:
  docker run -v SORUCE:DESTINATION[:OPTIONS]

  SOURCE: if this is a volume name, it will create a volume. if this is
a path it will createa bind mount.
  DESTINATION: Location to mount the data inside the container.
  OPTIONS: comma-sepereated list of options. For example ro for read-
only.

  Example:
    cd ~/
    mkdir message
    echo Hey, You! > message/message.txt

    Mount the directory to a container with a bind mount
        docker run -v /home/cloud_user/message:/root:ro busybox cat
/root/message.txt

    Run a container with a mounted volume.
        docker run -v my-volume:/root busybox sh -c 'cat /root/message.
txt'

Note: in swarm mode when we deploy services, only --mount can be used, -
v syntax doesn't work with services.


Create and manage volumes using docker volume commands
  docker volume create myvol
  docker volume ls
  docker volume inspect myvol
  docker volume rm myvol
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