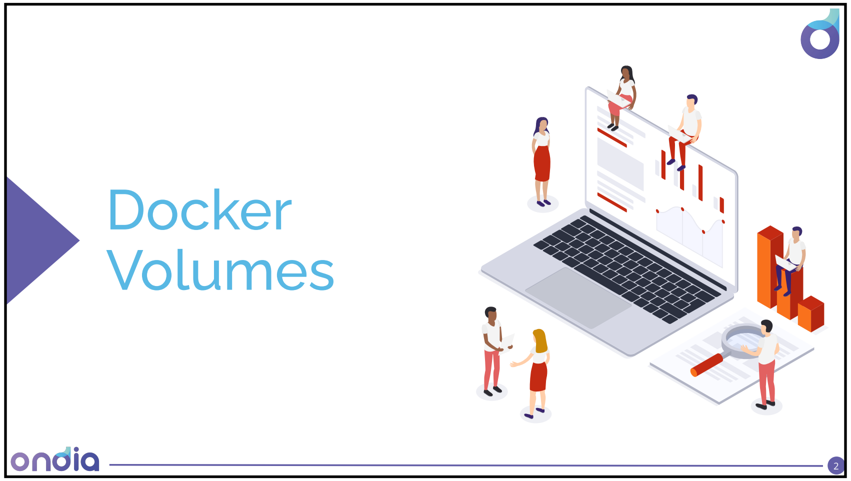
ondia

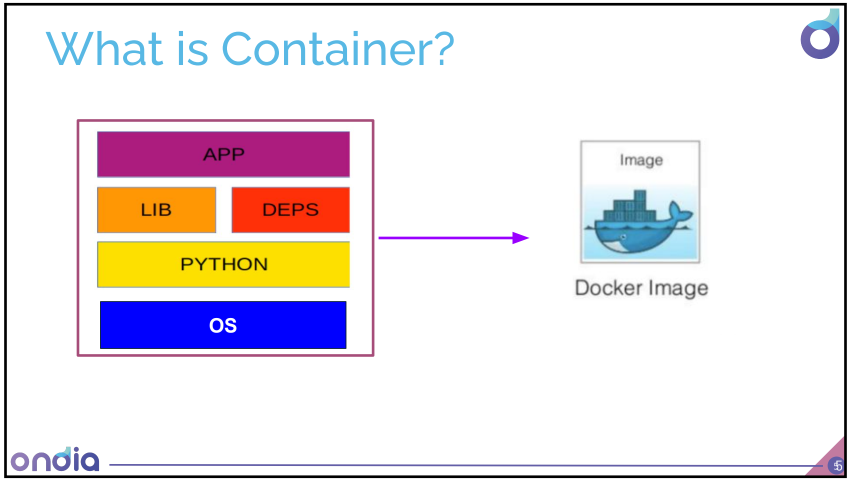


Docker Volumes

AGENDA

- Review of Docker
- Container Layers
- Managing data in Docker
- Declaration of volumes
- Docker Volume Behaviours
- Docker volume Commands

Docker



What is Container?

APP

LIB

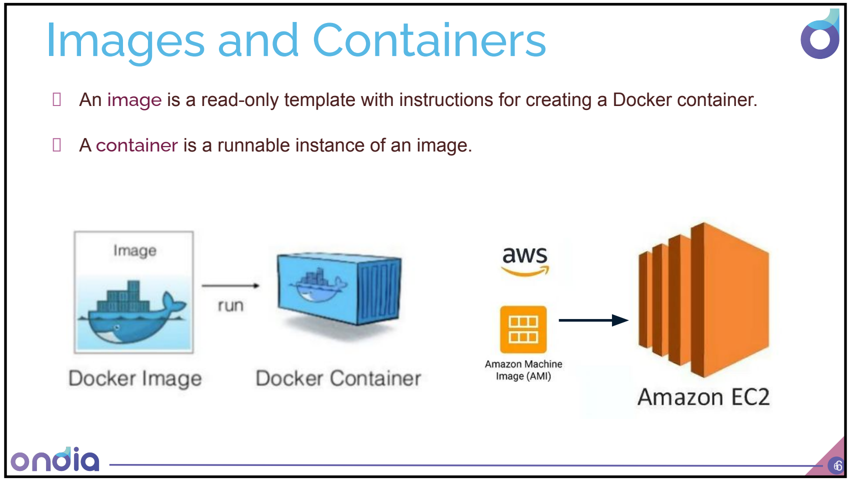
DEPS

PYTHON

OS

Image

Docker Image



Images and Containers

- An image is a read-only template with instructions for creating a Docker container.
- A container is a runnable instance of an image.

Image

run

Docker Image

Docker Container

aws

Amazon Machine Image (AMI)

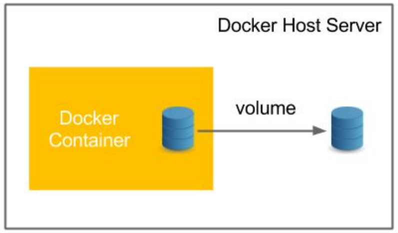
Amazon EC2

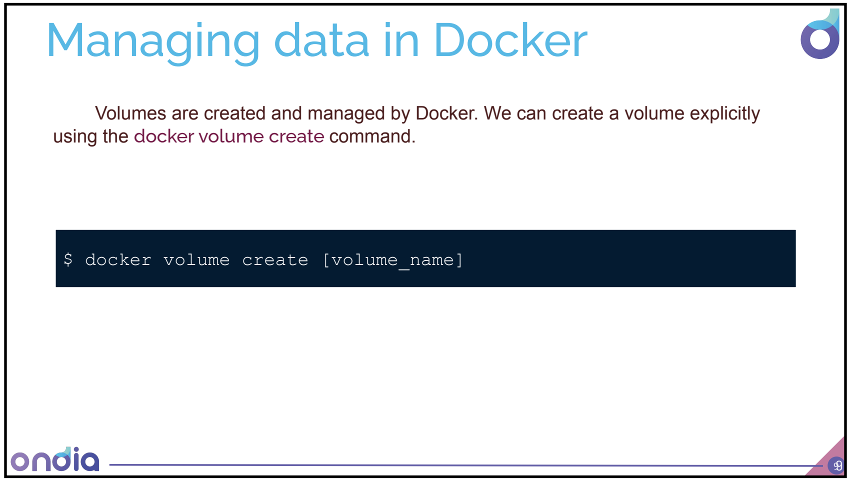
Managing data in Docker

Managing data in Docker

- By default, files created inside a container are stored on a **writable container layer** and data doesn't persist.

- Docker volumes, which are special directories in a container, store files in the host machine so that the files are **persisted** even after the container stops.

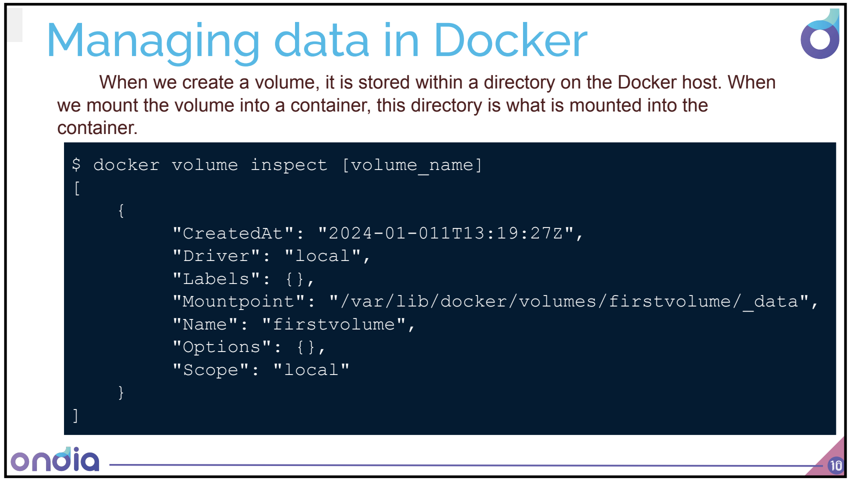




Managing data in Docker

Volumes are created and managed by Docker. We can create a volume explicitly using the docker volume create command.

```
$ docker volume create [volume_name]
```

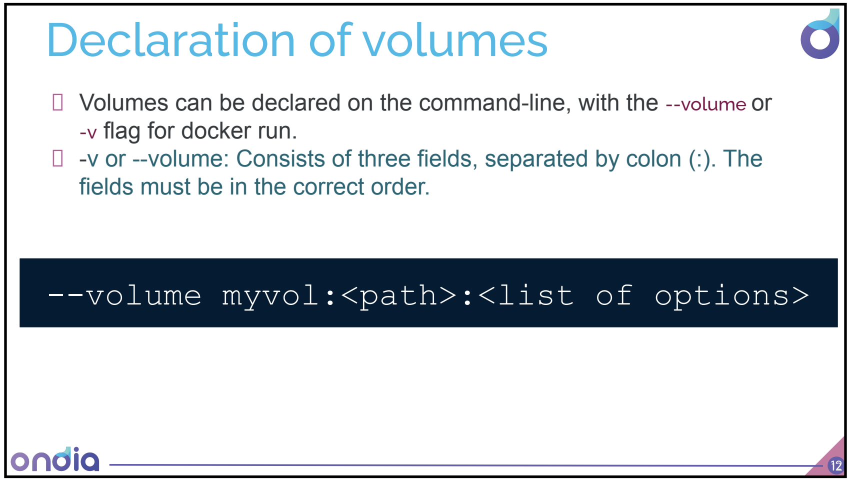


Managing data in Docker

When we create a volume, it is stored within a directory on the Docker host. When we mount the volume into a container, this directory is what is mounted into the container.

```
$ docker volume inspect [volume_name]
[
    {
         "CreatedAt": "2024-01-011T13:19:27Z",
         "Driver": "local",
         "Labels": {},
         "Mountpoint": "/var/lib/docker/volumes/firstvolume/_data",
         "Name": "firstvolume",
         "Options": {},
         "Scope": "local"
    }
]
```

Declaration of volumes



Declaration of volumes

- Volumes can be declared on the command-line, with the --volume or -v flag for docker run.
- -v or --volume: Consists of three fields, separated by colon (:). The fields must be in the correct order.

```
--volume myvol:<path>:<list of options>
```

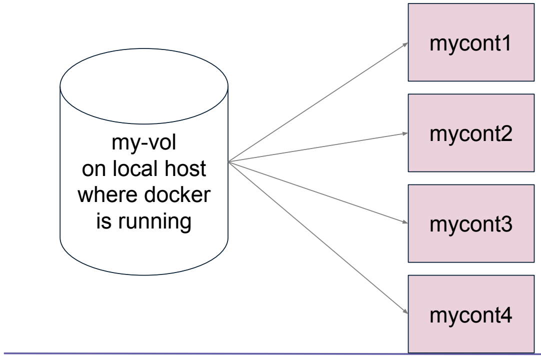
Declaration of volumes

```
--volume <volume_name>:<path>:<list of options>
```

- The first field is the name of the volume, and is unique on a given host machine.
- The second field is the path where the file or directory are mounted in the container.
- The third field is optional, and is a comma-separated list of options, such as ro (read only).

Declaration of volumes

We can use the same Volume with different Containers.



Docker Volume Behaviours

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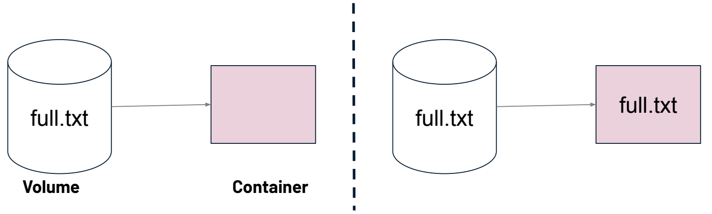
Docker Volume Behaviours

No	Situation	Behaviour
1	If there is no target directory.	The target directory is created and files inside volume are copied to this directory.
2	If there is a target directory, but it is empty.	The files in the volume are copied to the target directory.
3	If there is a target directory and it is not empty, but volume is empty.	The files in the target directory are copied to volumes.
4	If the volume is not empty.	There will be just the files inside volume regardless of the target directory is full or empty.

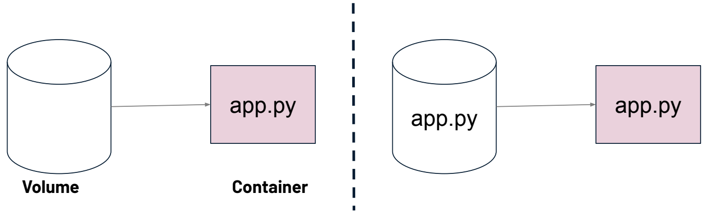
Docker Volume Behaviours

No	Situation	Behaviour
1	If there is no target directory.	The target directory is created and files inside volume are copied to this directory.
2	If there is a target directory, but it is empty.	The files in the volume are copied to the target directory.



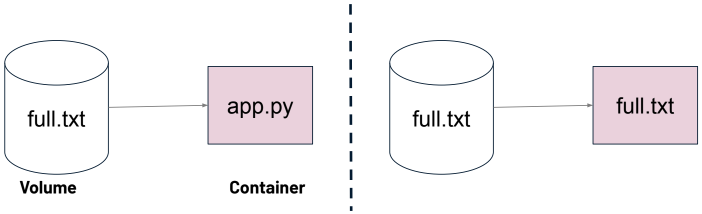
Docker Volume Behaviours

No	Situation	Behaviour
3	If there is a target directory and it is not empty, but volume is empty.	The files in the target directory are copied to volumes.

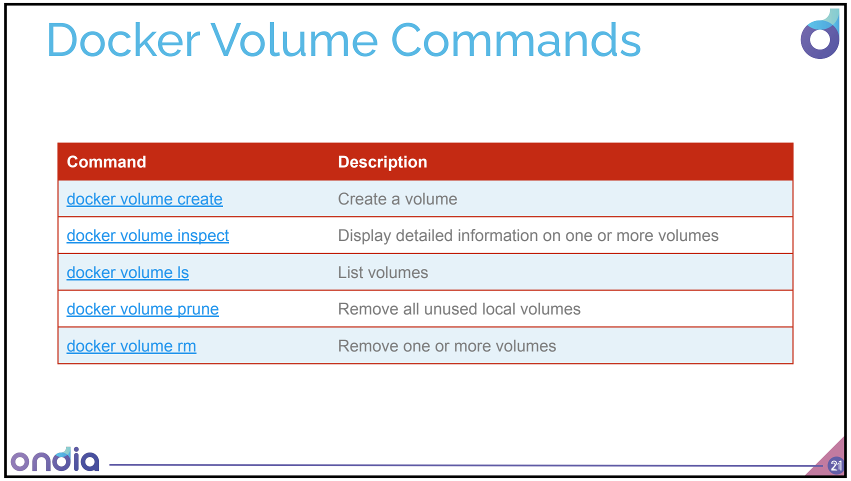


Docker Volume Behaviours

No	Situation	Behaviour
4	If the volume is not empty.	There will be just the files inside volume regardless of the target directory is full or empty.



Docker Volume Commands



Docker Volume Commands

Command	Description
docker volume create	Create a volume
docker volume inspect	Display detailed information on one or more volumes
docker volume ls	List volumes
docker volume prune	Remove all unused local volumes
docker volume rm	Remove one or more volumes

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THANKS!

Any questions?

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