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Understanding Docker

TL;DR It's not literally a container

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// About Me

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- Low/High level developer
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01

What is Docker

Is it a container ? is it a virtual machine ? or is it one kind of a sourcery

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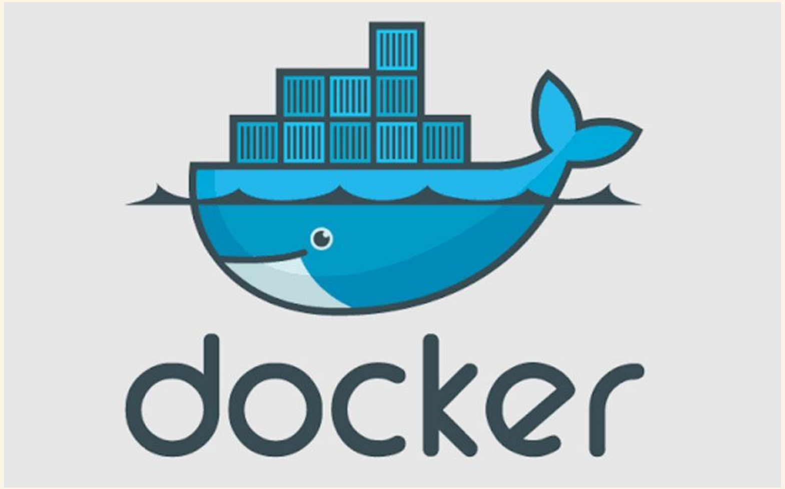
Docker

Yes, **it's a Container**, and no, **it's not a Virtual Machine**

It's like having a mini-computer inside of your computer, but instead of having full feature of being a computer, this thing only has those features that you needed to have.



Why Container ?

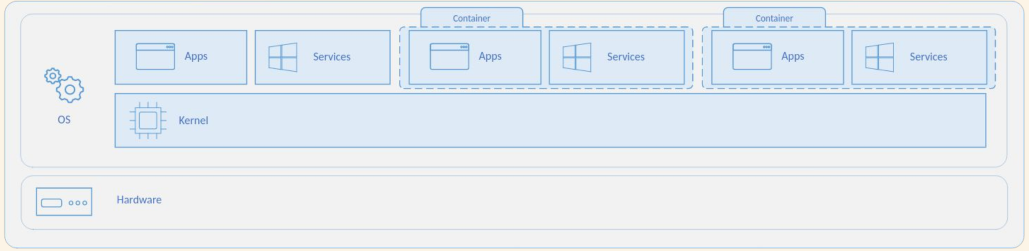
Purpose

- No more “but it works on my machine”
- Makes deployment a lot easier
- Infrastructure as code
- Can be used as another “workspace”

Versus VM (Virtual machines)

- Virtual machines are heavy
- Virtual machines are slow to load
- Virtual machines will use many storage
- It’s hard(er) to maintain virtual machines

Overall concept



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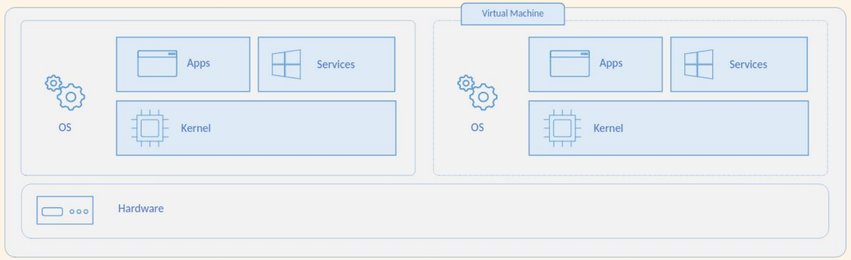
Virtual Machines



https://docs.microsoft.com/en-us/virtualization/windowscontainers/about/containers-vs-vm

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02

How to Use

Obviously, install it first

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Install

I’m really lazy, just head over to **https://docs.docker.com/engine/install/**

Or if you are (weirdly still) use windows / mac, then go here **https://docs.docker.com/desktop/windows/install/** and here **https://docs.docker.com/desktop/mac/install/**

Now What ?

There are several (kind of) main “things” in docker:

- Docker engine itself
- Docker compose
- Docker hub → its like github but for docker containers, got it ?

Which one to use ? Both

Docker

Use this to manage single containers

Docker Compose

Use this to manage multiple containers

02.A

Dockerfile

Let’s build a simple
container

Dockerfile Structure

```
# Base Image
FROM ubuntu:latest

# Instructions to execute during docker build process
RUN apt-get update
RUN apt-get install -y python

# Instructions to execute during docker run process
CMD ["-c","print(\"test\")"]
ENTRYPOINT ["python"]
```

Sharing Volumes

```
USING HOST VOLUME

docker run -it --name=[container_name] -d -v [host_path]:[container_path] alpine:latest

---

USING DOCKER VOLUME

docker volume create [volume_name]
docker run -it --name=[container_name] -d -v [volume_name]:[container_path] alpine:latest
```

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Sharing Containers

SAVE THE WHOLE STATE OF THE IMAGE (including file changes)

```
docker export [image_id] > [filename].tar
docker import - [new_image_name] < [saved_filename].tar
```

ONLY SAVE THE OS

```
docker save -o [filename].tar [image_name]
docker load < [saved_filename].tar
```

02.B

docker-compose.yaml

Don't ask me why the name
is really long

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Docker Compose Structure

```yaml
version: "3.9"  # optional since v1.27.0

# All Services
services:
  web:
    build: .
    ports:
      - "5000:5000"
    volumes:
      - .:/code
      - logvolume01:/var/log
    links:
      - redis
  redis:
    image: redis

# Other Stuff (can also add networking)
volumes:
  logvolume01: {}
```

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03

How to Monitor

TL;DR So many ways

So many options, but here is a simple one for example

Lazy Docker

https://github.com/jesseduffield/lazydocker

Basically a terminal based ui (TUI) for monitoring docker containers

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THANKS!

Reference(s):

- https://docs.docker.com/
- https://dockerlabs.collabnix.com/
- https://dockerlabs.collabnix.com/docker/cheatsheet/

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