

Some initial Docker knowledge

Installation

- Docker installation. We need Docker Engine and Docker Compose, not Docker Desktop as such.
 - o Linux or Linux VM in Windows: <https://docs.docker.com/engine/install/ubuntu/> and for Linux also: <https://docs.docker.com/compose/install/other/#on-linux>
 - o Windows: <https://docs.docker.com/desktop/install/windows-install/>
 - o Mac: <https://docs.docker.com/desktop/install/mac-install/> (Note: Intel chip or Apple silicon?)
- The main thing is the Docker Engine (Which in Win/Mac is installed with Docker Desktop)
 - o March 2023: v. 20.10.23, Oct 2022: v. 20.10.17,
- 1. Build images, 2. Share images via registry like DockerHub (hub.docker.com), 3. Run **images as containers**.
- Lighter than virtual machine. Containers share the same OS resources, but are sandboxed = **isolated** from each other and the host computer **by Docker Engine** for e.g.:
 - o folders and files - (though if you need to share **volume**, it's possible)
 - o internal network ports - (though if you need to open/publish a port outside the container, it's possible)
 - o networks - (by default each container is alone, but can be put to one 'network' if needed)

What would the VM hypervisor be then? A hypervisor, also known as a virtual machine monitor or VMM, is software that creates and runs virtual machines (VMs). A hypervisor allows one host computer to support multiple guest VMs by virtually sharing its resources, such as memory and processing. Source:

<https://www.vmware.com/topics/glossary/content/hypervisor.html>

- Docker images and container make it possible to e.g. run / have
 - o two different versions of Node on the same computer,
 - o with different even 'globally' (=still only in that container) installed npm modules,
 - o both thinking they are running 'at port 3000' (local port inside the container)
 - o but those ports offered outside of the two containers as e.g. 8333 and 8444
 - o containers can see each other if needed with so called **network(s)**
- With Docker we can tackle e.g. these challenges (These are some of the Docker benefits):
 - o Some files missing from the deployment => Image contains all needed
 - o Software versions don't match => Image can contain all needed individual software packages, exactly the version wanted
 - o Environment etc. settings vary => Image always starts from its own wanted settings
 - o Building the dev or runtime environment takes time => After image built, it can be taken into use very fast.
 - o Building the environment is sometimes impossible to roll back to previous state => Docker allows all to be scripted, and we can improve those scripts iteratively, and even take a copy of some old script as basis for a different kind of project.

YAML/YML format: Indentation to show nesting. Dash to show list items.

<https://docs.docker.com.xz2401.com/engine/docker-overview/> Docker Overview

<https://www.docker.com/blog/understanding-docker-networking-drivers-use-cases/>