Docker

Rupesh Panwar

Date: 02-Aug-21

Before we start..

Login-Docker for Windows/Mac

Create Login
https://hub.docker.com/

Login into Docker Lab
https://labs.play-with-docker.com/

Login-Docker for Windows/Mac

Steps

Sign up for a Docker Hub account

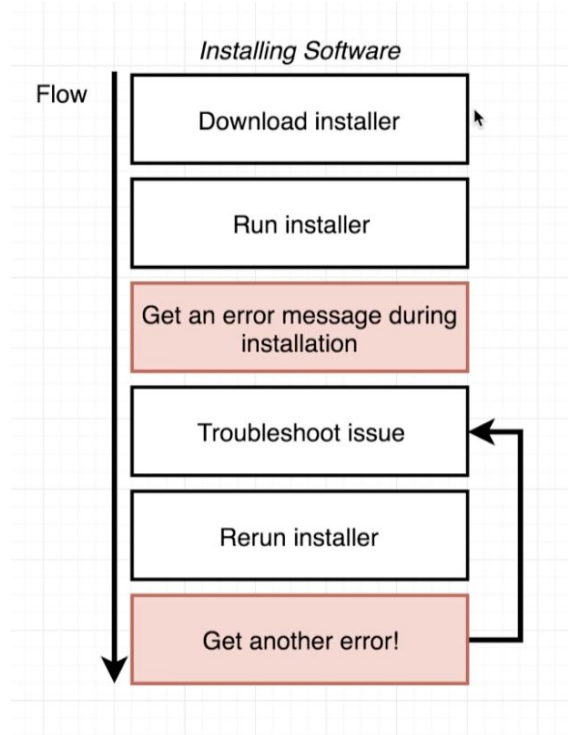} docker.com

Download/Install Docker for Mac

Login to Docker

Verify Docker installation

Agenda

1. What is docker/why we use Docker
2. Very first Docker terminology
3. Docker for Windows/Mac-Components
4. Using Docker client
5. A container..
6. How your computer is running Docker

1. What is Docker/Why we use Docker

Installing Software

Flow

Download installer

Run installer

Get an error message during installation

Troubleshoot issue

Rerun installer

Get another error!

1. What is Docker/Why we use Docker

https://redis.io/download

Installation

From source code

Download, extract and compile Redis with:

```
$ wget https://download.redis.io/releases/redis-6.2.5.tar.gz
$ tar xzf redis-6.2.5.tar.gz
$ cd redis-6.2.5
$ make
```

1. What is Docker/Why we use Docker

https://redis.io/download

The binaries that are now compiled are available in the `src` directory. Run Redis with:

```
$ src/redis-server
```

You can interact with Redis using the built-in client:

```
$ src/redis-cli
redis> set foo bar
OK
redis> get foo
"bar"
```
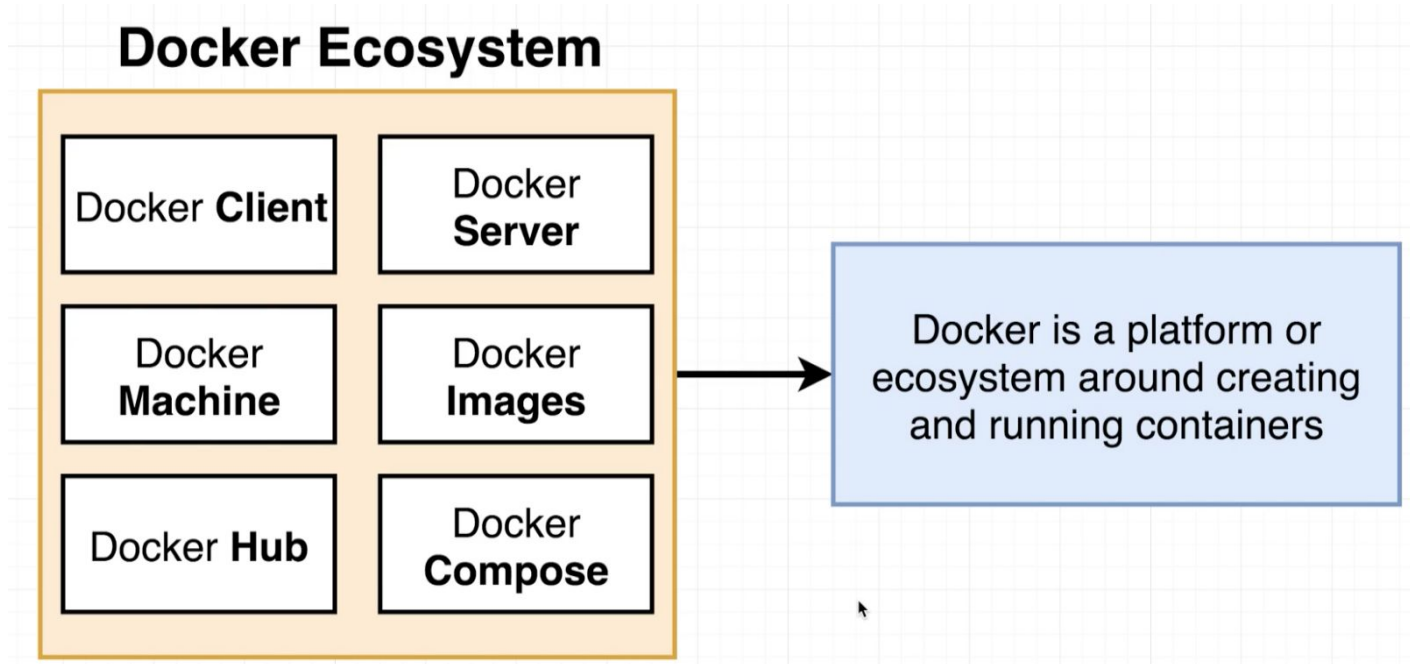
1. What is Docker/Why we use Docker
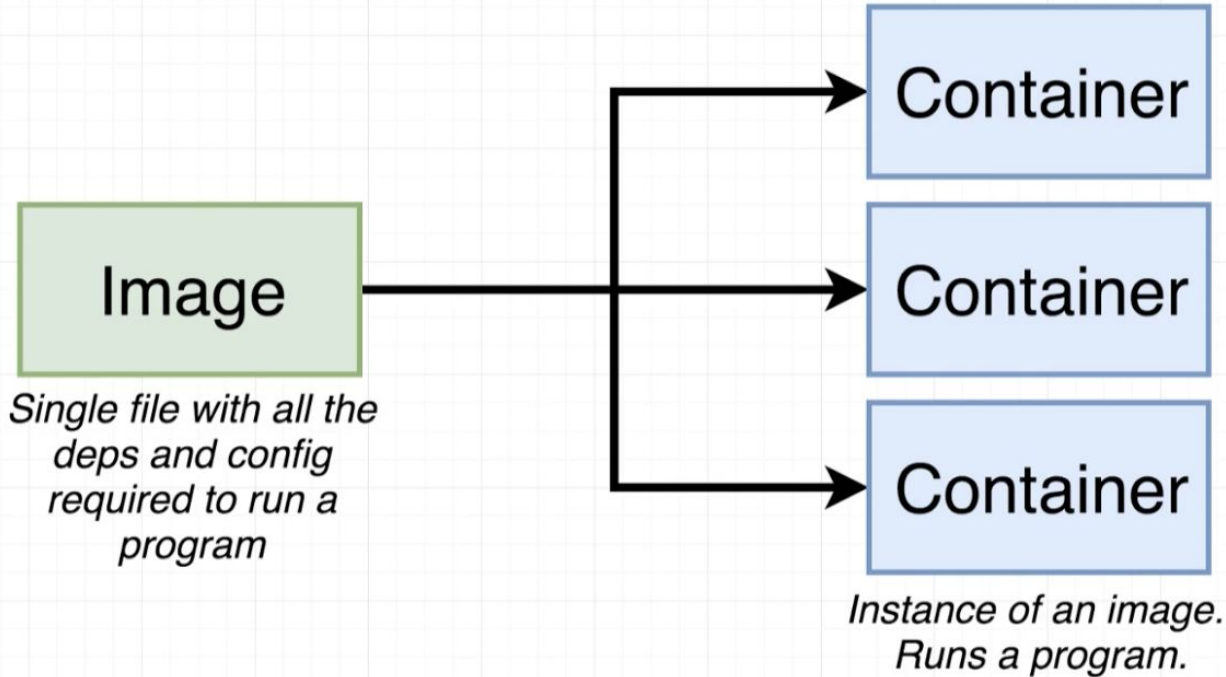
Run > docker run -it redis

Why use Docker? → Docker makes it really easy to install and run software without worrying about setup or dependencies
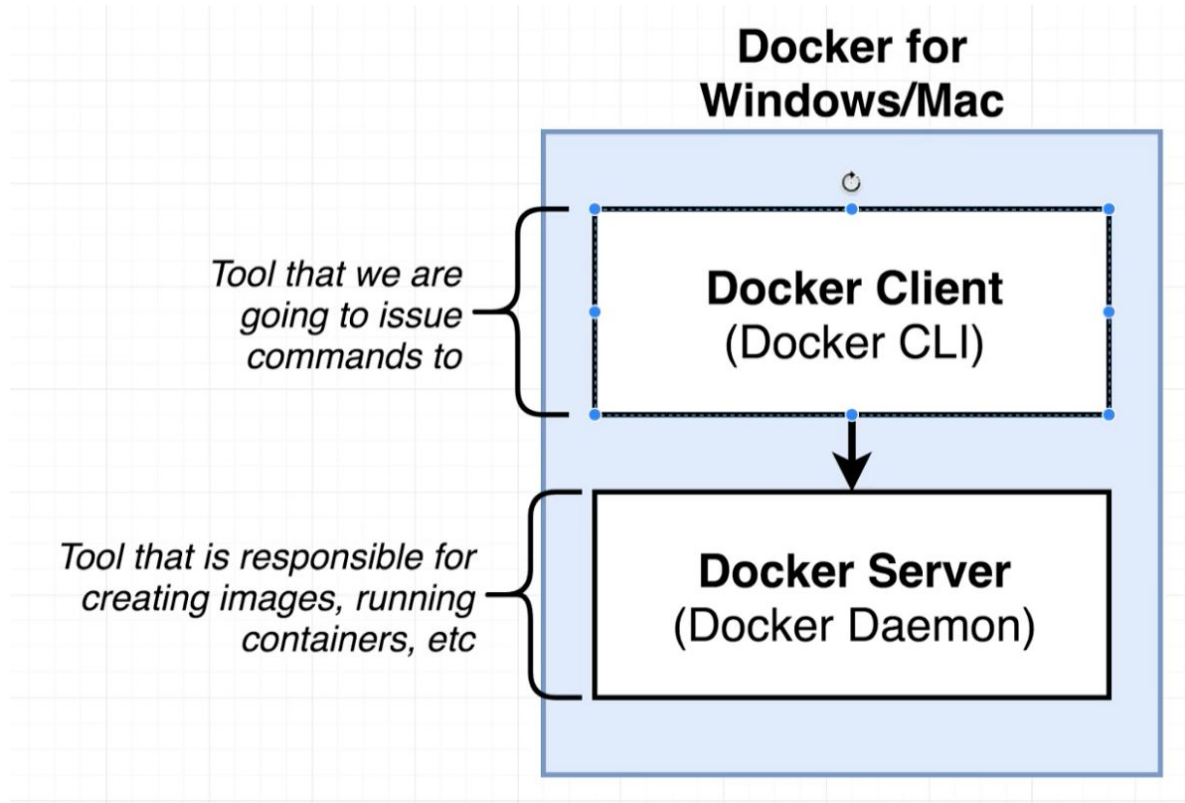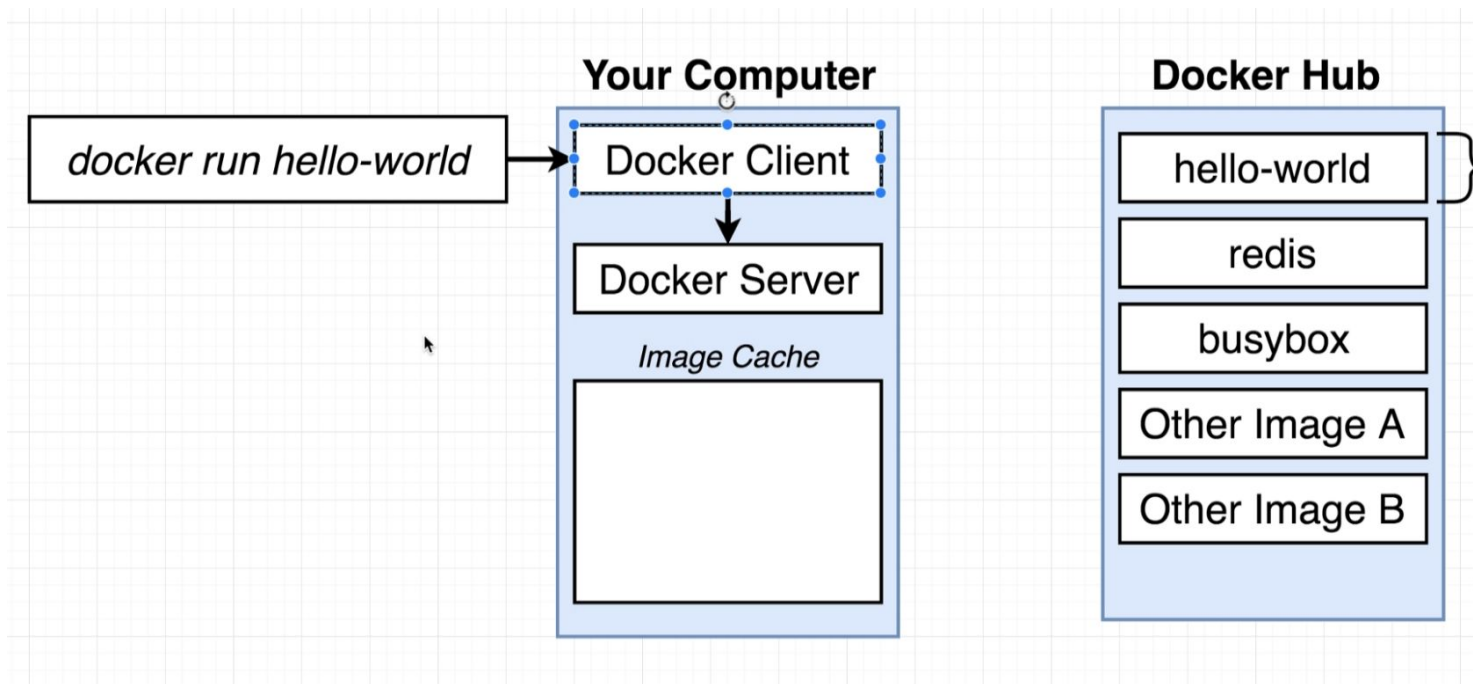
1. What is Docker/Why we use Docker

Docker Ecosystem

Docker **Client**	Docker **Server**
Docker **Machine**	Docker **Images**
Docker **Hub**	Docker **Compose**

→ Docker is a platform or ecosystem around creating and running containers

2. Very first Docker terminology

Image
Single file with all the deps and config required to run a program

Container
Container
Container
Instance of an image. Runs a program.

3. Docker for Windows/Mac-Components

Docker for Windows/Mac

Tool that we are going to issue commands to

Docker Client
(Docker CLI)

Tool that is responsible for creating images, running containers, etc
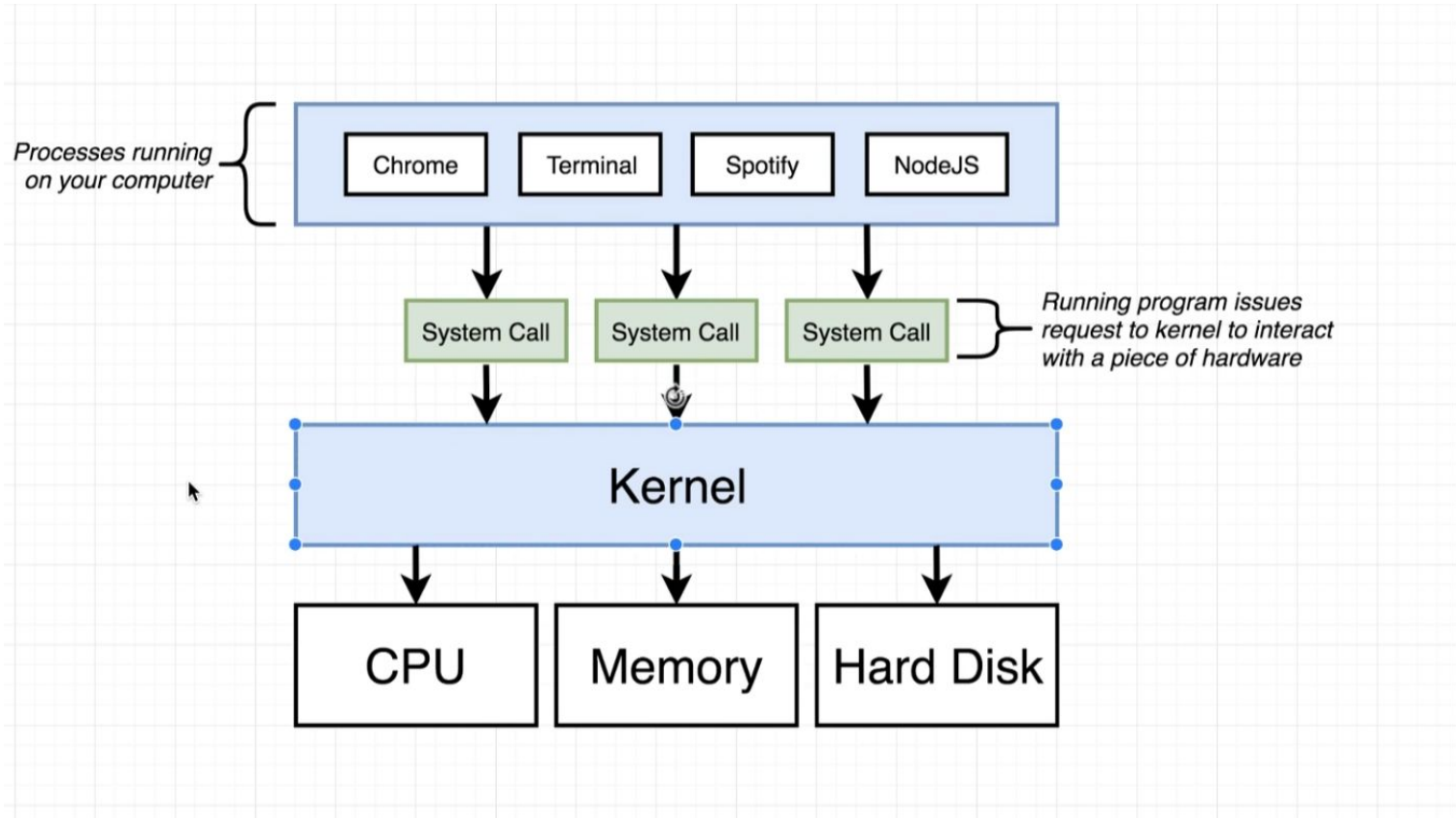
Docker Server
(Docker Daemon)

4. Using Docker client

Docker run hello-world

5. A container..

Processes running on your computer: Chrome, Terminal, Spotify, NodeJS

System Call, System Call, System Call — Running program issues request to kernel to interact with a piece of hardware

Kernel

CPU, Memory, Hard Disk
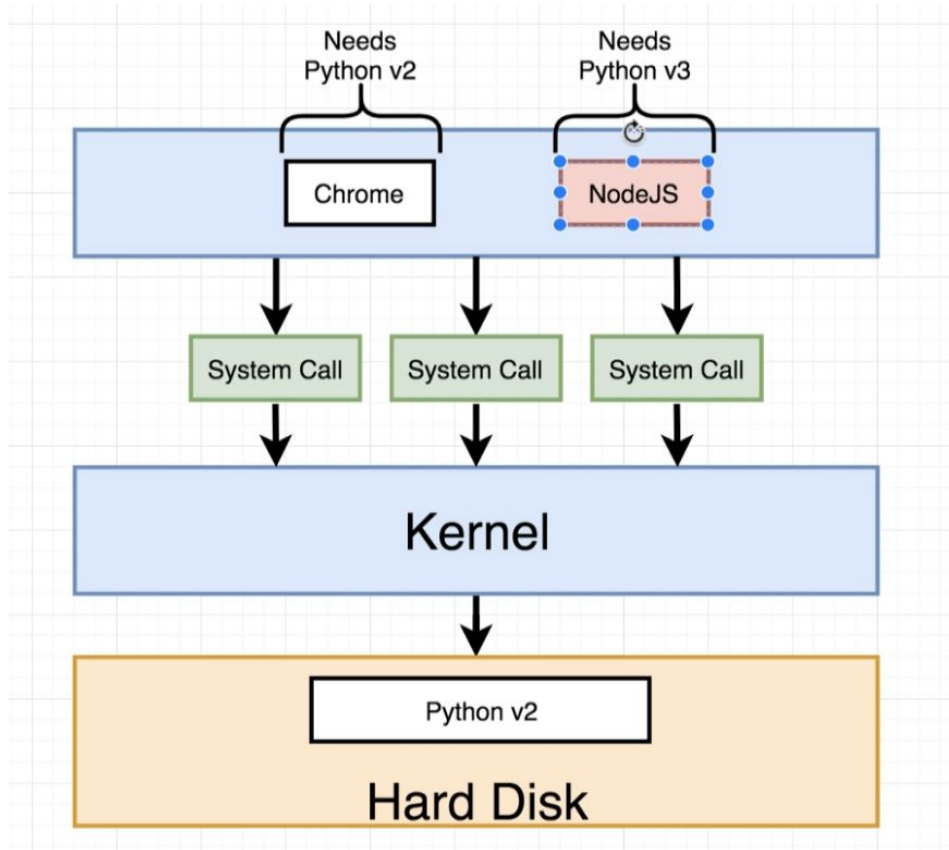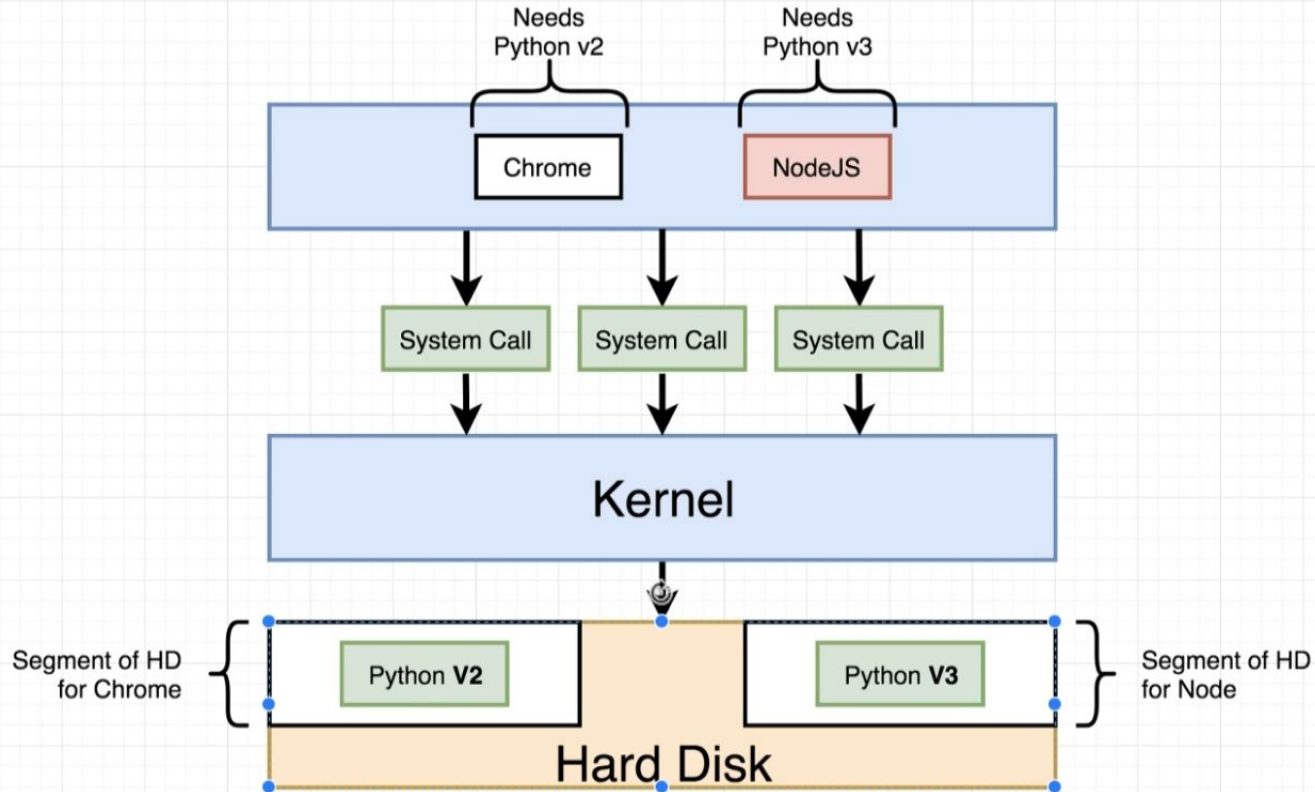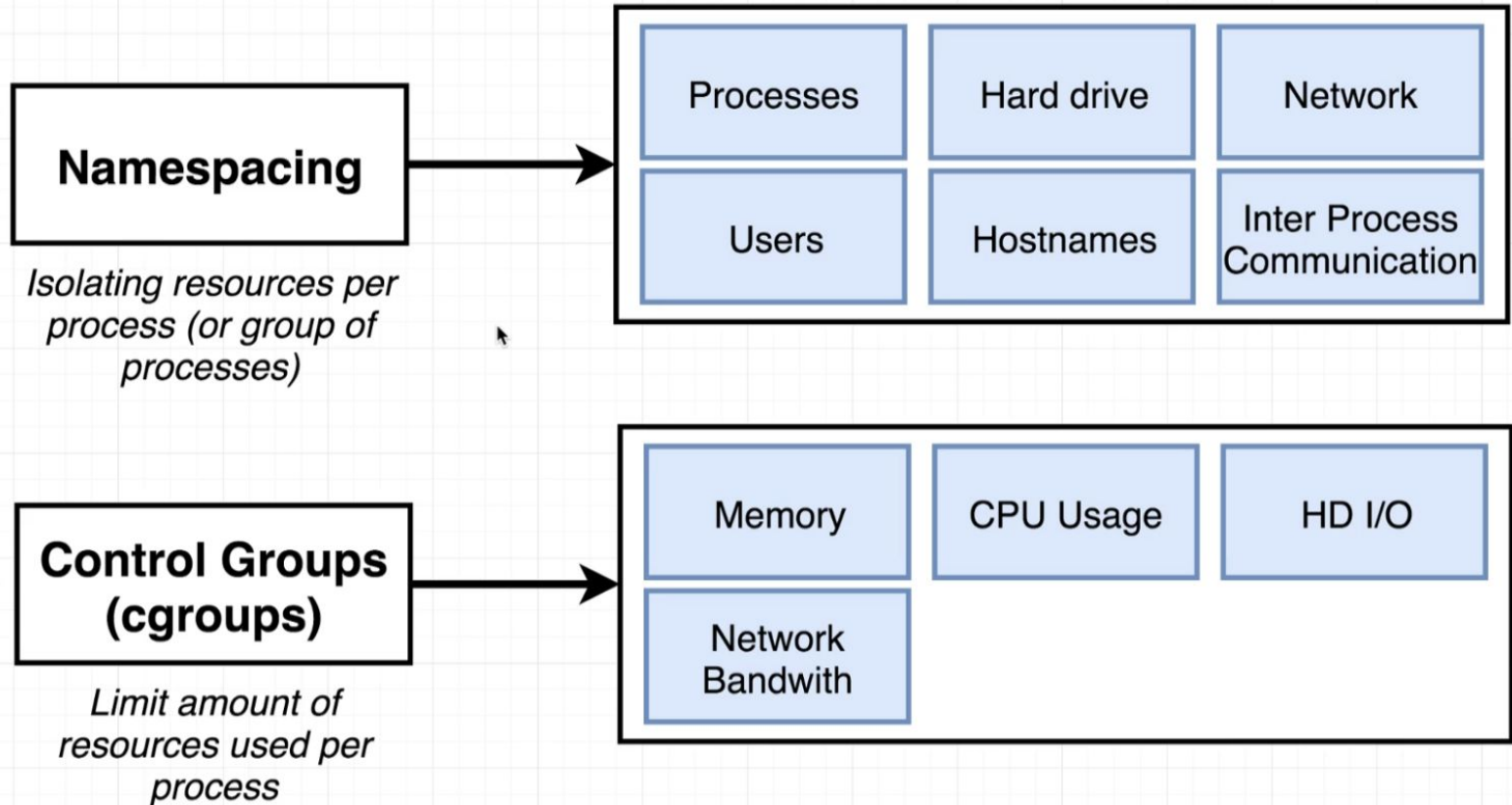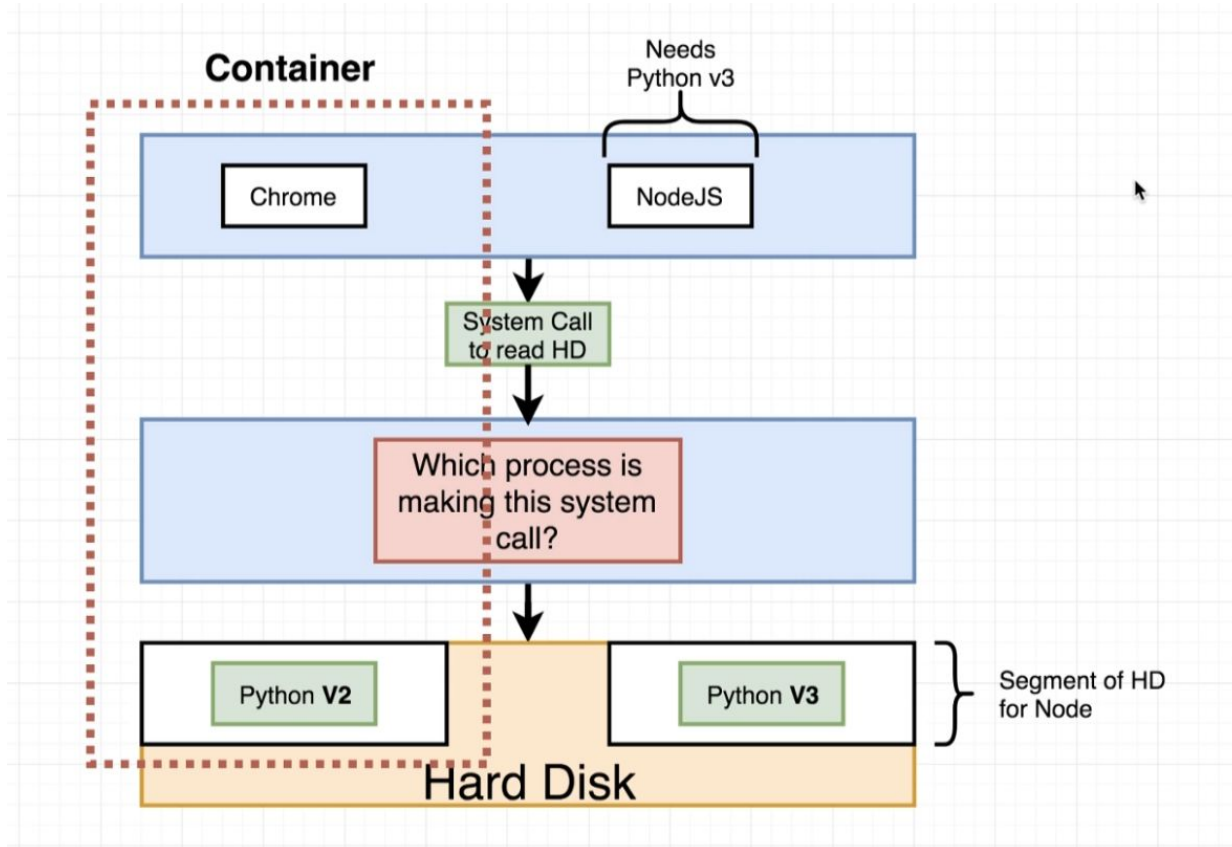
5. A container..

5. A container..

5. A container..

Namespacing

Isolating resources per process (or group of processes)

| Processes | Hard drive | Network |
| Users | Hostnames | Inter Process Communication |

Control Groups (cgroups)

Limit amount of resources used per process

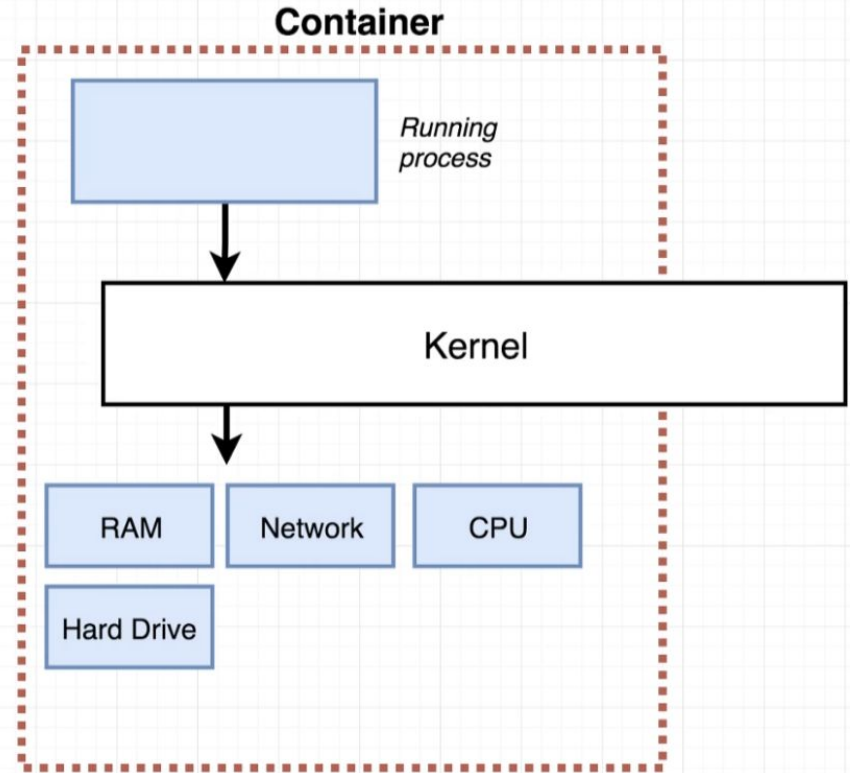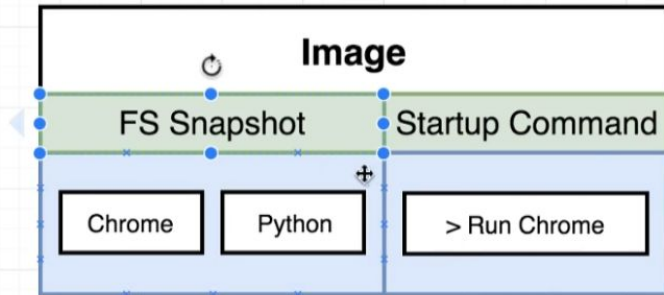| Memory | CPU Usage | HD I/O |
| Network Bandwith | | |

5. A container..

5. A container..

Container

Chrome

Kernel

Portion of each
made available to
process

Hard Drive

Network

RAM

CPU

5. A container..

Image

FS Snapshot	Startup Command
Chrome Python	> Run Chrome

Container

Running process

Kernel

RAM   Network   CPU

Hard Drive
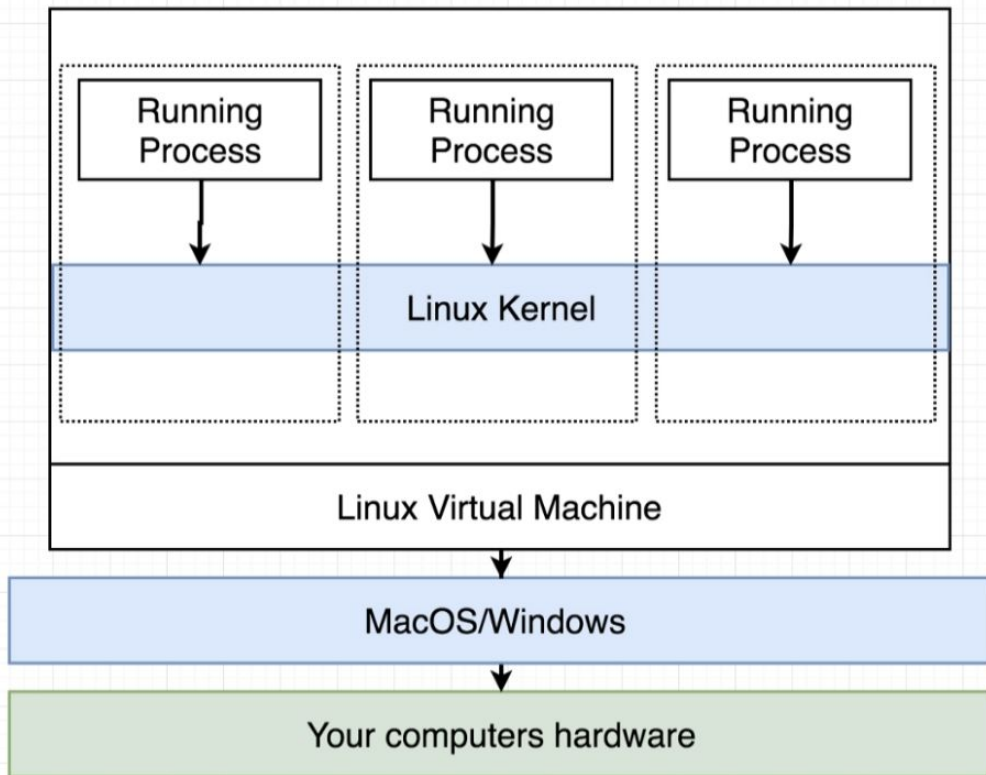
5. A container..

6. How your computer is running Docker


```
Server: Docker Engine - Community
 Engine:
  Version:          20.10.0
  API version:      1.41 (minimum version 1.12)
  Go version:       go1.13.15
  Git commit:       eeddea2
  Built:            Tue Dec  8 18:58:04 2020
  OS/Arch:          linux/amd64
  Experimental:     true
 containerd:
  Version:          v1.4.3
  GitCommit:        269548fa27e0089a8b8278fc4fc781d7f65a939b
 runc:
  Version:          1.0.0-rc92
  GitCommit:        ff819c7e9184c13b7c2607fe6c30ae19403a7aff
 docker-init:
  Version:          0.19.0
  GitCommit:        de40ad0
```