Docker

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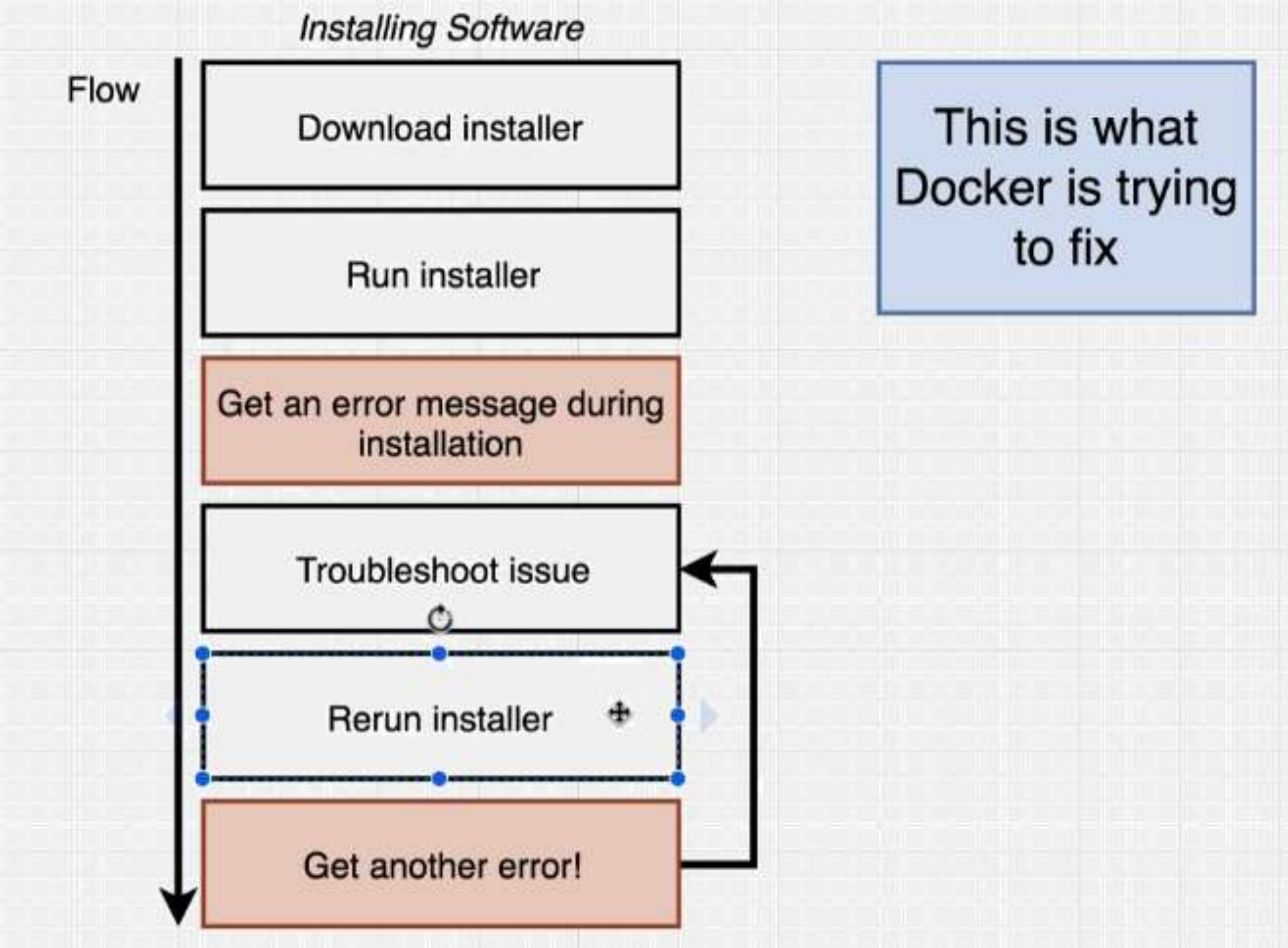
Installing Software



Installing Software

Flow

Download installer

Run installer

Get an error message during installation

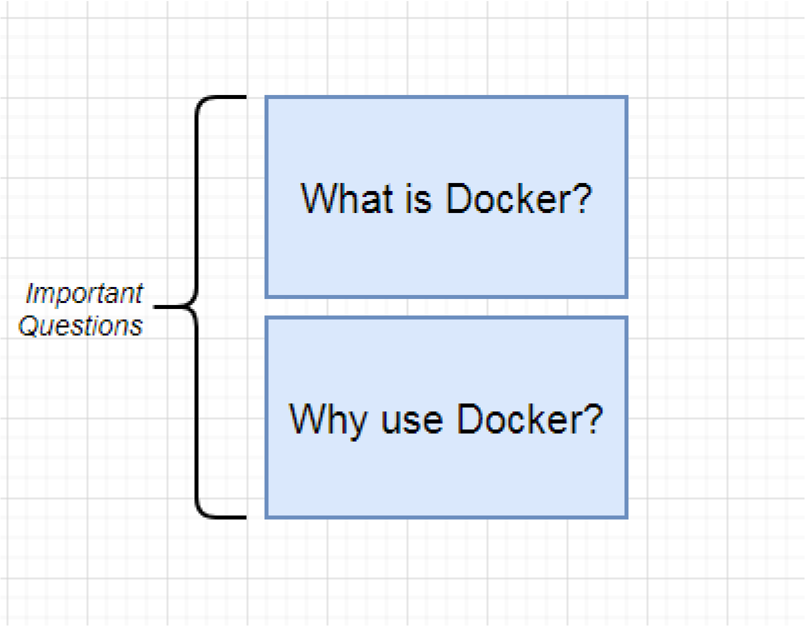
Troubleshoot issue

Rerun installer

Get another error!

This is what Docker is trying to fix

Docker

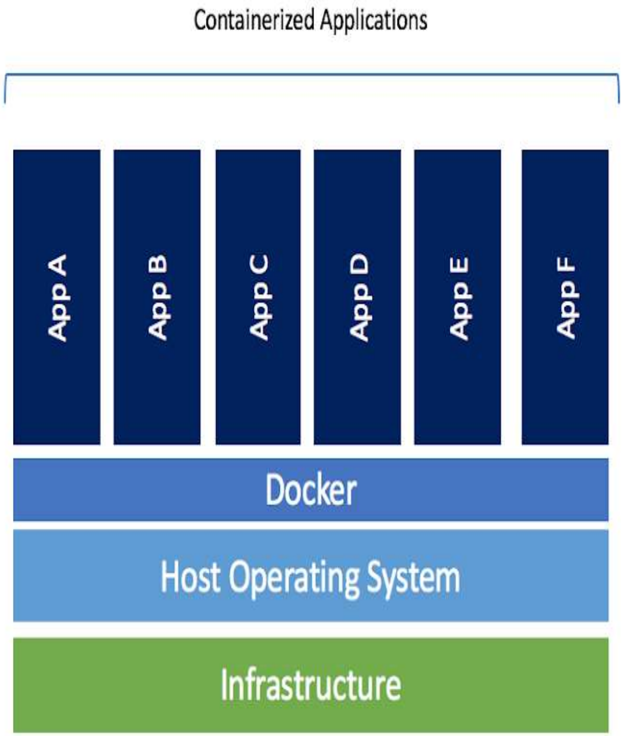


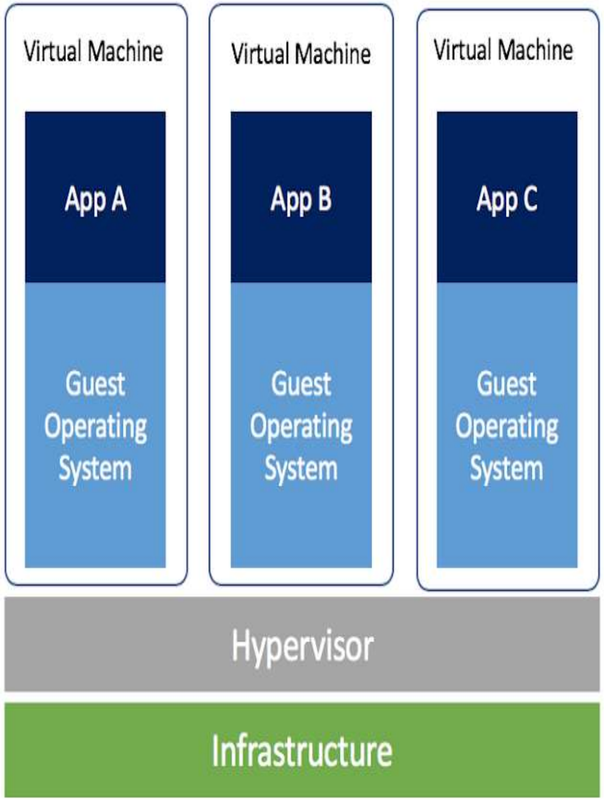
Important Questions

What is Docker?

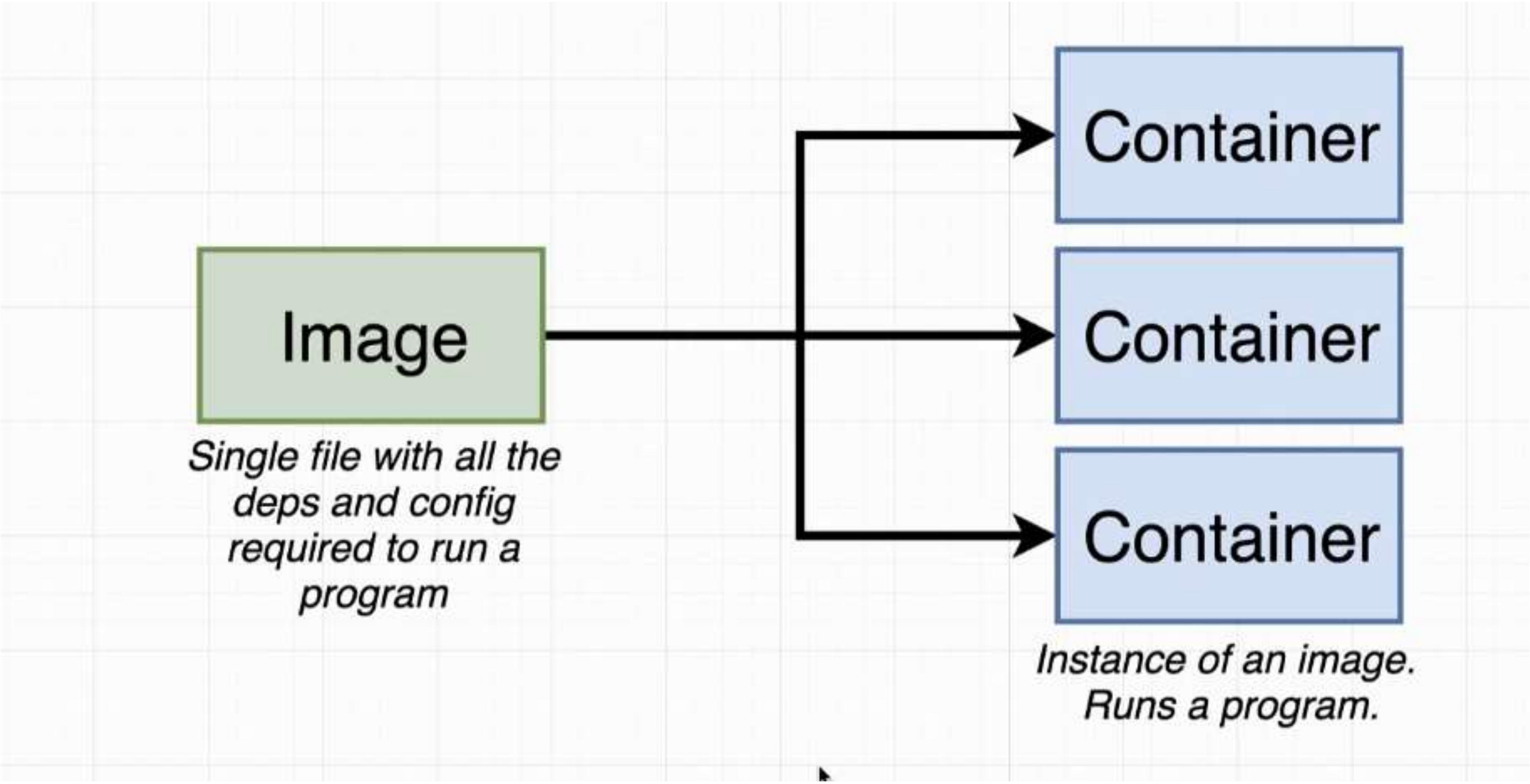
Why use Docker?

VM Vs Containerized





What is Docker



Image

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

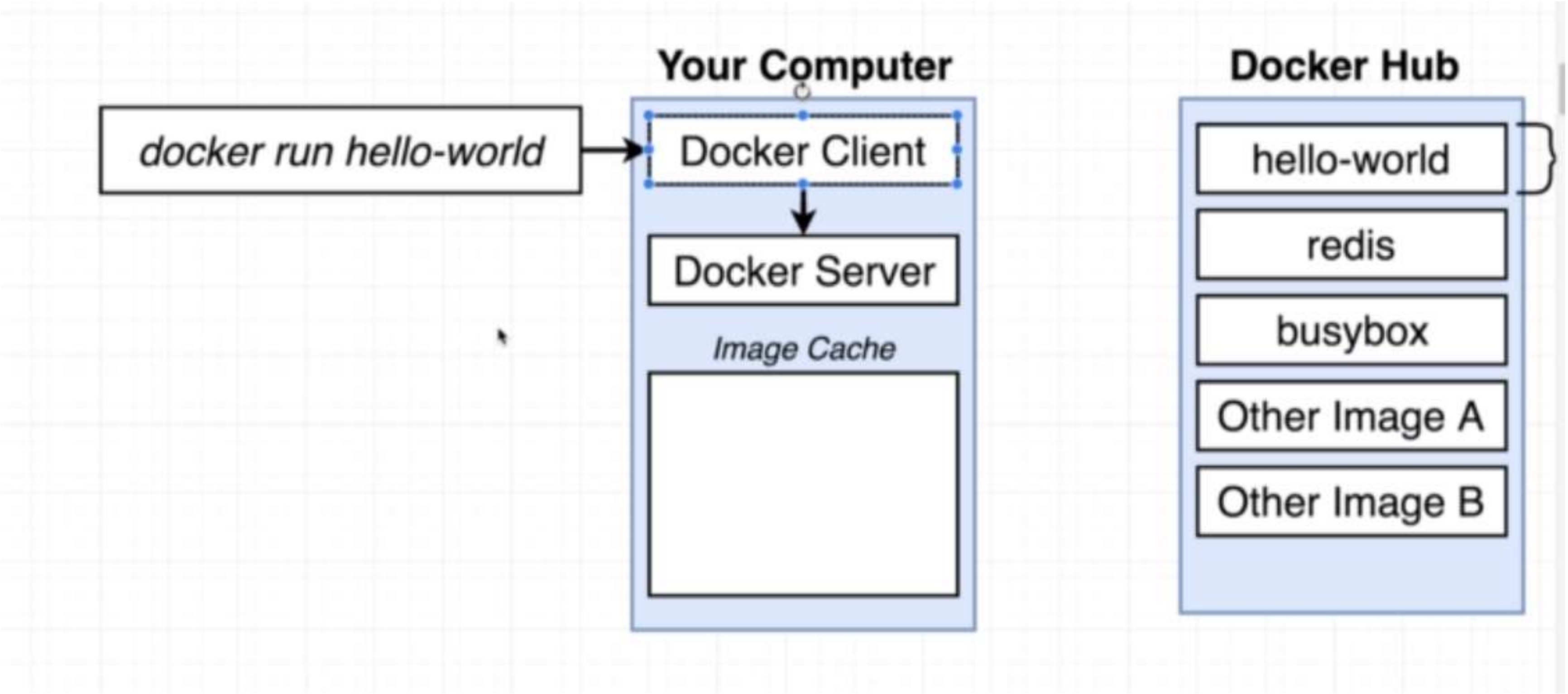
Container

Container

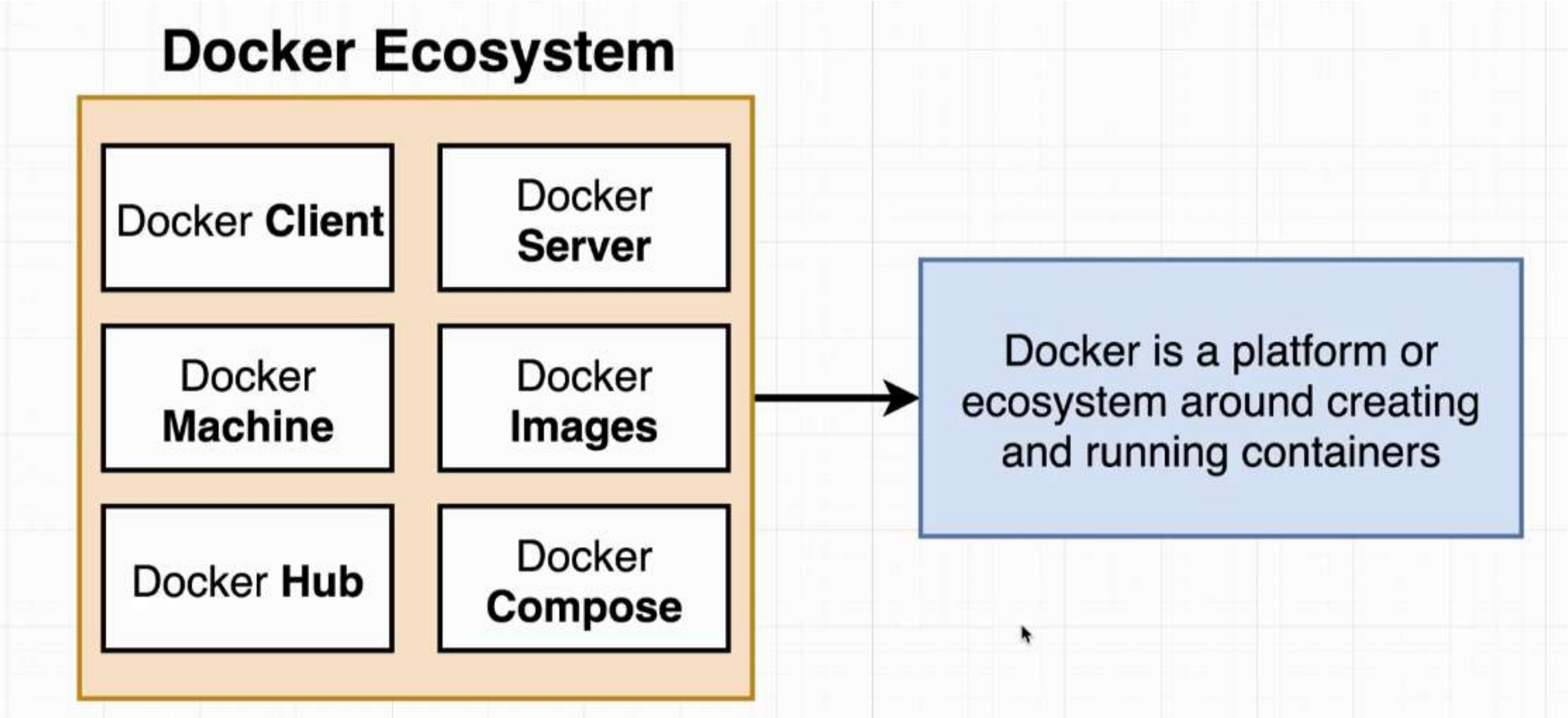
Container

Instance of an image. Runs a program.

What is Docker



Docker Ecosystem



Docker Ecosystem

Docker **Client**

Docker **Server**

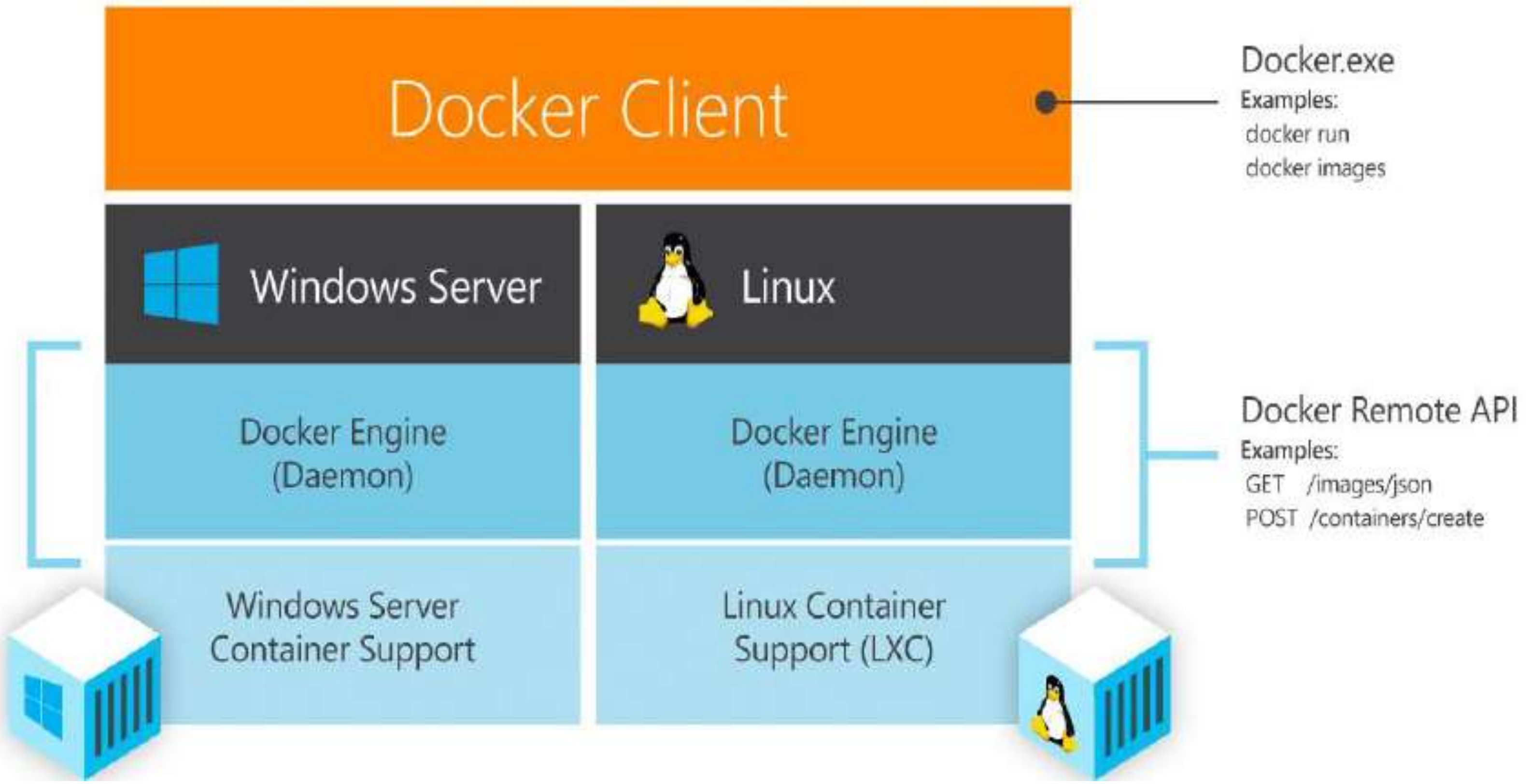
Docker **Machine**

Docker **Images**

Docker **Hub**

Docker **Compose**

Docker is a platform or ecosystem around creating and running containers

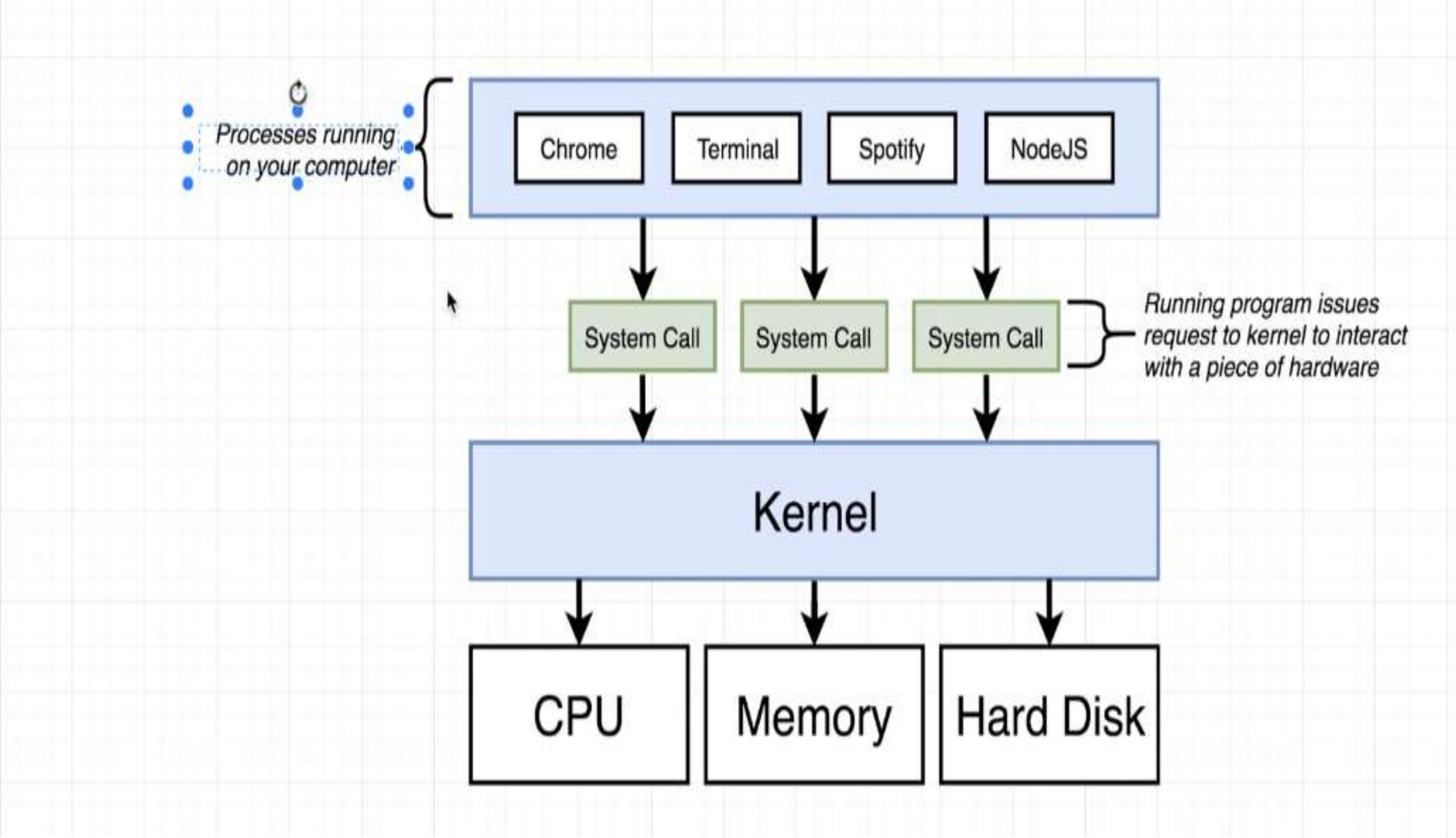


Docker.exe
Examples:
docker run
docker images

Docker Remote API
Examples:
GET /images/json
POST /containers/create

Docker Engine

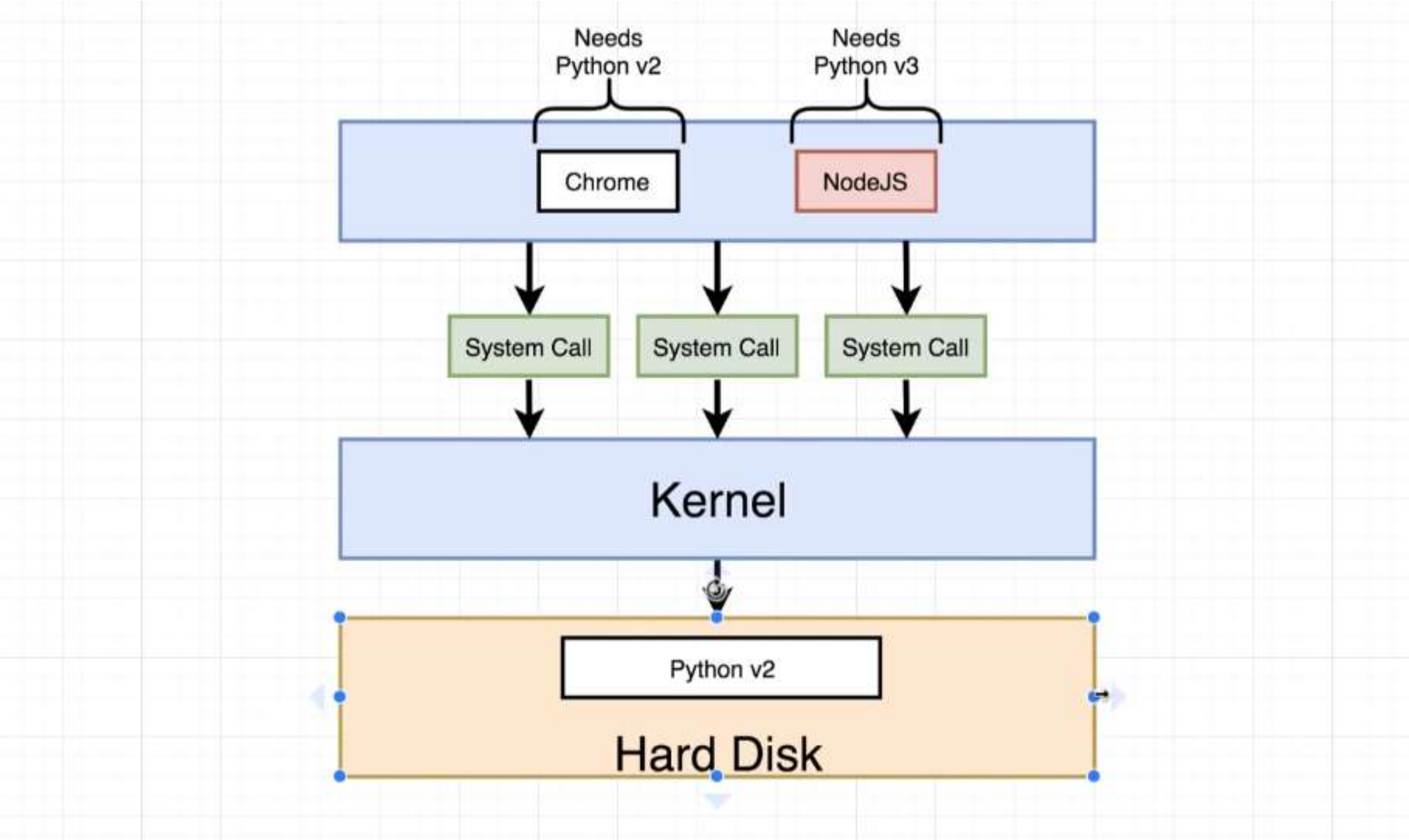
- Docker Demon
  - Docker demon listen for All API request and manages all Docker objects (Discussed in next slide)
- Docker Client
  - Docker client makes request to Docker demon for managing Docker objects
- Client types
  - Rest client /Docker SDK
  - CLI
  - User Interface
- Docker Registry
  - All Docker images are store in Docker registry
- On client request, Docker demon pulls Docker images from registry and creates various Docker objects



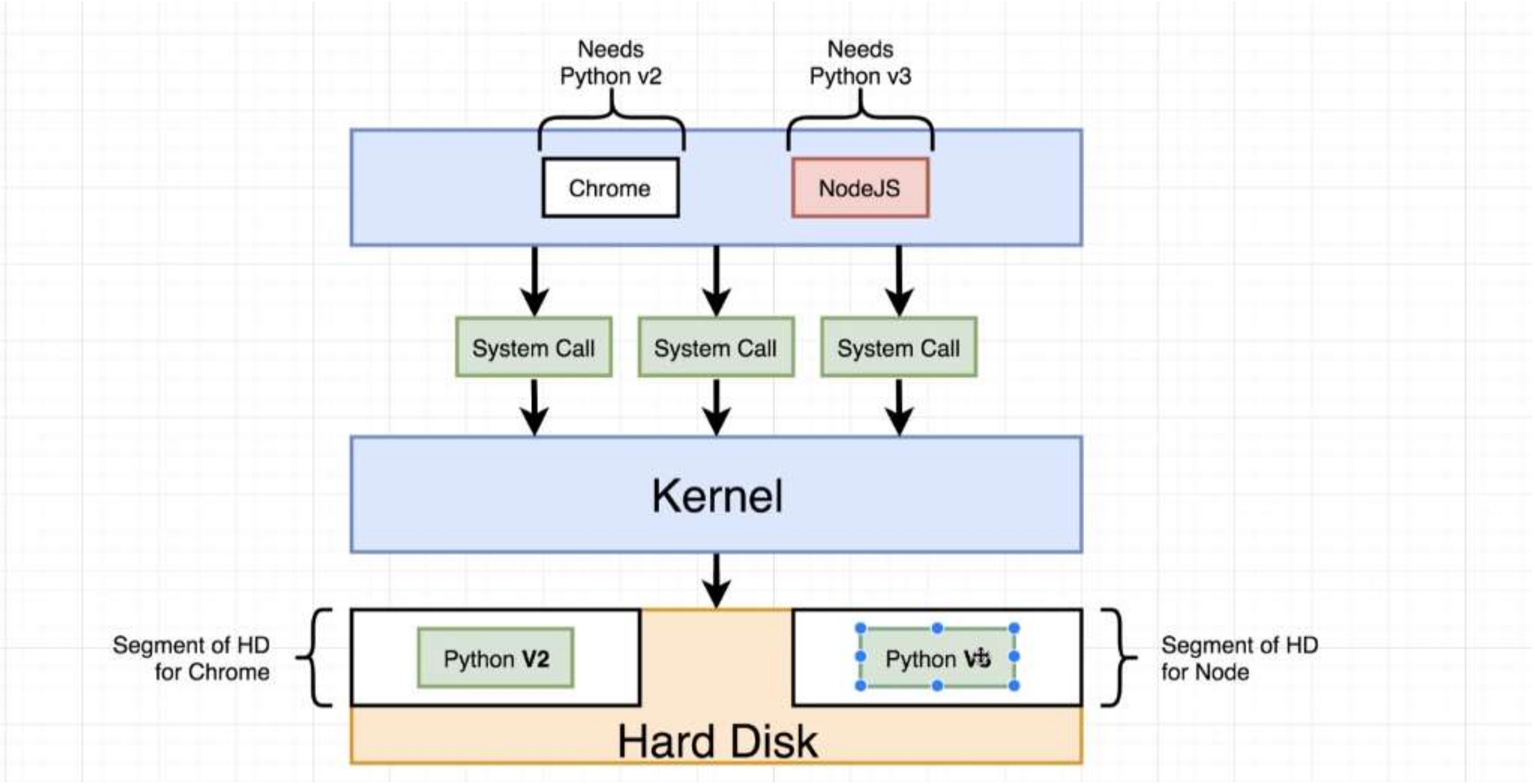
Processes running on your computer

Running program issues request to kernel to interact with a piece of hardware

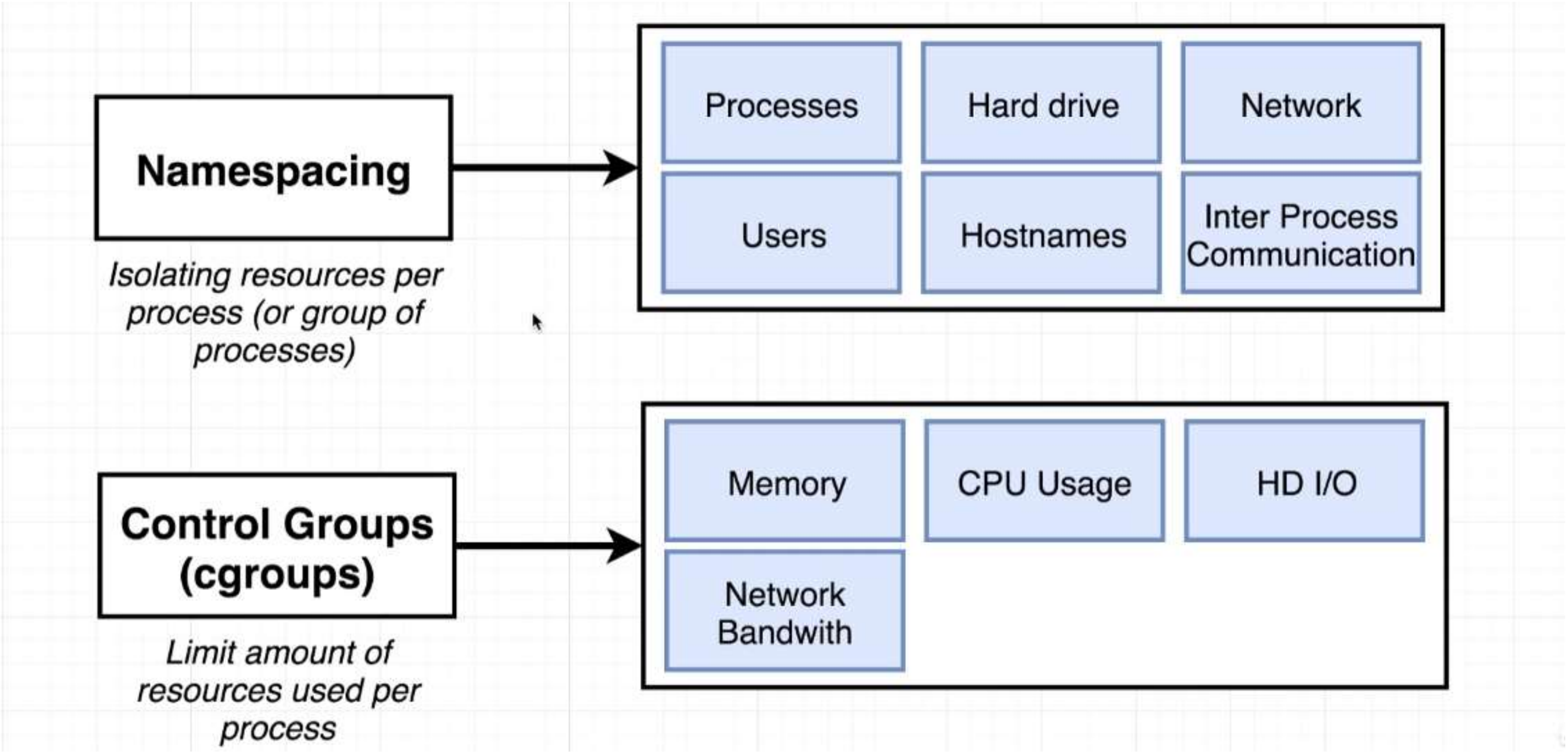
Name Spacing



Name spacing



Namespacing



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

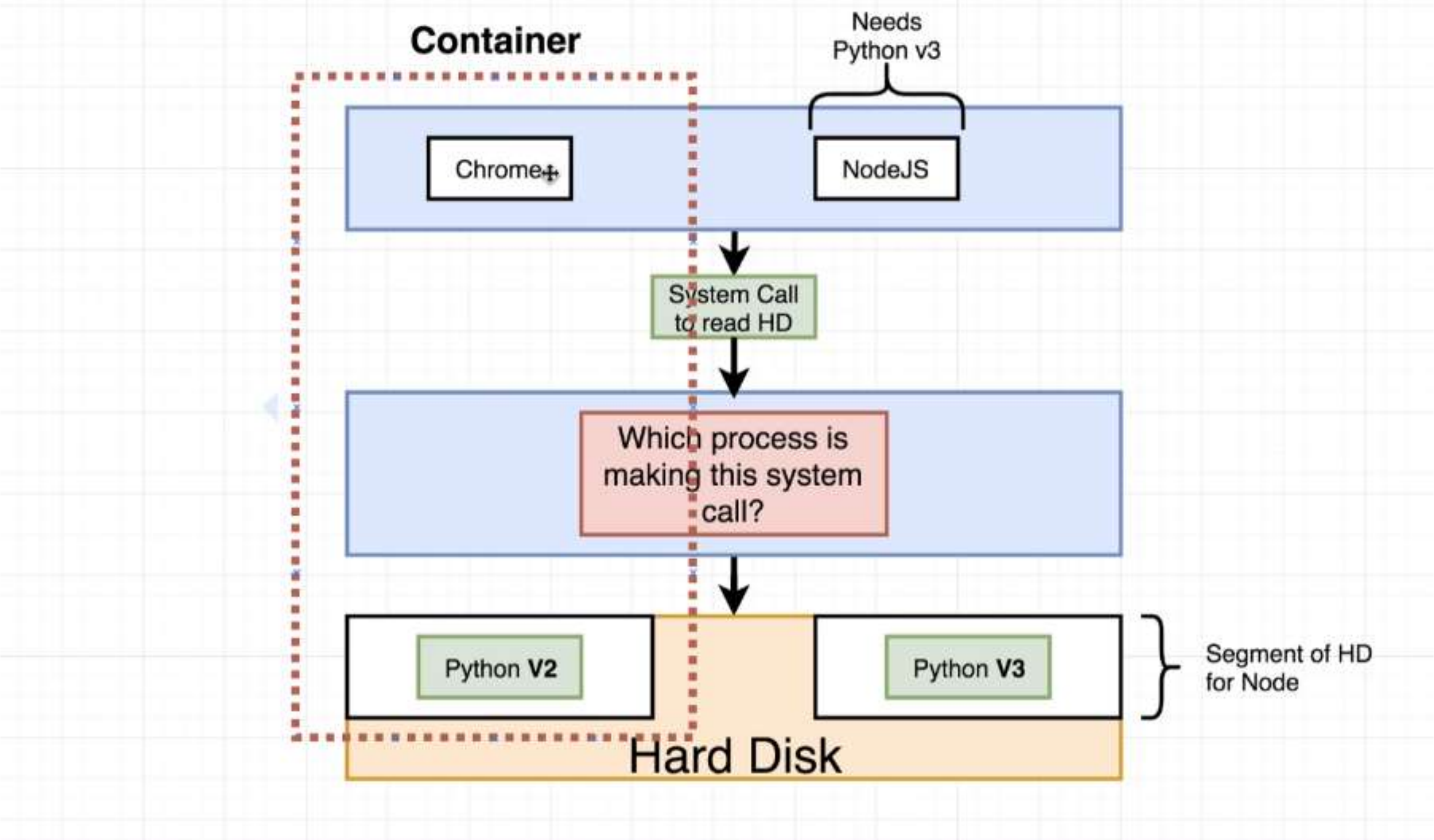
Memory

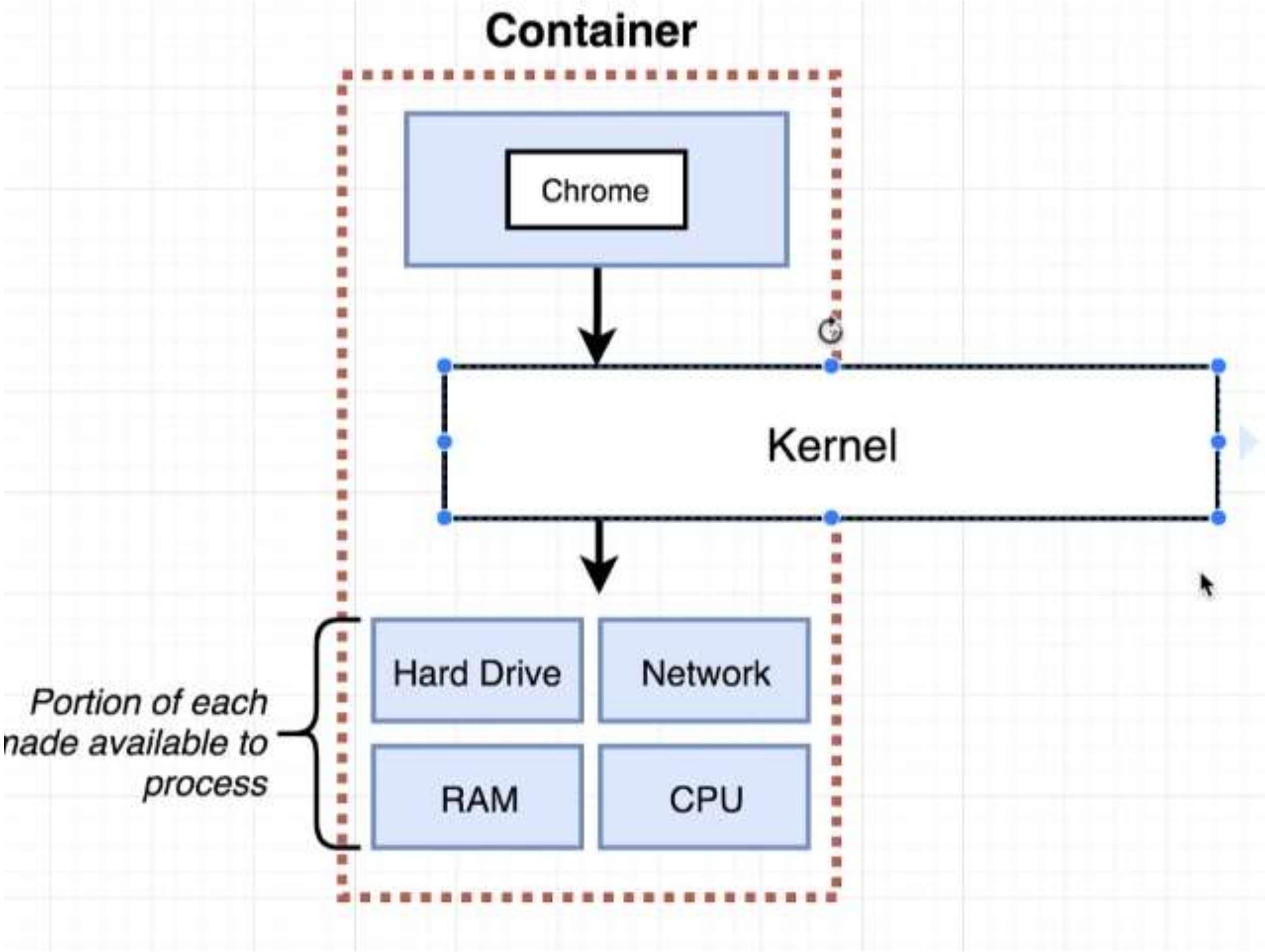
CPU Usage

HD I/O

Network Bandwith

Namespacing





Container

Chrome

Kernel

Hard Drive

Network

RAM

CPU

Portion of each
nade available to
process

Container

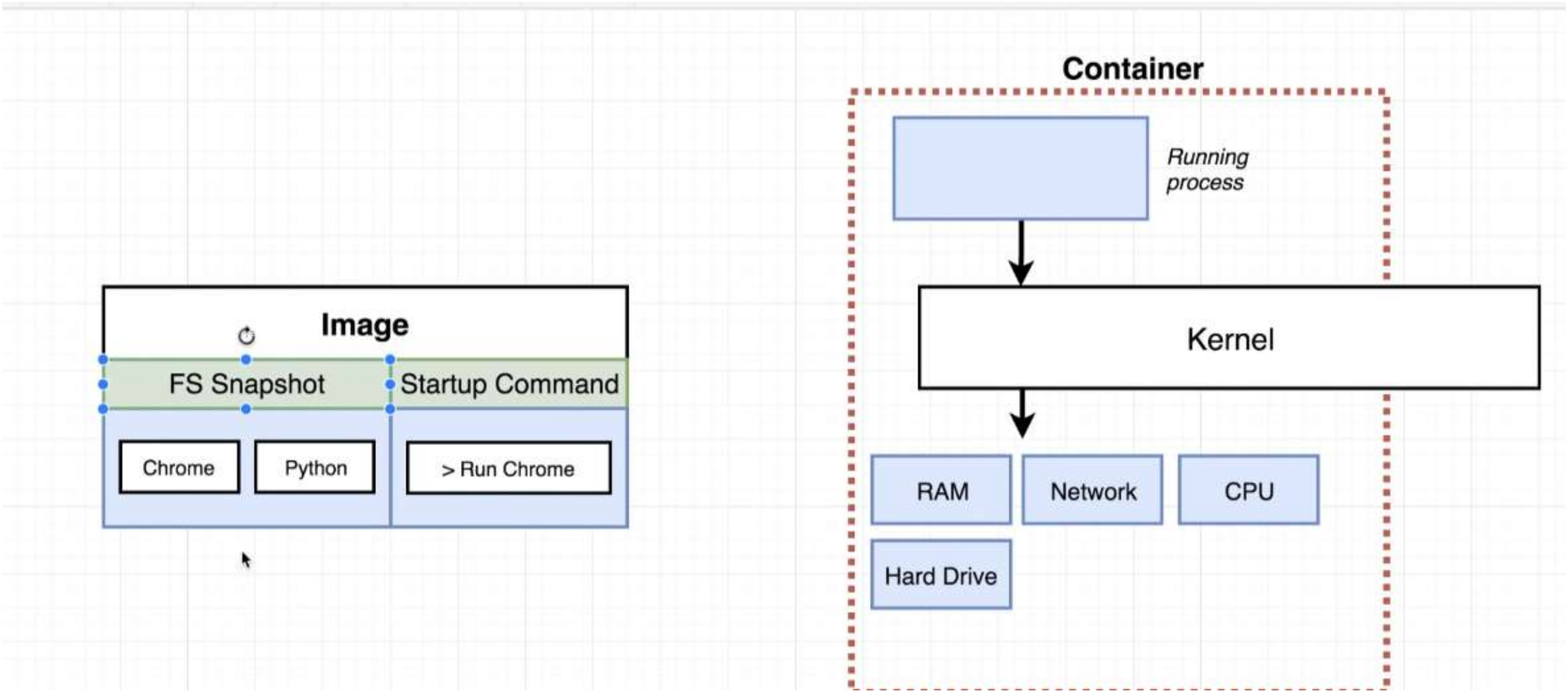
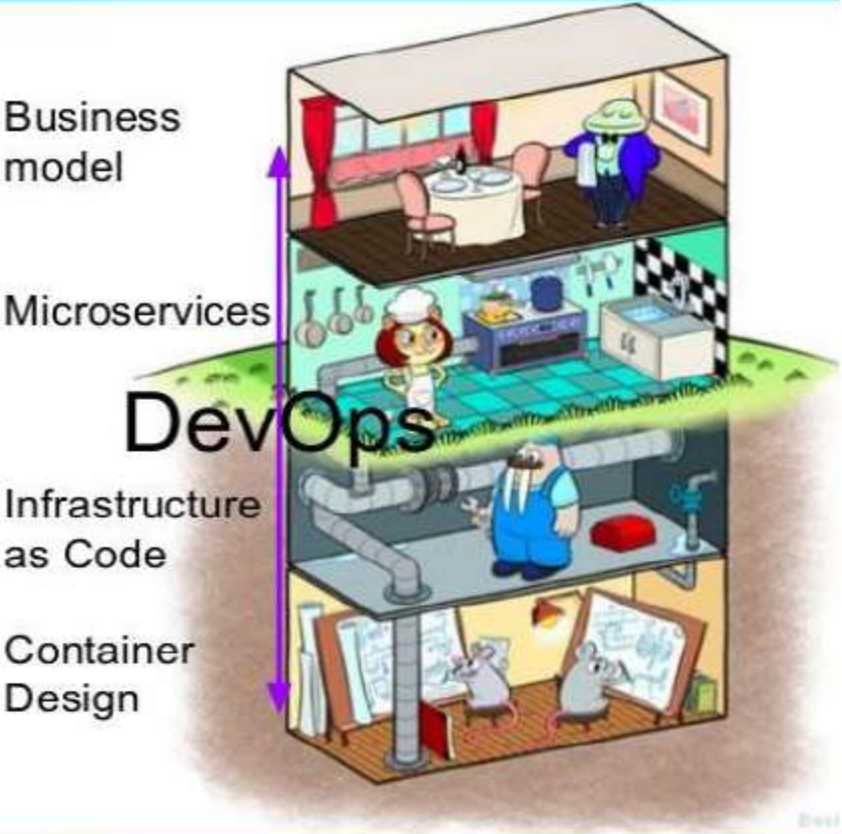


Image
FS Snapshot
Startup Command
Chrome
Python
> Run Chrome
Container
Running process
Kernel
RAM
Network
CPU
Hard Drive

The Docker Stack



Business model

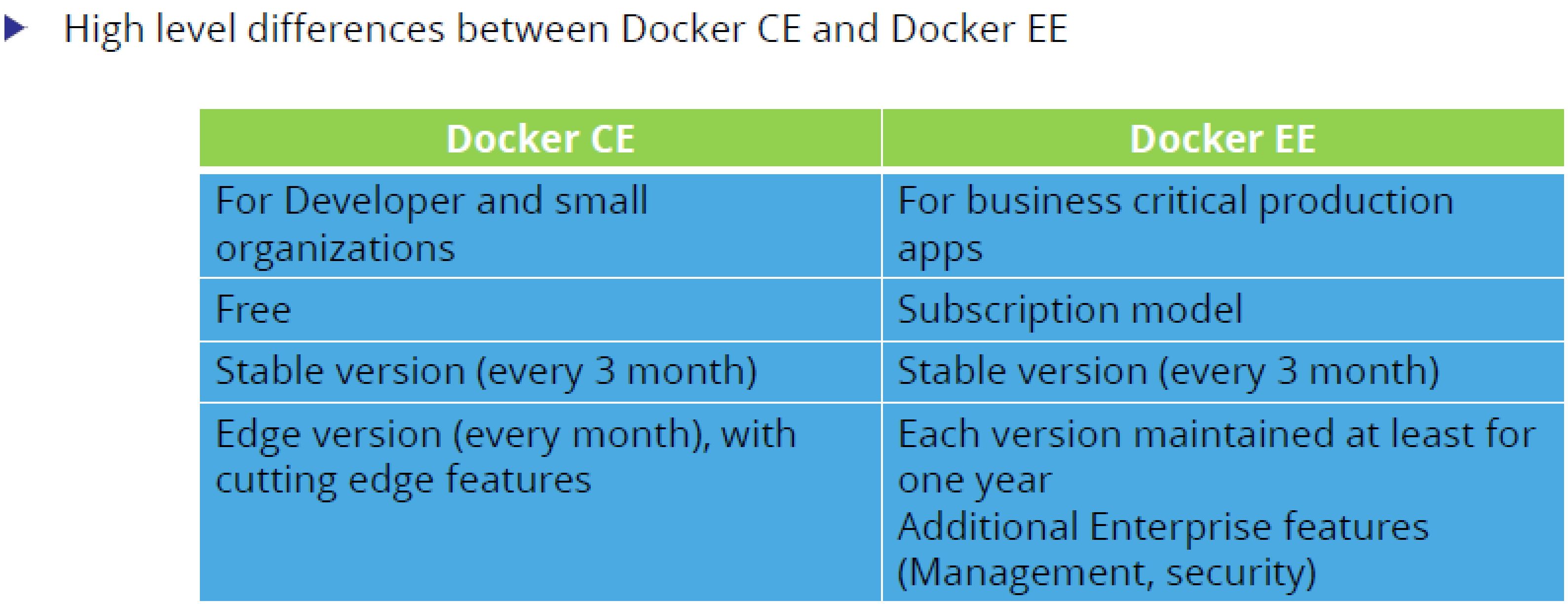
Microservices

DevOps

Infrastructure as Code

Container Design

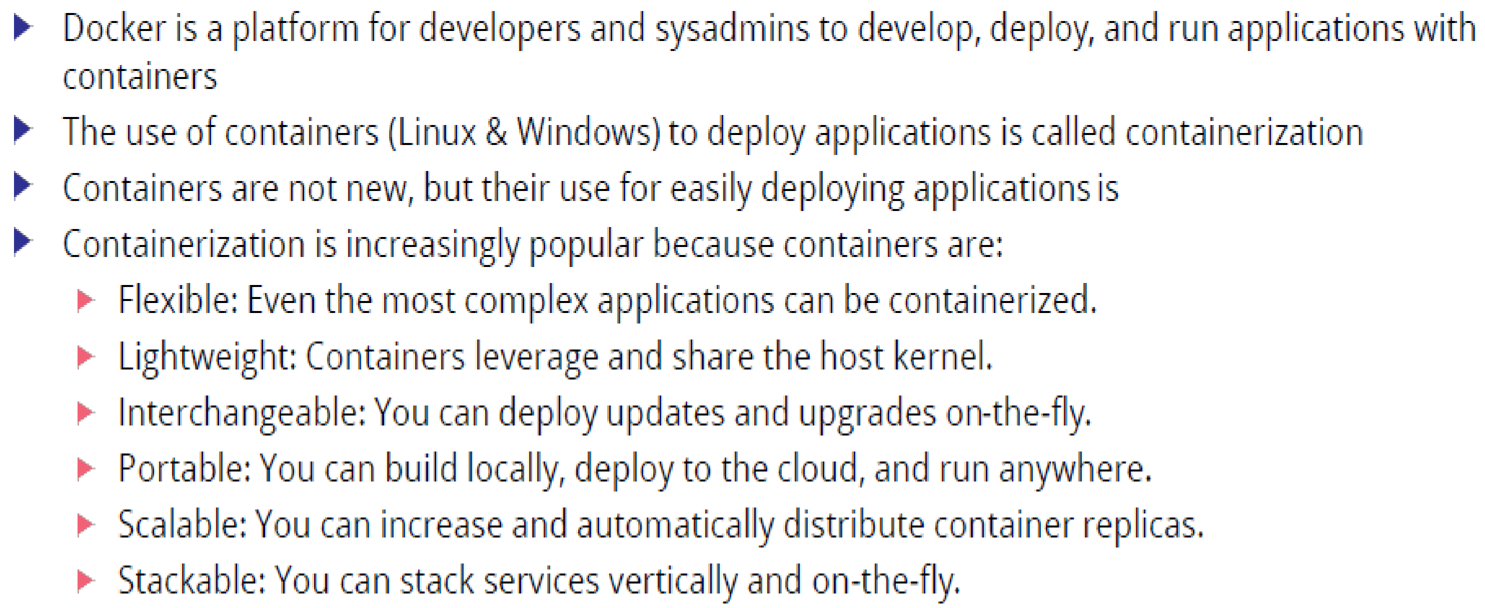
Docker CE Vs Docker EE



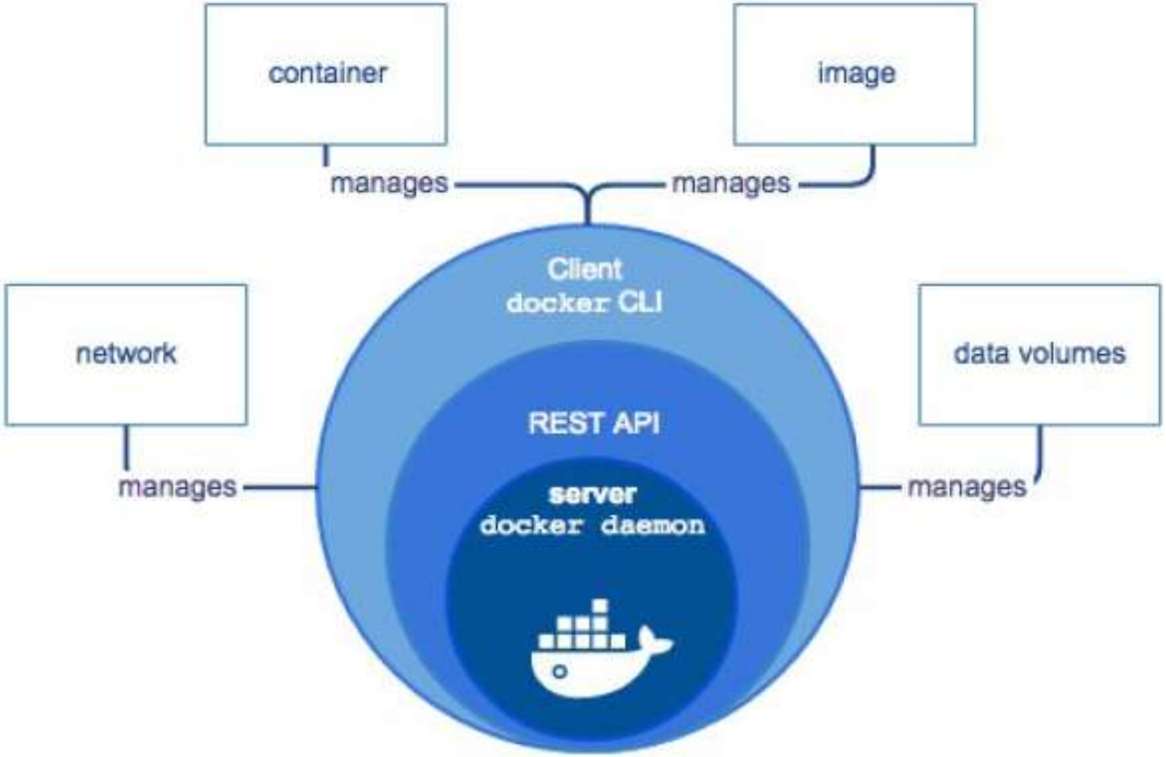
- High level differences between Docker CE and Docker EE

Docker CE	Docker EE
For Developer and small organizations	For business critical production apps
Free	Subscription model
Stable version (every 3 month)	Stable version (every 3 month)
Edge version (every month), with cutting edge features	Each version maintained at least for one year Additional Enterprise features (Management, security)

Docker Container Basic



- Docker is a platform for developers and sysadmins to develop, deploy, and run applications with containers
- The use of containers (Linux & Windows) to deploy applications is called containerization
- Containers are not new, but their use for easily deploying applications is
- Containerization is increasingly popular because containers are:
  - Flexible: Even the most complex applications can be containerized.
  - Lightweight: Containers leverage and share the host kernel.
  - Interchangeable: You can deploy updates and upgrades on-the-fly.
  - Portable: You can build locally, deploy to the cloud, and run anywhere.
  - Scalable: You can increase and automatically distribute container replicas.
  - Stackable: You can stack services vertically and on-the-fly.


container
image
manages
manages
Client
docker CLI
network
data volumes
REST API
manages
manages
server
docker daemon

The End