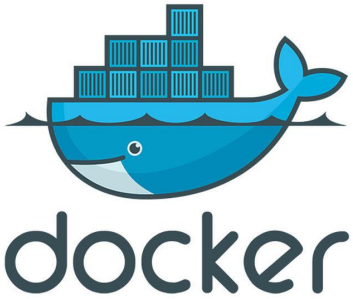
How its made: Docker



A presentation by:
Joar Rutqvist and Pontus Broberg

Content

- What is Docker?
- Docker, “Under the hood”
  - Implementation
- Docker vs VM
- Summary

What is Docker?

What is Docker?

- Open source, Linux based tool
- Uses “Containers” to package your application
- Your application can run on any other Linux machine

Docker, “Under the Hood”

How would you implement docker?

- Same OS
- Separated programs
- No access to host OS

A good start: Processes

- Some isolation
- Good support for resource distribution
- Problem: Shared OS and configuration

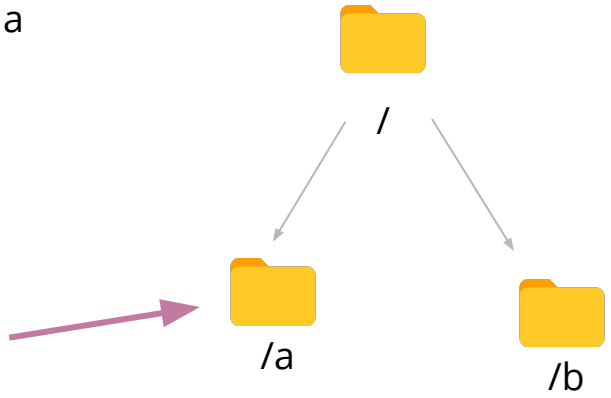
Example: Filespace isolation

A: Creates a file "**file.txt**" in **/**

B: Writes a lot of gibberish into any file named **file.txt** in **/**

Isolating file systems

We can change what a process sees as **/**



Crucially only a thinks that**/a** is actually **/**

Before running it we "trick" a that **this** is **/**

We may now trick **b** that **/b** is **/**, making it unable to access **/a/file.txt**

We have split a and b's file handling into separate **namespaces**

Namespaces: What you can see

- File system *Each container only sees its private sub-filesystem*
- Process IDs
- Users
- Networking
- ...

We also need: Control Groups

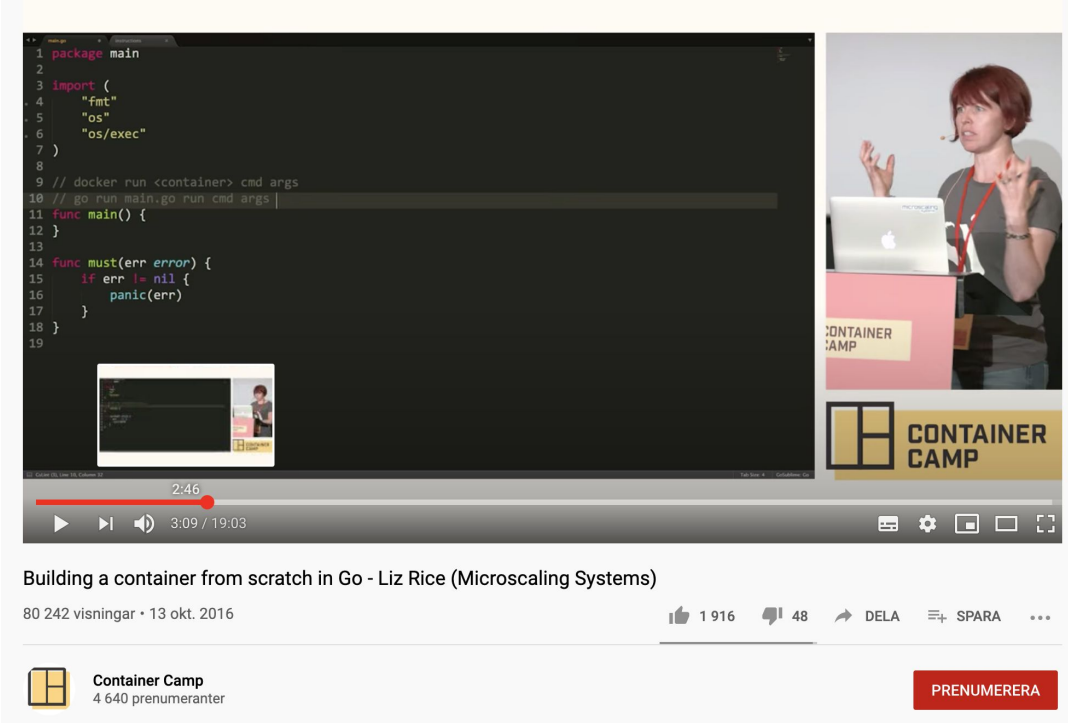
Limiting computer resources

- CPU *"give each container 10% of the CPU only"*
- Memory
- Disk I/O
- Device permissions
- ...

WOULD YOU LIKE TO KNOW MORE?

Please check out the talk **Building a container from scratch in Go** by **Liz Rice** from the conference **Container Camp** (you will get it even if you haven't used Go) .

There you will get a quick look into how these ideas might be implemented using the Go programming language.

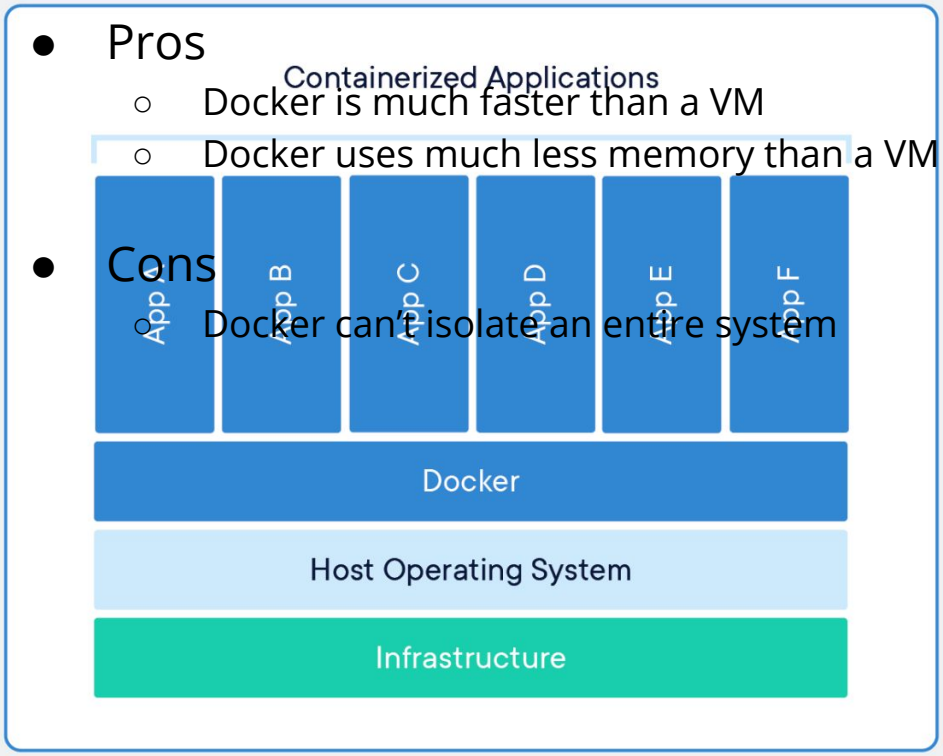


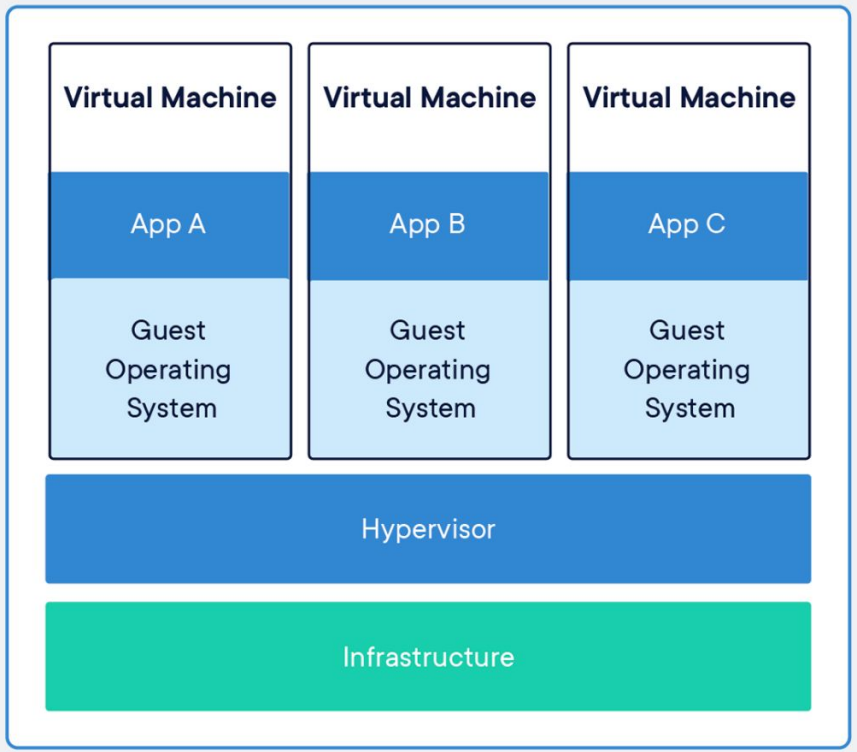
Docker vs VM

Docker vs Virtual Machine

src: https://www.docker.com/resources/what-container#/package_software

- Pros
  - Docker is much faster than a VM
  - Docker uses much less memory than a VM
- Cons
  - Docker can't isolate an entire system





Summary

Summary

Docker provides containers

Container environments are identical everywhere

This is achieved by isolating

Thank You For Listening!