Docker for Fun and Profit

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Seven Bridges Genomics

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Outline

Docker for
Fun and
Profit

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What is
Docker?

What's Inside
the Box?

sbgsdk

1 **What is Docker?**

2 **What's Inside the Box?**

3 **sbgsdk**

What is Docker?

http://www.docker.io
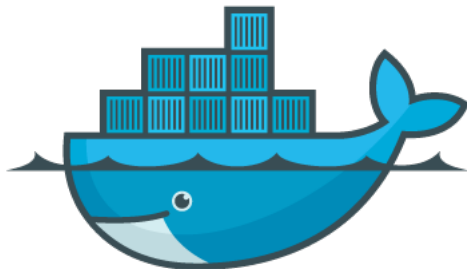
Docker is an open-source project to easily create lightweight, portable, self-sufficient containers from any application

What does it mean?

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What is
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sbgsdk

- Open source
  - Code available on Github:
    https://github.com/dotcloud/docker
  - Written in Go
  - Actively developed, lots of community contributors
- Lightweight, portable, self-sufficient containers
  - No virtual machine, runs on host hardware/kernel
  - Isolated from host using kernel features such as control groups, process/network namespacing
- ...from any application
  - Point of view that influences design

Origin

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- Created by than Dotcloud to support their PaaS business
- Open-sourced as 'cool peace of tech'
- Caught like wildfire - company renamed recently to Docker inc.

What does it do?

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- System daemon with an HTTP API
- Command line tool
- Image packaging format
- Repository with pre-cooked images

But I heard it's picky about Linux version

- It was, but not that much
- As of last week and version 0.7 it's even less picky
- Plans to make it cross platform (Linux/BSD/Solaris)

What's Inside the Box?

- Linux containers (lxc)
- Control groups (cgroups)
- Union mount file system (aufs)

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- Boston/Belgrade based BioIT startup
- We're hiring! Checkout `https://jobs.sbgenomics.com`
- Platform for processing genome data, data management, visualization, project coordination
- Lots of 3rd party apps
- One app does only part of the job - pipelines

Use case

- We want to enable outside developers to deploy applications to our platform
- Reproducibility is a big concern
- Process isolation, resource control - Yes, please

SDK

- Application protocol
- Python implementation
- Docker as a package format: existing tooling, only diff is transported
- Docker as a system service: daemon runs and monitors processes, process isolation, resource control

Developer machine   Master server   Slave servers

| | SDK | Docker | → | | Docker registry | ← | | Runtime | Docker | |