Building with Docker

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docker

Old Way

New Way

Problem: Shipping Code

source: Jérôme Petazzoni, "The Future of Distributed Applications"

Problem: Shipping Goods

source: Jérôme Petazzoni, "The Future of Distributed Applications"

Solution: Intermodal Container

Solution: Linux Container
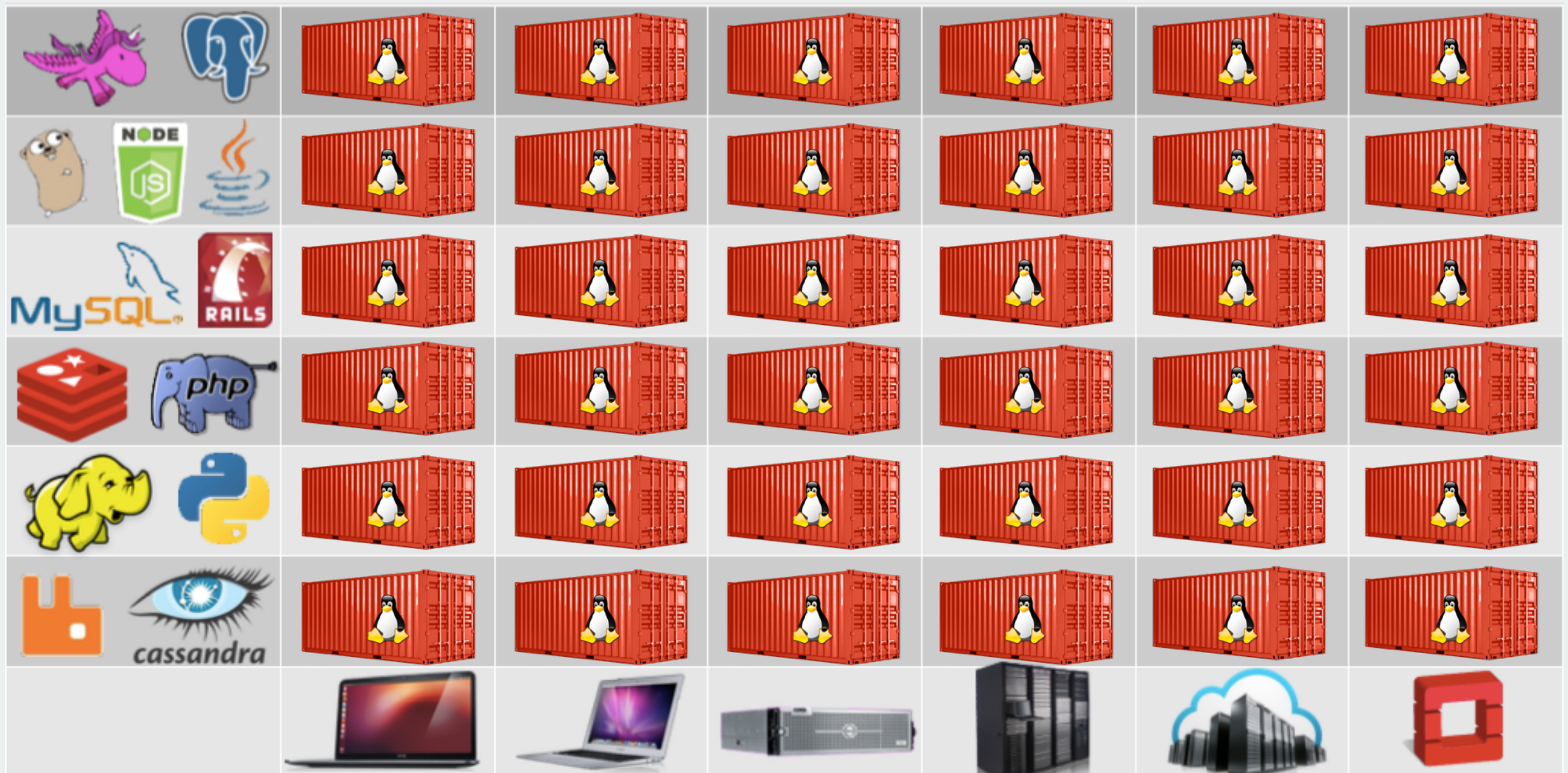
What is Docker?

Docker Engine allows you to package an application with all of its dependencies into a standardized unit for software development.

Docker Philosophy: In almost all cases, you should only run a single process in a single container. Decoupling applications into multiple containers makes it much easier to scale horizontally and reuse containers.
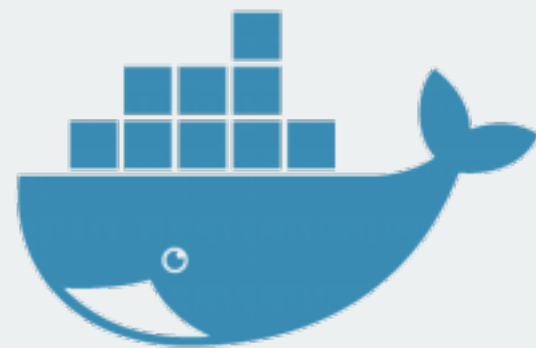
Docker Image: In Dockerland, there are **images** and there are **containers**. The two are closely related, but distinct. To use a programming metaphor, if an image is a class, then a container is an instance of a class—a runtime object.
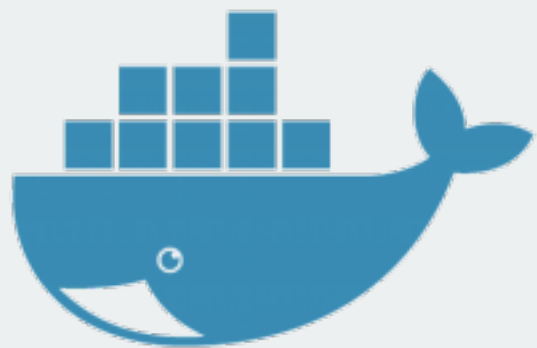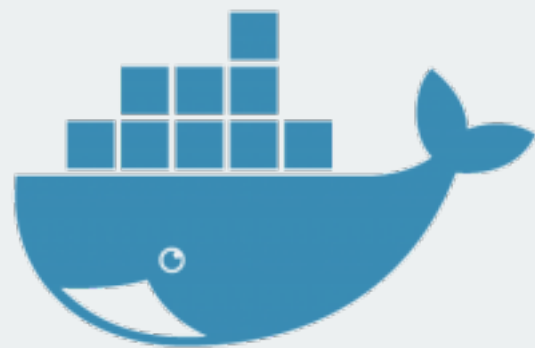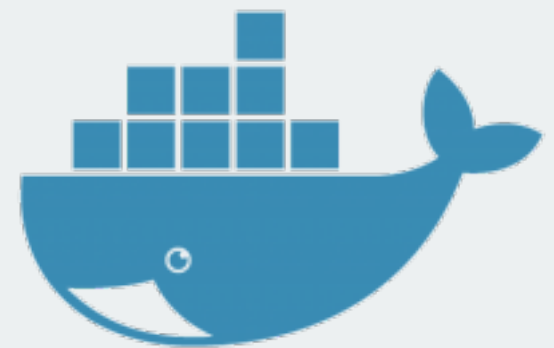
Port Mapping   Env Vars   Persistent Storage   Registry

What are Docker building blocks?

Chroot: A chroot is a way of isolating applications from the rest of your computer, by putting them in a jail. However, with chroot you can specify another directory to serve as the top-level directory for the duration of a chroot.

Linux Namespaces: An elegant way to "detach" your processes from a specific layer of the kernel and assign them to a new one.

Linux Control Groups: By using cGroups, system administrators gain fine-grained control over allocating, prioritizing, denying, managing, and monitoring system resources.

Docker File System: copy-on-write file system approach which forms layered FS known as UnionFS.

Dockerfile: receipt for building.

DOCKER

Chroot	LXC/LibContainer

Layer FS	cGroups	Namespace

Registry	Linux Kernel

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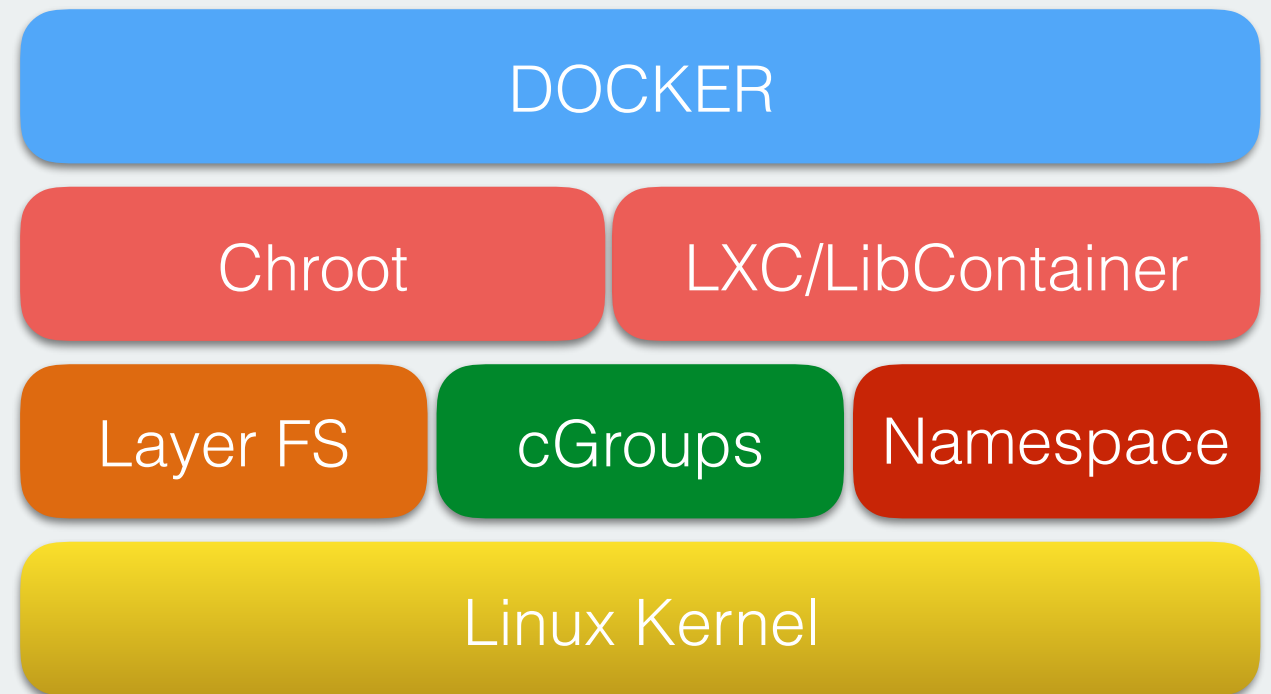
Glossary

Immutable Infra: A pattern or strategy for managing services in which infrastructure is divided into "data" and "everything else". "Everything else" components are replaced for every deployment, rather than being updated in-place. Same as USA Economy vs European economy

Stateless App: an **application** program that does not record data generated in one session – such as information about user settings and events that occurred -- for use in the next session with that user.

Micro-Services: software architecture style in which complex applications are composed of small, independent processes communicating with each other using language-agnostic APIs.

Loose Coupling: an approach to interconnecting the components in a system or network so that those components, also called elements, depend on each other to the least extent practicable.

Twelve Factor App: Check it out if you have a chance - http://12factor.net

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