PostgreSQL in Containers at Scale

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&

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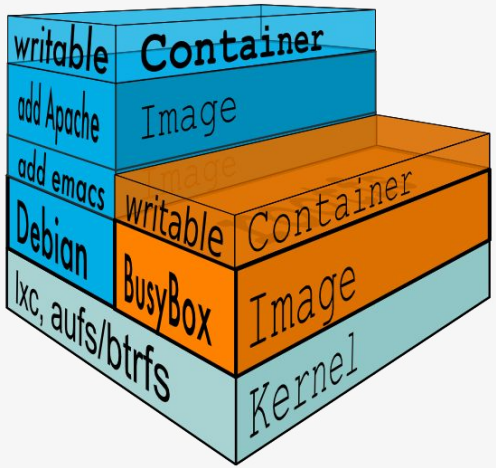
http://bit.ly/postscale

Goals

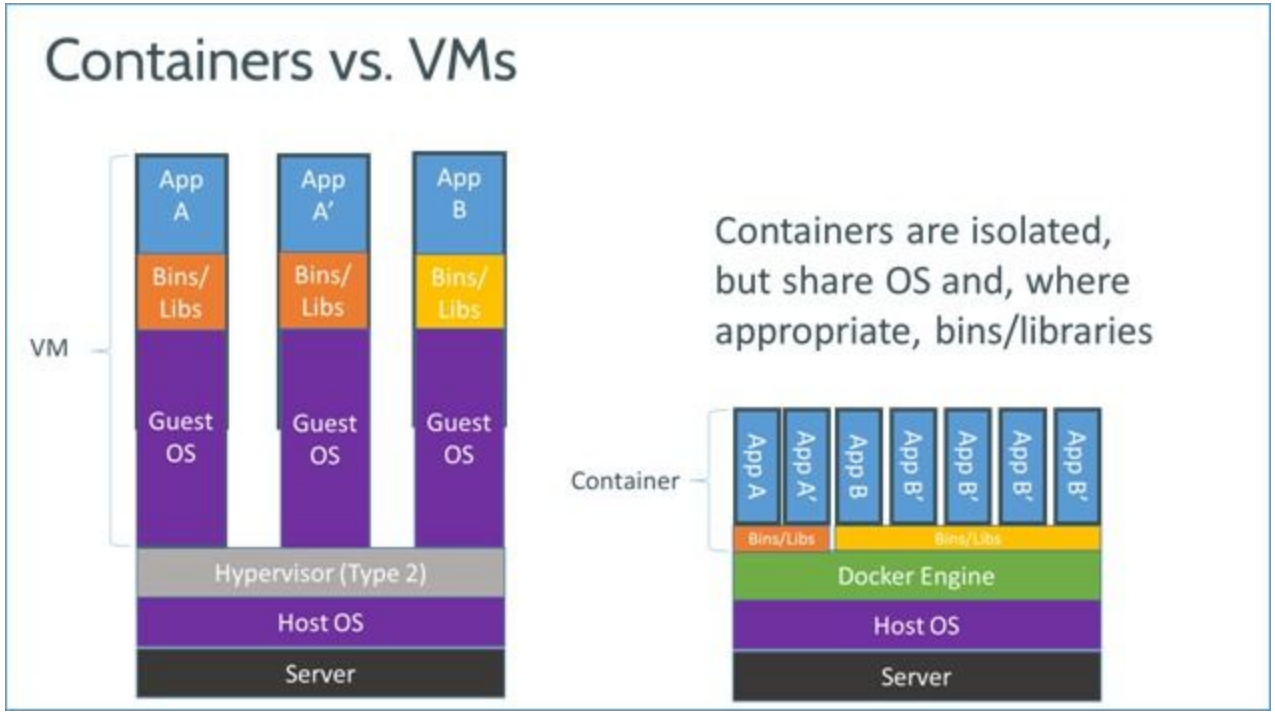
- Introduction to containers, kubernetes, and OpenShift
- Watch the easiest replication and scaling in your life
- Deeper dive on the Container work

Defining Containers



- In Docker parlance, a *container* is a running instance of an *image*
- Based on Linux containers (namespaces, control groups)
- Combines file system *layers* into a "Union File System"
- Includes all of the components necessary to run a process, store persistent data, or both

Containers


Containers vs. VMs
VM
App A
App A'
App B
Bins/ Libs
Bins/ Libs
Bins/ Libs
Guest OS
Guest OS
Guest OS
Hypervisor (Type 2)
Host OS
Server
Containers are isolated, but share OS and, where appropriate, bins/libraries
Container
App A
App A'
App B
App B'
App B'
App B'
App B'
Bins/Libs
Bins/Libs
Docker Engine
Host OS
Server

Containers are Not Enough

Orchestration, Scheduling, Isolation are Still Needed

kubernetes

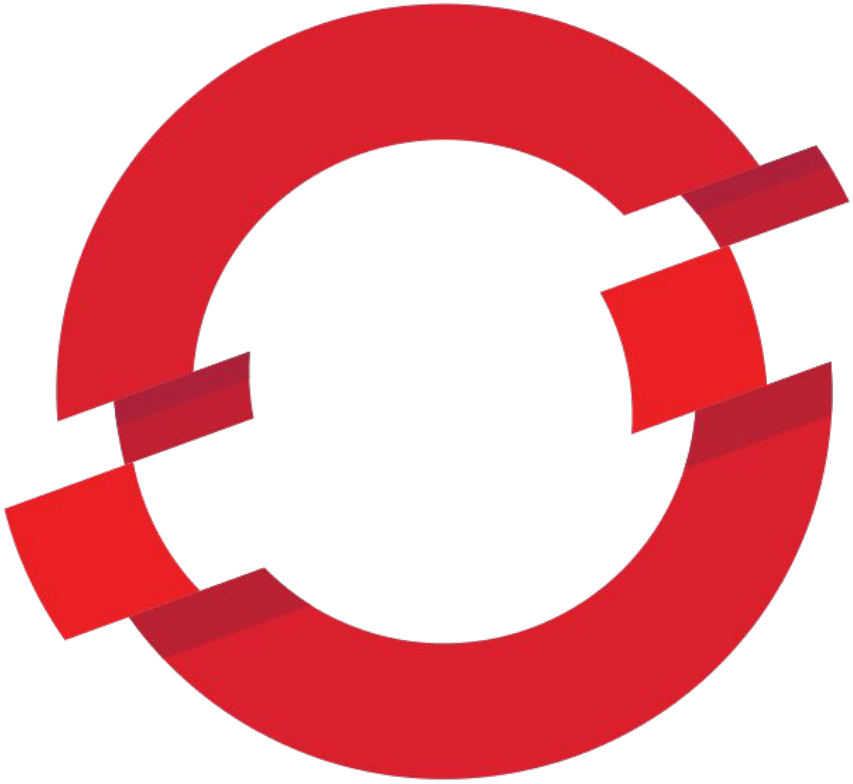
by Google

History

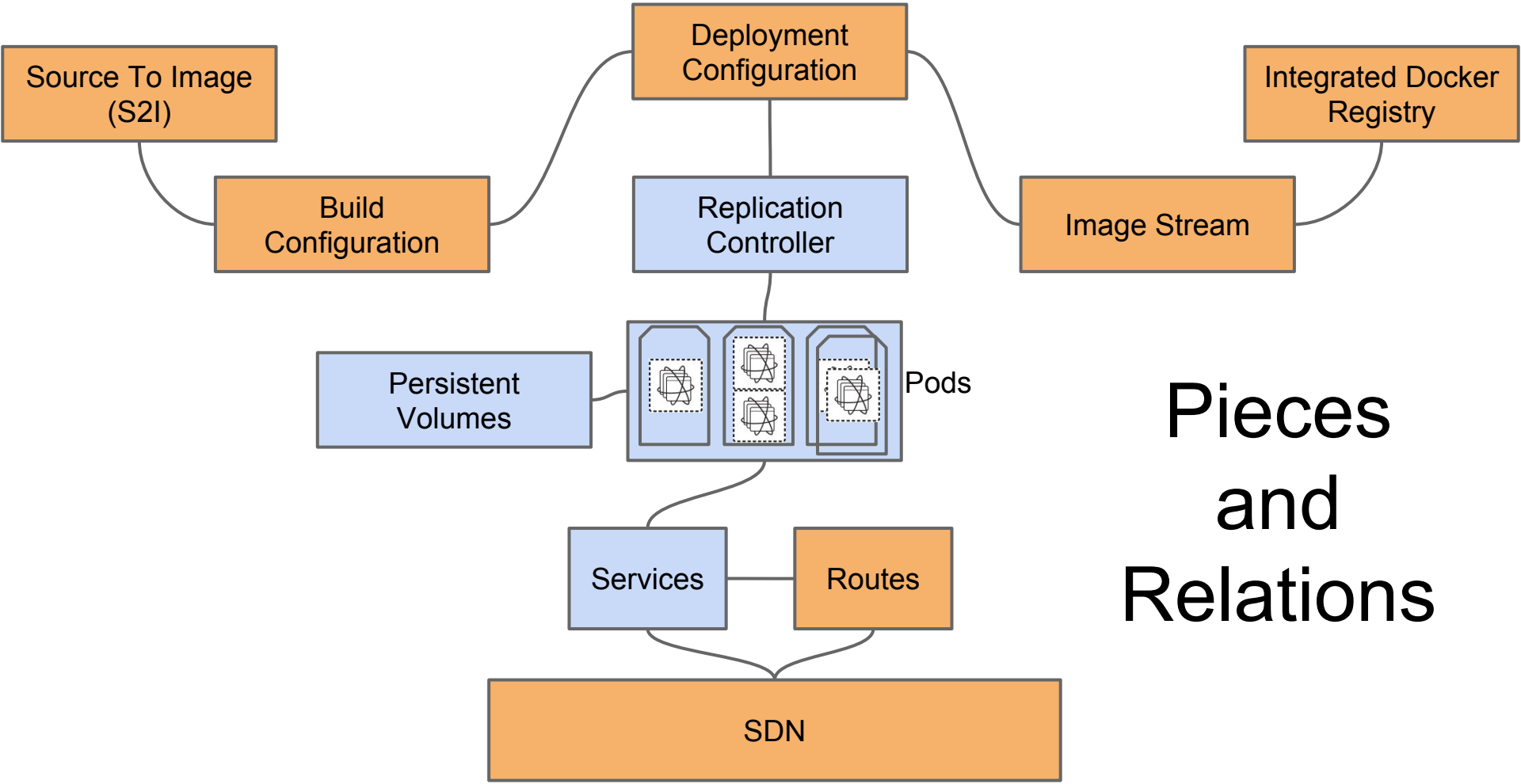
- Comes out of Borg and Omega
- ~7000 containers a second inside Google
- Next iteration they wanted to Open Source

BUT...

Developer Experience, Managing Applications, And SysAdmin Experience



OPENSHIFT

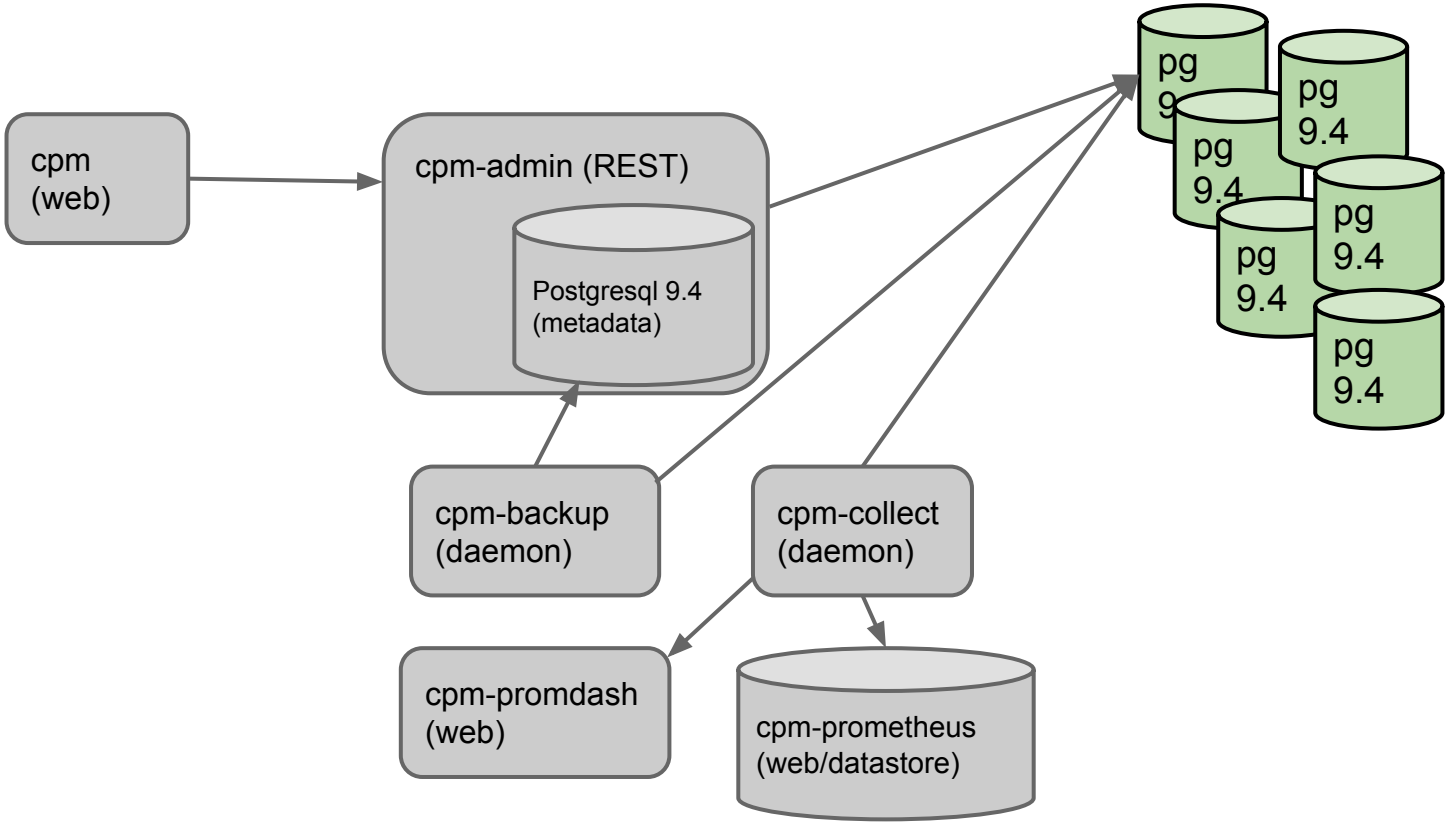


Pieces and Relations

OpenShift Demo

Building Docker Container

CPM Architecture



Crunchy PostgreSQL Manager Demo

- Uses Docker for provisioning
- golang + angular.js + PostgreSQL 9.4
- multi-host
- Prometheus, monitoring
- extensible
- open-sourced at https://github.com/CrunchyData/crunchy-postgresql-manager
- creating a port to OpenShift
- jeff.mccormick@crunchydata.com

Take homes

- We are in a time of container explosion
- Kubernetes And OpenShift get you beyond containers
- Good times are ahead of your with containers + Postgresql
- Upstream FIRST!!!

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