Containers in Production

A really **short** introduction to the container story at GS SHOP

Vivek Juneja

Container Platform Team

GS SHOP

IT Innovation Center

2015 - Current

A 1 hour presentation

In 10 minutes or less :)

http://bit.do/mesosgs

Agenda

1. Our approach
2. Experience
3. What are we working on

Agenda

1. Our approach
2. Experience
3. What are we working on


Give me 10
containers
to run my app
CONTAINER is NOT
like a VM
STFUHERO.COM

"CONTAINER is a runtime unit of a distributed application"

ThoughtWorks®

Clients Services Products

TECHNOLOGY RADAR

Search A-Z FAQs

Techniques

Inverse Conway Maneuver

TRIAL

Conway's Law asserts that organizations are constrained to produce application designs which are copies of their communication structures. This often leads to unintended friction points. The '**Inverse Conway Maneuver**' recommends evolving your team and organizational structure to promote your desired architecture. Ideally your technology architecture will display isomorphism with your business architecture.

the morning paper

an interesting/influential/important paper from the world of CS every weekday morning, as selected by Adrian Colyer

The O-Ring Theory of DevOps

NOVEMBER 11, 2015

SUBSCRIB

never miss

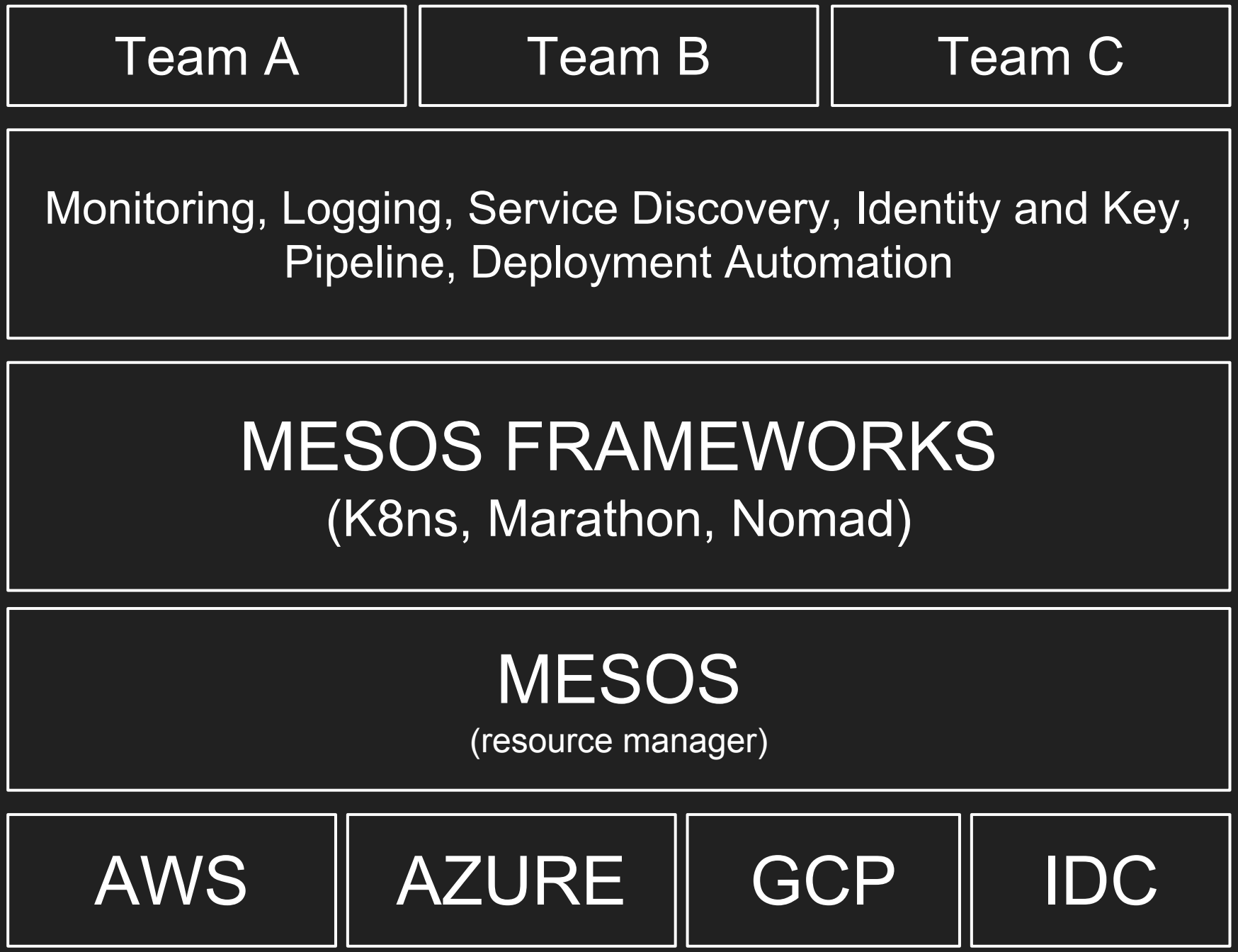
Morning Pa

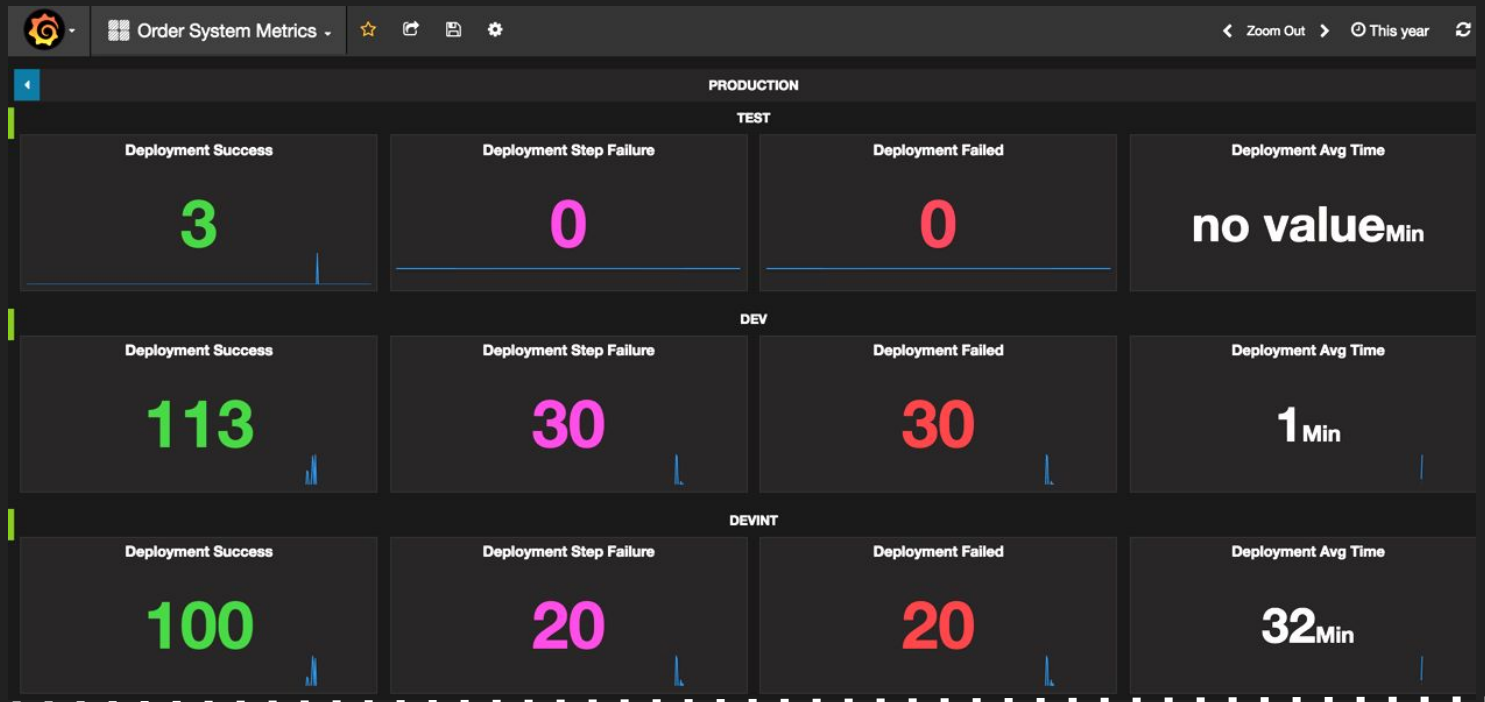
The O-Ring Theory of Economic Development – Kremer 1993

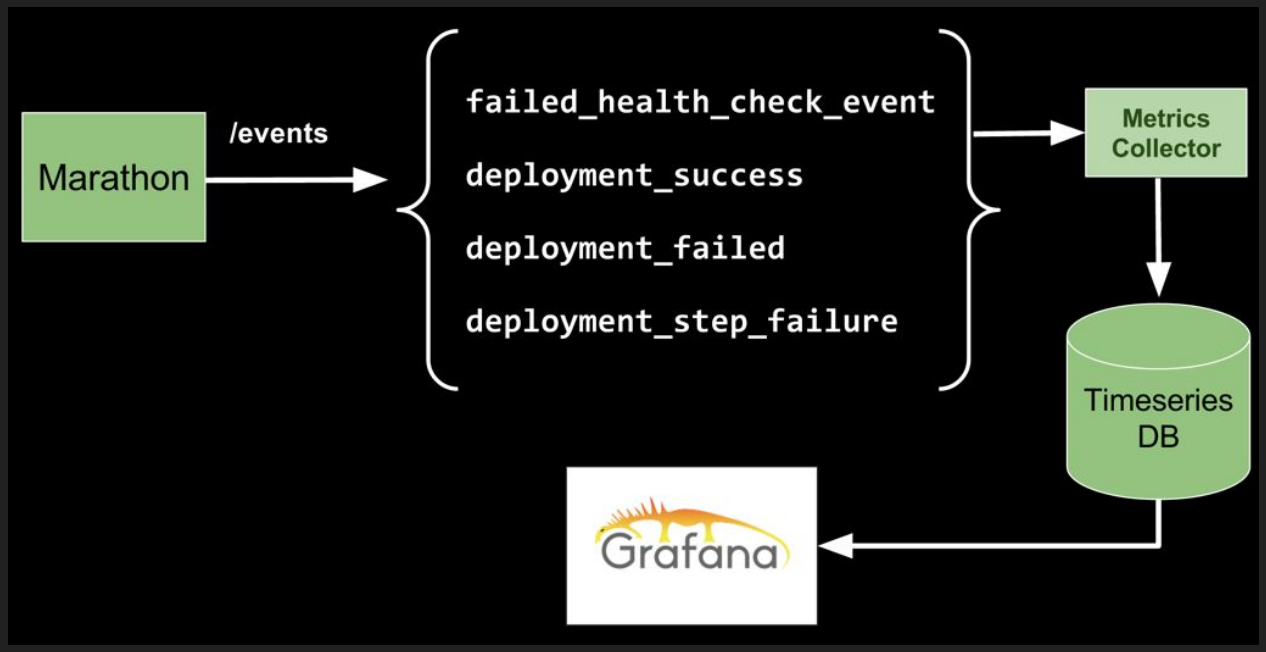
Something a little different today, loosely based on the paper cited above,

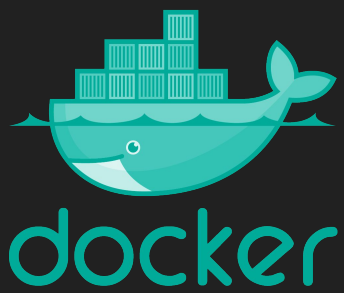
http://bit.do/oringtheory

METRICS	LOGGING	SERVICE DISCOVERY	BUILD AUTOMATION
DEPLOY AUTOMATION	SERVICE BOILERPLATE	MONITORING	PROVISIONING AUTOMATION
BASE IMAGE MANAGEMENT	BLUE-GREEN and CANARY RELEASES	DISTRIBUTED TRACING	KEY MANAGEMENT
COMPLIANCE MANAGEMENT	CLUSTER MANAGEMENT	STATEFUL SERVICE	CONTAINER AGNOSTIC


Team A
Team B
Team C
Monitoring, Logging, Service Discovery, Identity and Key, Pipeline, Deployment Automation
MESOS FRAMEWORKS
(K8ns, Marathon, Nomad)
MESOS
(resource manager)
AWS
AZURE
GCP
IDC


Order System Metrics
Zoom Out
This year
PRODUCTION
TEST
Deployment Success
3
Deployment Step Failure
0
Deployment Failed
0
Deployment Avg Time
no value Min
DEV
Deployment Success
113
Deployment Step Failure
30
Deployment Failed
30
Deployment Avg Time
1 Min
DEVINT
Deployment Success
100
Deployment Step Failure
20
Deployment Failed
20
Deployment Avg Time
32 Min

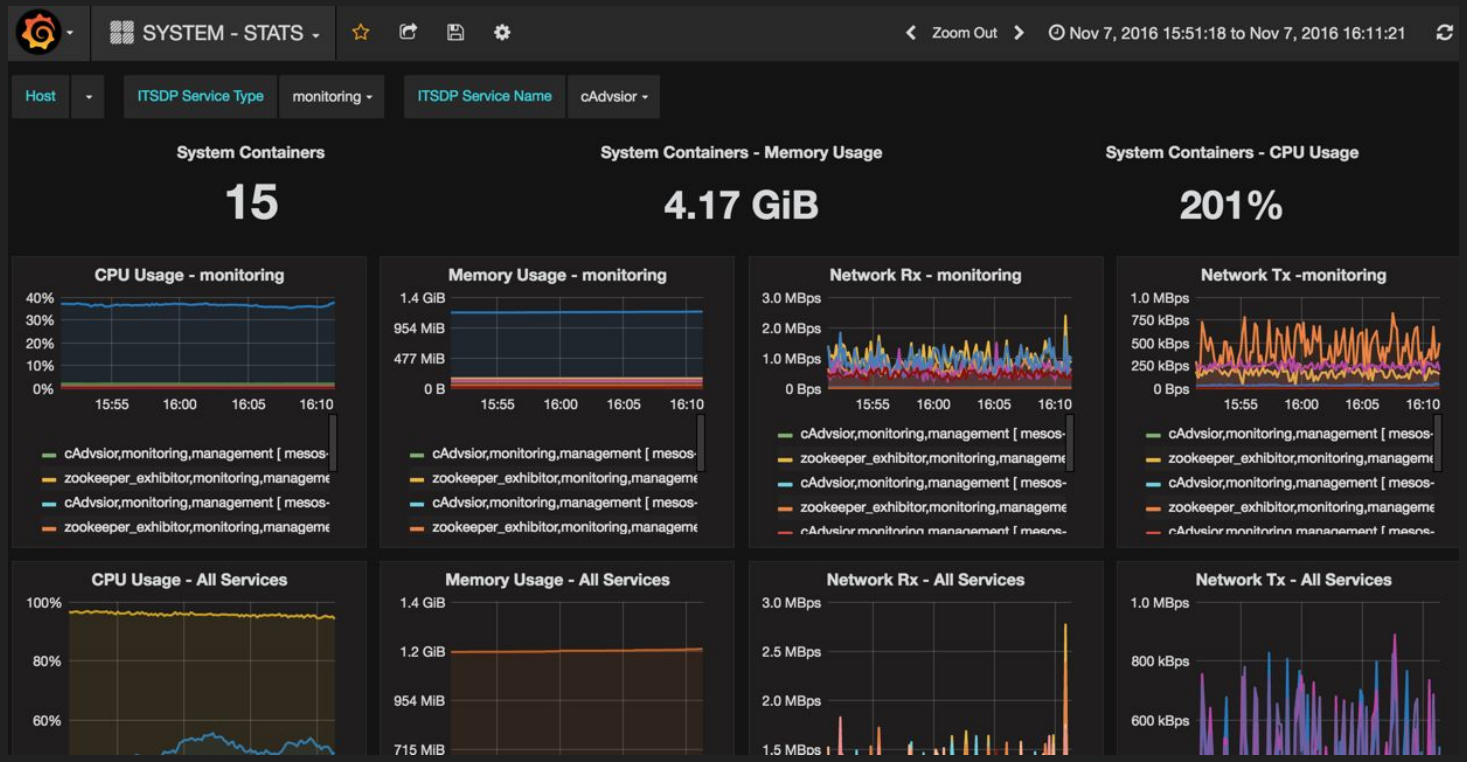

Marathon
/events
failed_health_check_event
deployment_success
deployment_failed
deployment_step_failure
Metrics Collector
Timeseries DB
Grafana

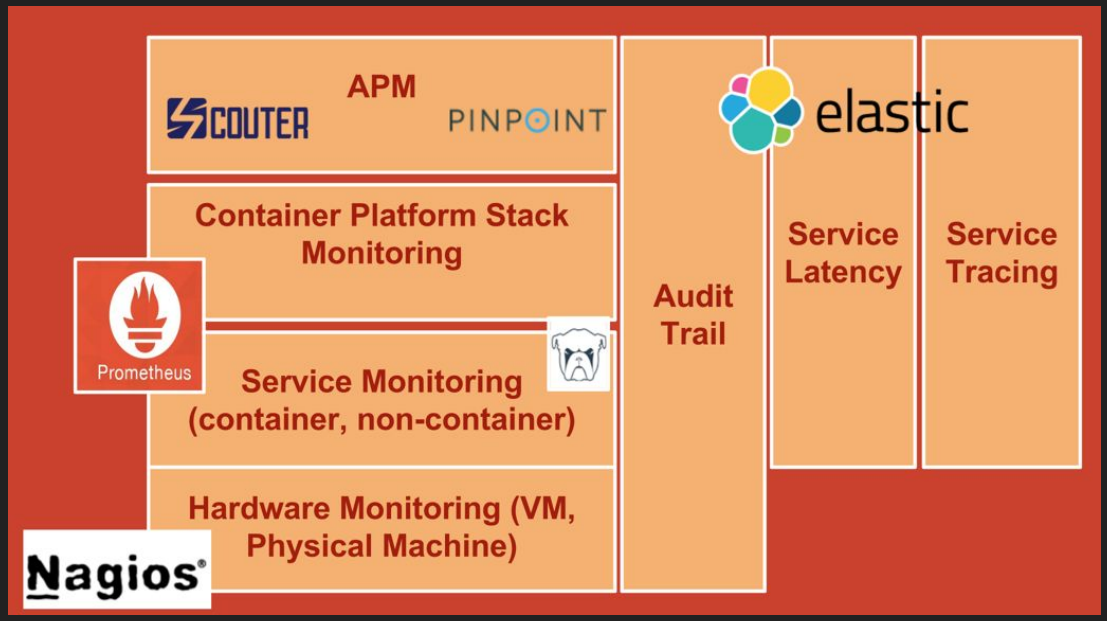


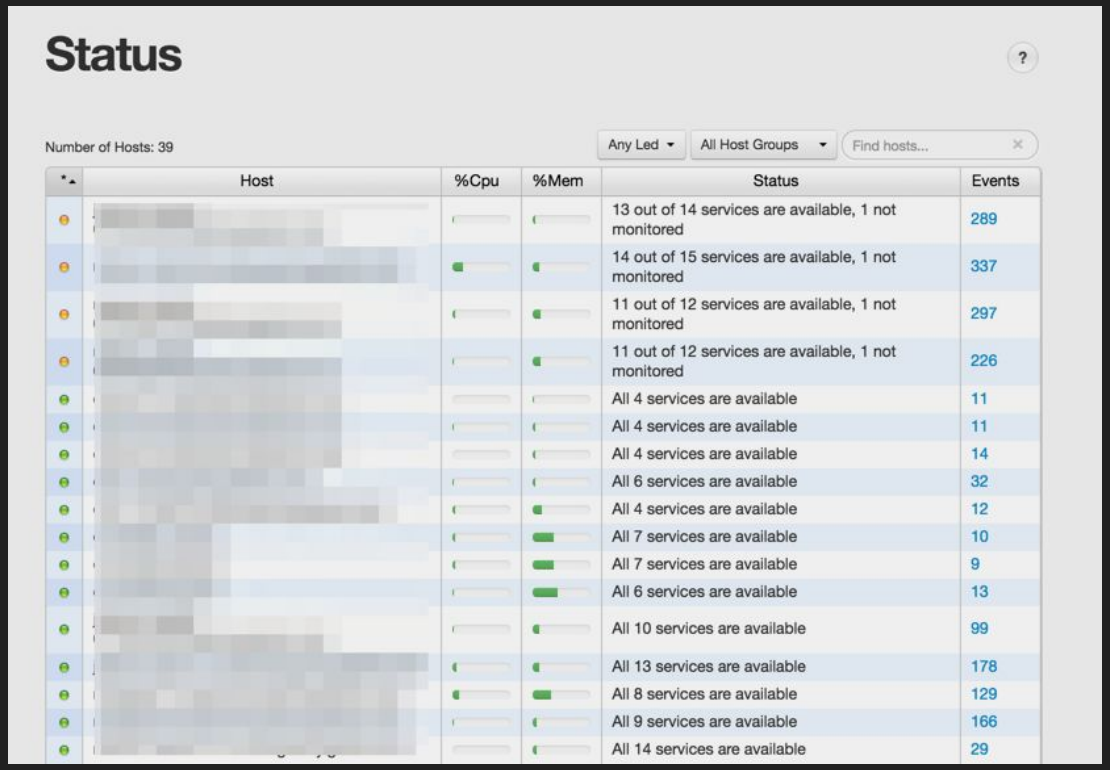
gliderlabs / logspout

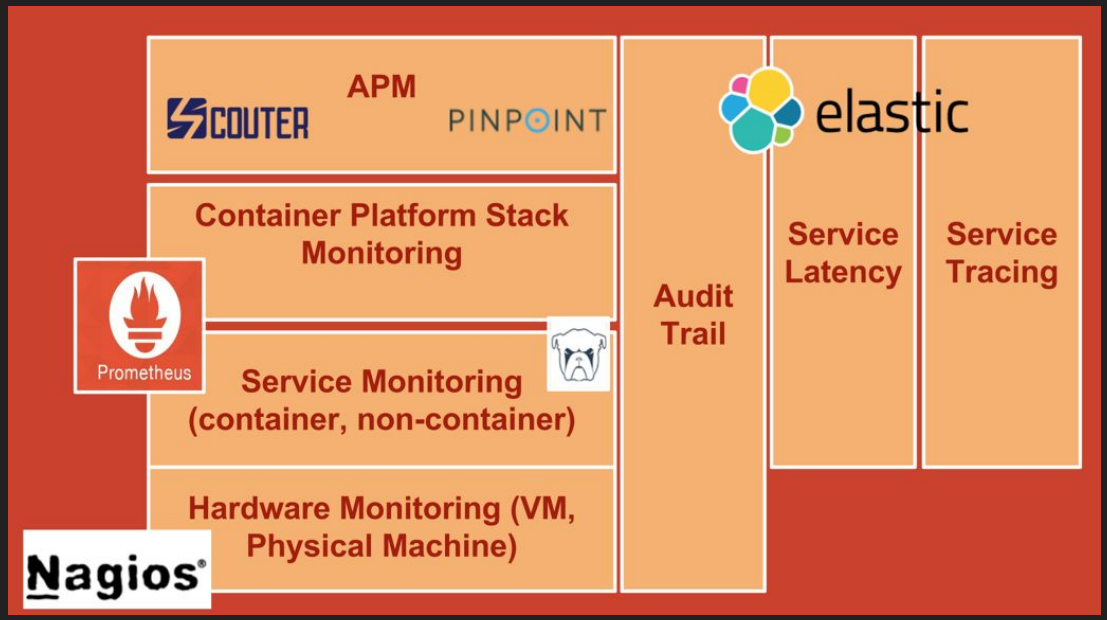
logstash

Pre-configured
On-demand Log
Dashboards


SYSTEM - STATS
Zoom Out
Nov 7, 2016 15:51:18 to Nov 7, 2016 16:11:21
Host
ITSDP Service Type
monitoring
ITSDP Service Name
cAdvsior
System Containers
15
System Containers - Memory Usage
4.17 GiB
System Containers - CPU Usage
201%
CPU Usage - monitoring
Memory Usage - monitoring
Network Rx - monitoring
Network Tx -monitoring
CPU Usage - All Services
Memory Usage - All Services
Network Rx - All Services
Network Tx - All Services


APM
SCOUTER
PINPOINT
elastic
Container Platform Stack Monitoring
Prometheus
Service Monitoring (container, non-container)
Hardware Monitoring (VM, Physical Machine)
Nagios
Audit Trail
Service Latency
Service Tracing


Status
Number of Hosts: 39
Any Led
All Host Groups
Find hosts...
Host
%Cpu
%Mem
Status
Events
13 out of 14 services are available, 1 not monitored
289
14 out of 15 services are available, 1 not monitored
337
11 out of 12 services are available, 1 not monitored
297
11 out of 12 services are available, 1 not monitored
226
All 4 services are available
11
All 4 services are available
11
All 4 services are available
14
All 6 services are available
32
All 4 services are available
12
All 7 services are available
10
All 7 services are available
9
All 6 services are available
13
All 10 services are available
99
All 13 services are available
178
All 8 services are available
129
All 9 services are available
166
All 14 services are available
29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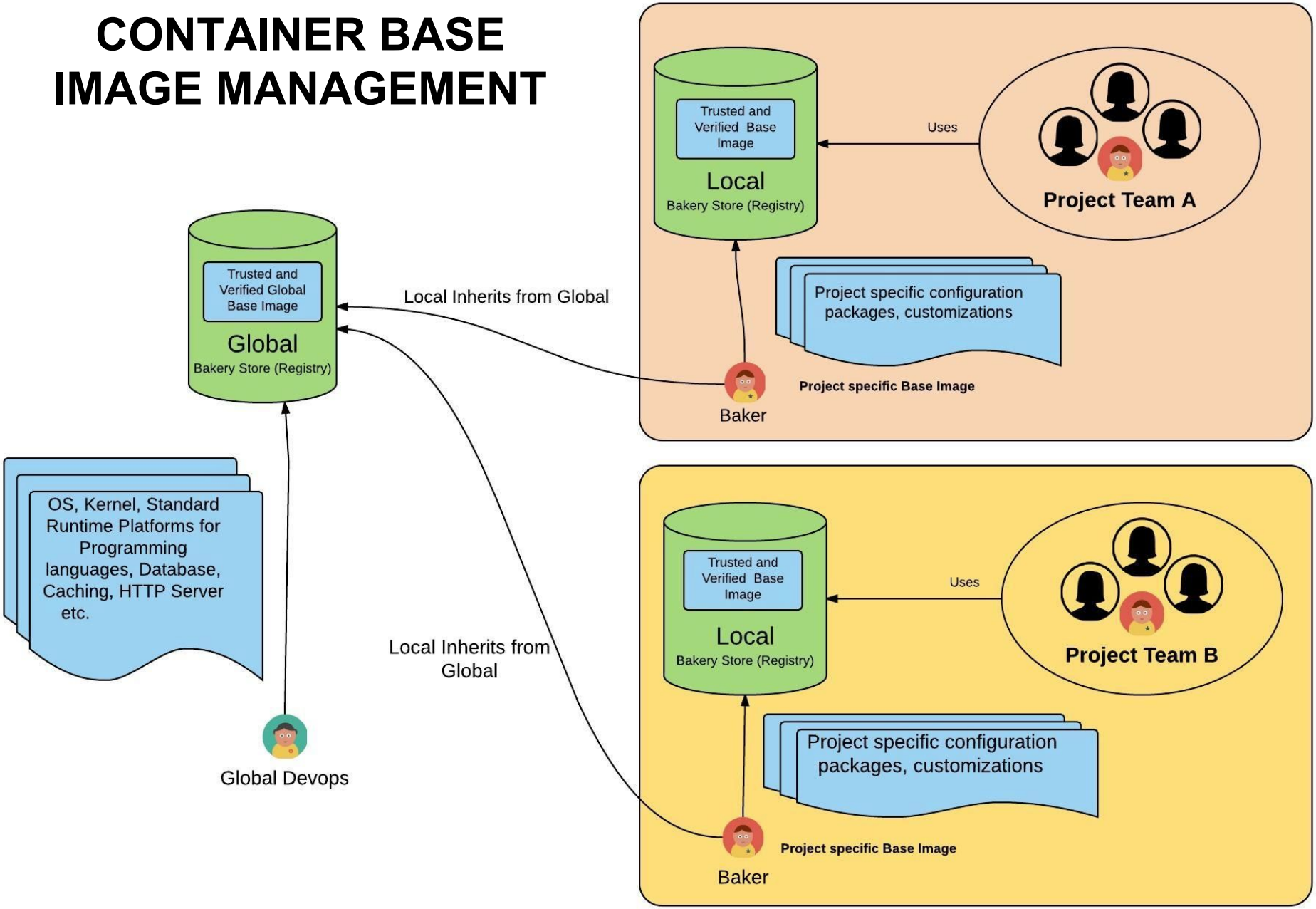
Jenkins
DSL

Source Controlled
Jenkins Jobs and
Pipelines

CONTAINER BASE IMAGE MANAGEMENT



http://bit.do/rollingupgrade

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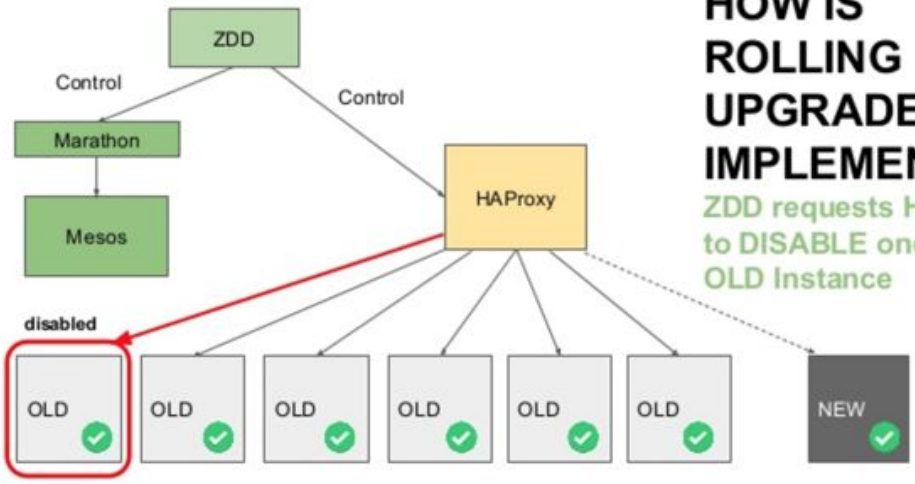


HOW IS ROLLING UPGRADE IMPLEMENTED

ZDD requests HAProxy to DISABLE one of the OLD Instance

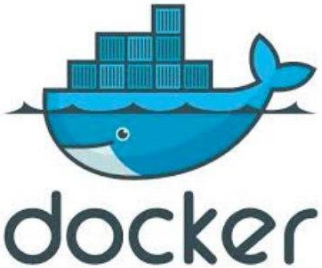
ZDD is a Python Script part of the Marathon-lb Project from Mesosphere

This repository | Search | Pull requests | Issues | Gist

mesosphere / marathon-lb

<> Code | Issues 17 | Pull requests 0 | Projects 0 | Wiki

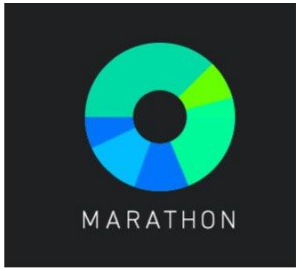
Marathon-lb is a service discovery & load balancing tool for DC/OS


docker


Jenkins


Prometheus


MESOS


MARATHON


CONSUL


Zinst


HA
PROXY


elasticsearch.


logstash
Kibana


Monit

& many more

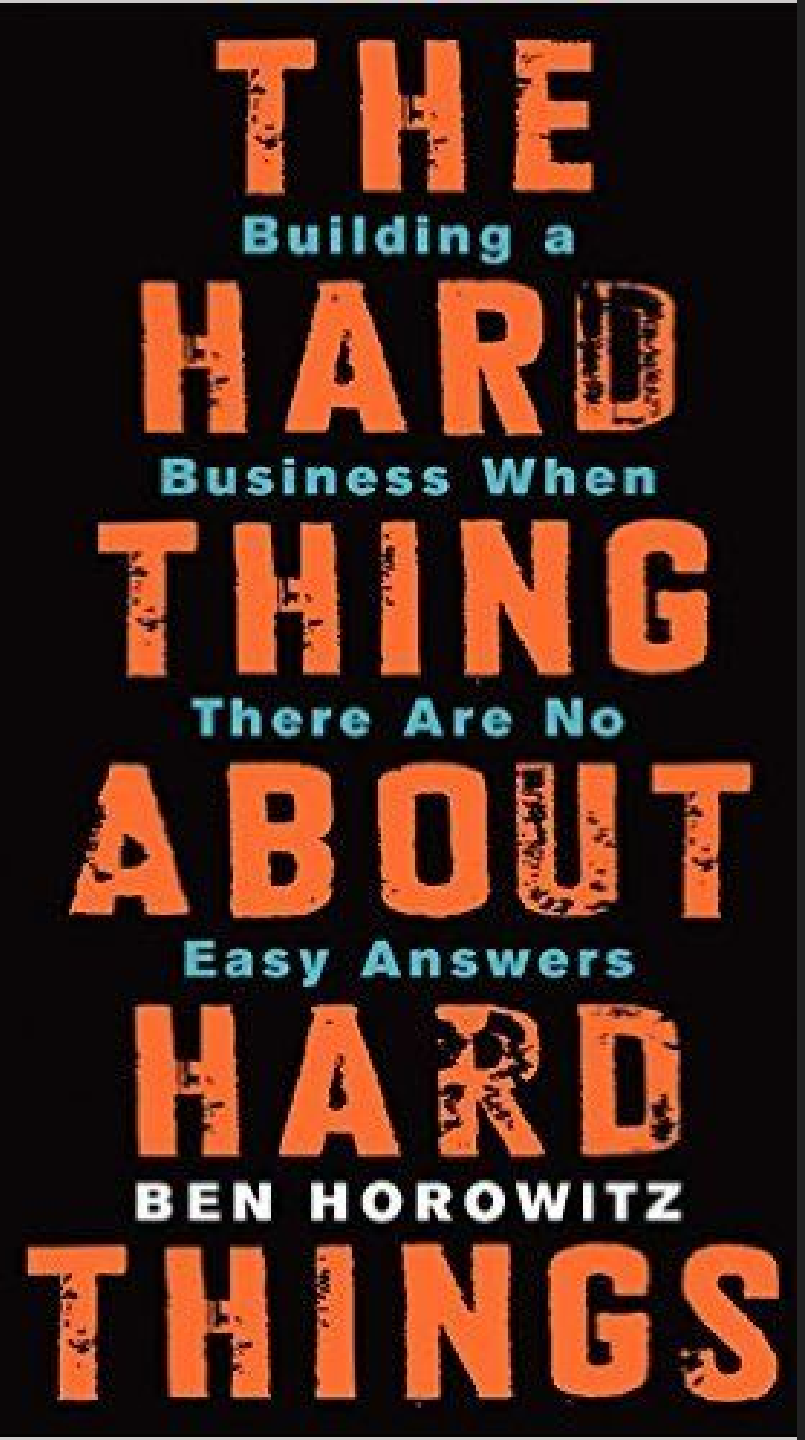
Agenda

1. Our approach
2. Experience
3. What are we working on

We run non-microservices

in Production

on Containers



a. Distributed Log ordering
b. **Port based Service Discovery**
c. **L4 DSR and HAProxy**
d. Sticky Sessions for non-Microservices
e. Downtime-less Cluster upgrades
f. Notifications Noise
g. Distributed Tracing
h. Container Base Images
i. **Zero Downtime Deployment**

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1. Our approach
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Stuff that inspires us everyday

a. Containerized Stateful Services
b. **Multitenant** Container Infrastructure
c. Container Infrastructure Provisioning automation
d. Multi-Cloud Container Infrastructure
e. Testable Container Infrastructure
f. Bakery Management
g. Kubernetes with Mesos *(K8ns is amazing for Microservices)*

https://github.com/GSSHOPLabs

https://gitter.im/gravity-itsdp

Thanks

고맙습니다

http://bit.do/containergs

We ♥ Container community !

We are Hiring !