DATADOG

Monitoring In Motion

Challenges in Monitoring Kubernetes & Containers

Ilan Rabinovitch
Director, Community
Datadog

Cloud Native SF Meetup
Feb 25, 2016

About Me

Ilan Rabinovitch
Datadog

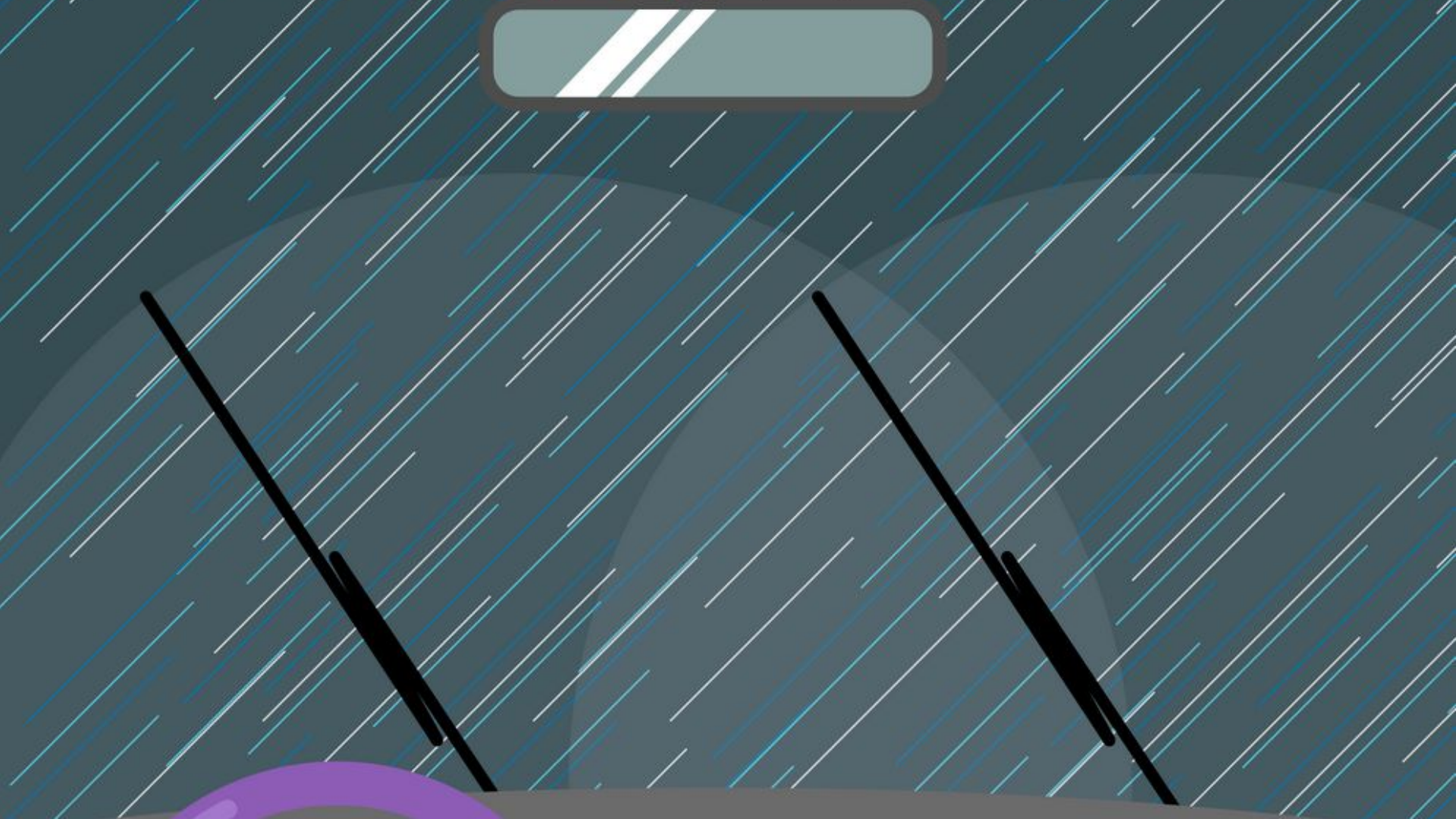
ilan@datadoghq.com
@irabinovitch

- Long time Datadog user.
- Prior to Datadog built automation and monitoring tooling at Ooyala and Edmunds.com
- SCALE and TXLF Co-Founder

Agenda

- Monitoring 101 - Crash Course
- Challenges in Monitoring Dynamic Infrastructure
- Demo Time
- Questions?

Monitoring Everything



@honest_update on Twitter

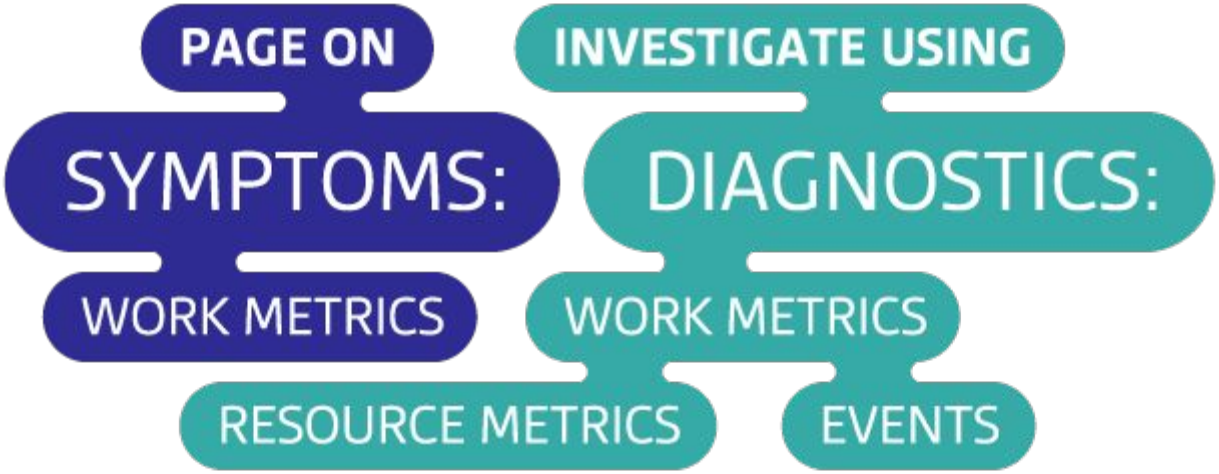
Quick Overview of Datadog

- Monitoring for modern applications.
- Time series storage of metrics and events.
- Trending, alerting and anomaly detection.
- Hundreds of integrations out of the box.

Monitoring 101: Categorization

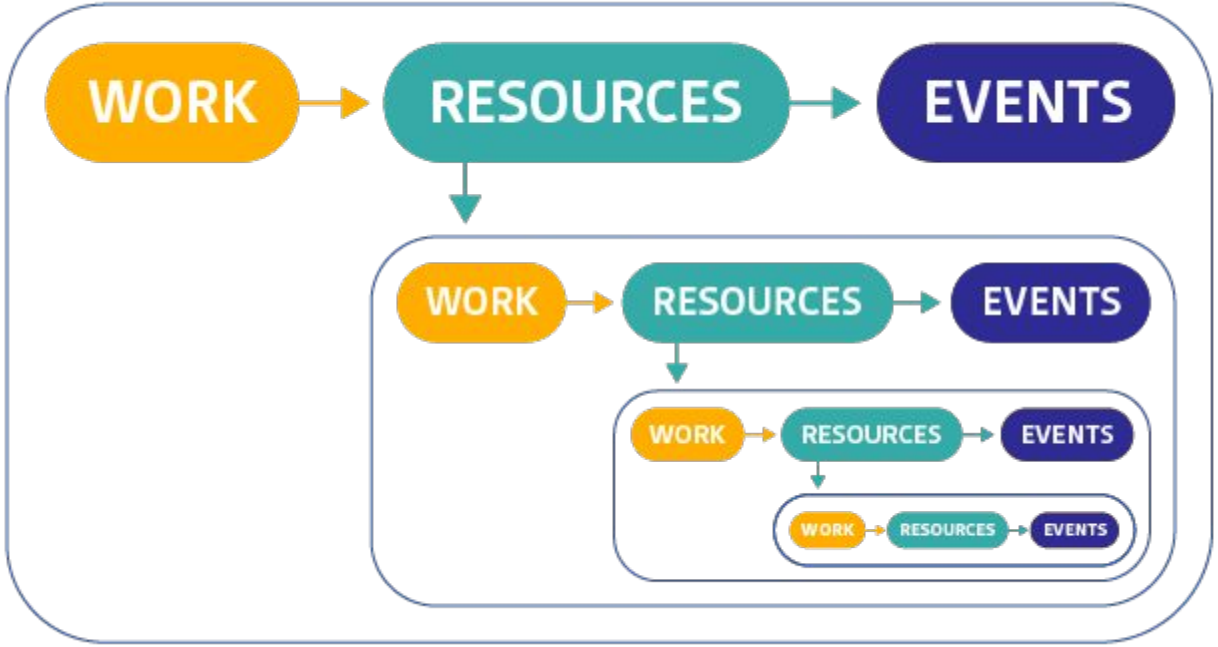
More at: http://goo.gl/t1Rgcg

Monitoring 101: Focus on symptoms



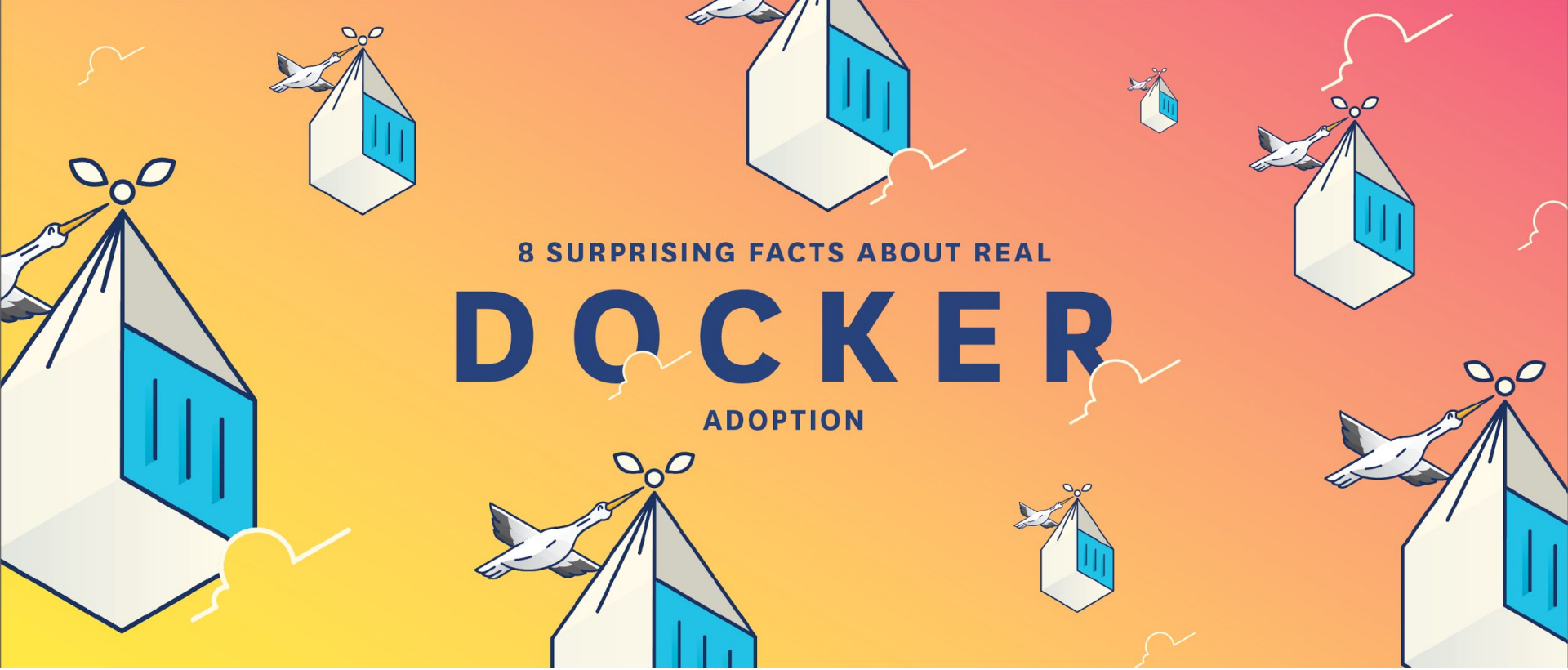
More at: http://goo.gl/t1Rgcg

Recurse until you find root cause.

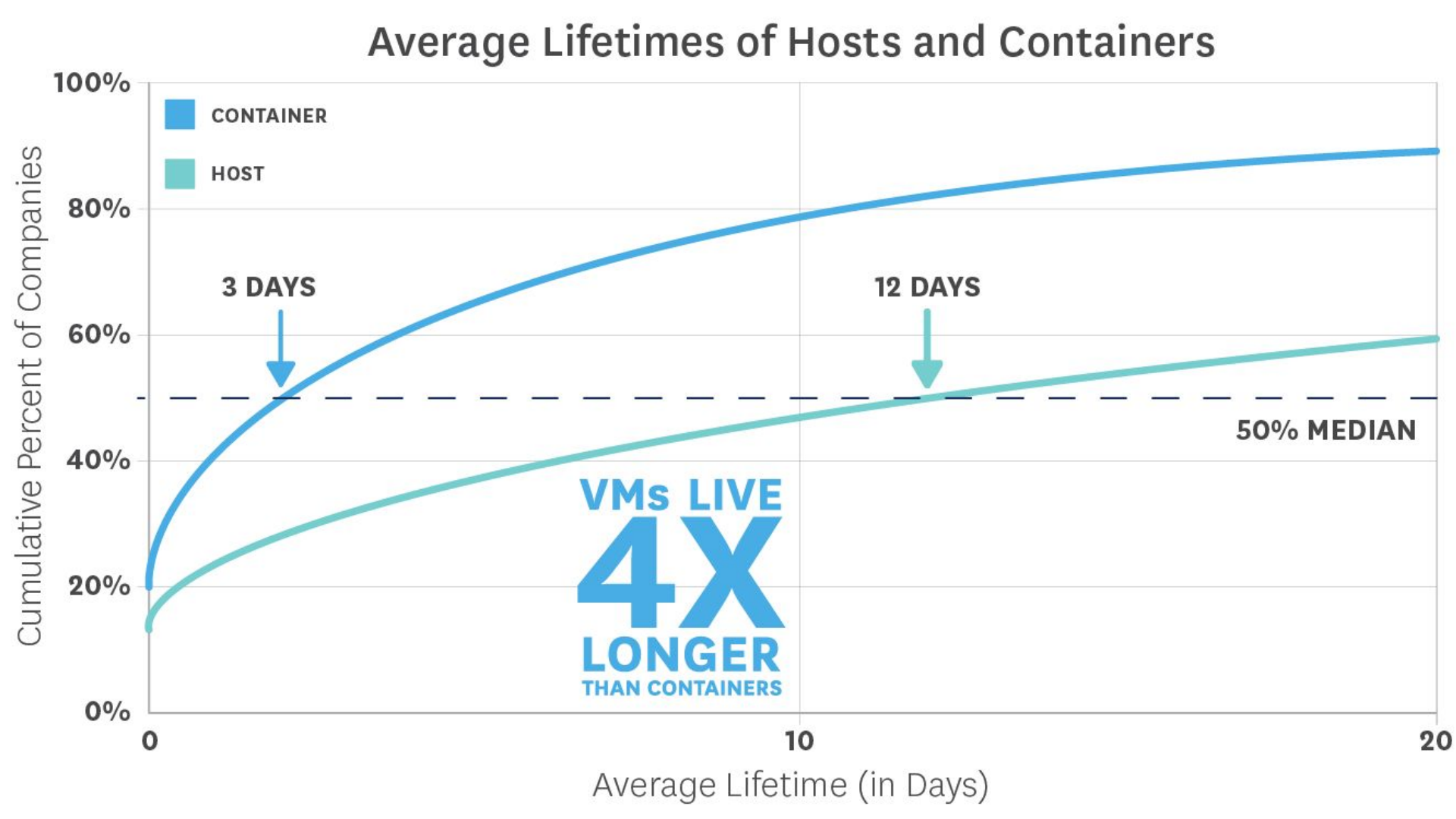


More at: http://goo.gl/t1Rgcg

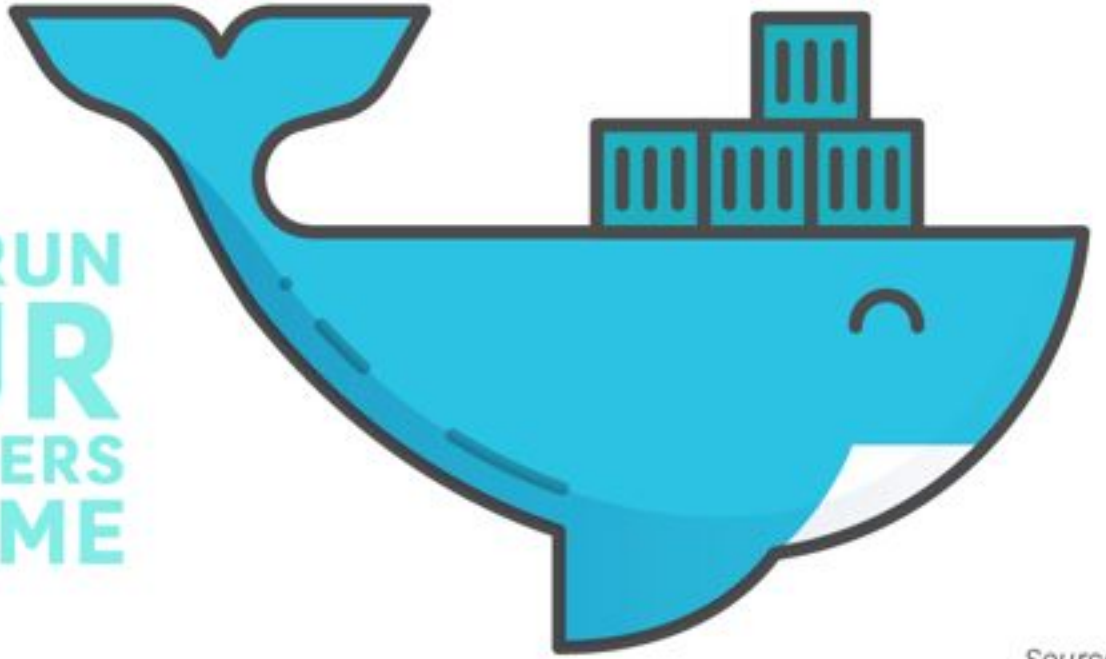
Container Monitoring Challenges



https://www.datadoghq.com/docker-adoption/


Average Lifetimes of Hosts and Containers
100%
80%
60%
40%
20%
0%
Cumulative Percent of Companies
CONTAINER
HOST
3 DAYS
12 DAYS
50% MEDIAN
VMs LIVE
4X
LONGER
THAN CONTAINERS
0
10
20
Average Lifetime (in Days)

HOSTS RUN
FOUR
CONTAINERS
AT A TIME



Source: Datadog

Operational Complexity

- Average containers per host: N
  (N=4, 10/2015)
- N-times as many “hosts” to manage
- Affects everything

Operational Complexity: Scale

100

instances

400

containers

Operational Complexity: Scale

160

metrics per host

640

metrics per host

Assuming 4 containers per host

Operational Complexity: Scale

100

instances

64,000

metrics

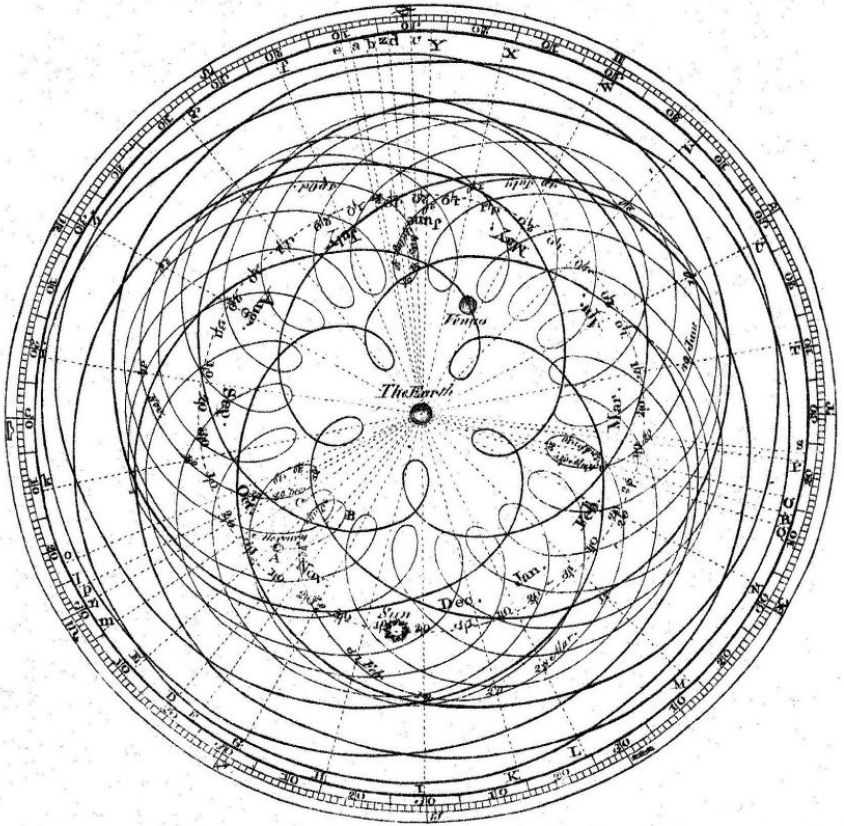
Assuming 4 containers per host

Honest Status Page
@honest_update

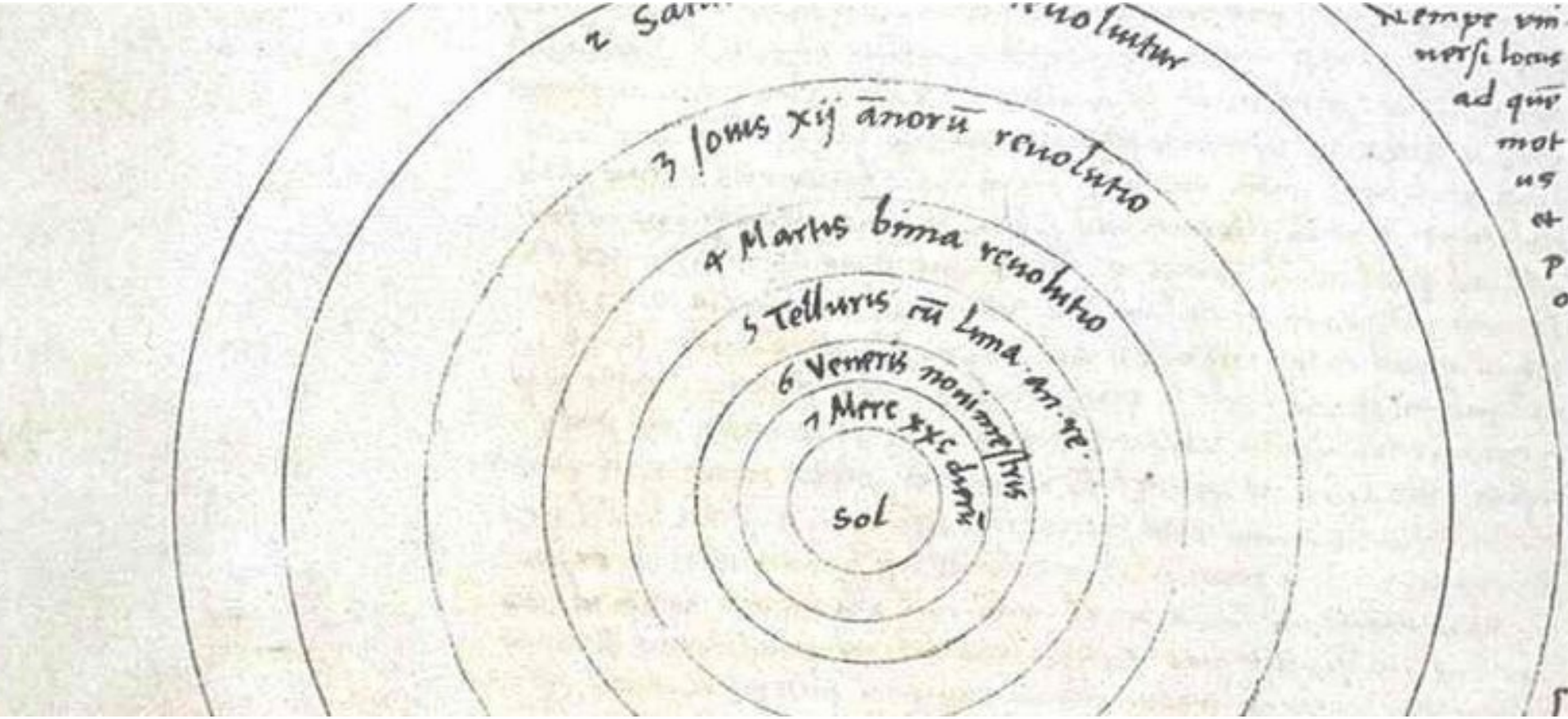
Following

Between containers, cluster managers and virtual machines we've lost track of where our code even is. #inception

Host Centric vs Service Centric



Host Centric vs Service Centric



Query Based Monitoring

"What's the average throughput of my application per version?"

"Alert me when one of my pods from a replication controller is not behaving like the others?"

"Show me rate of HTTP 500 responses from nginx"
"… in region us-east1 across all datacenters"
"… running my app version 2…."

Query Based Monitoring

- Use **tags**, labels, etc on your hosts and metrics.
- Pull in existing labels from your infrastructure (Region, Docker Images, K8S Tags..)

By using tags, auto-adapt!

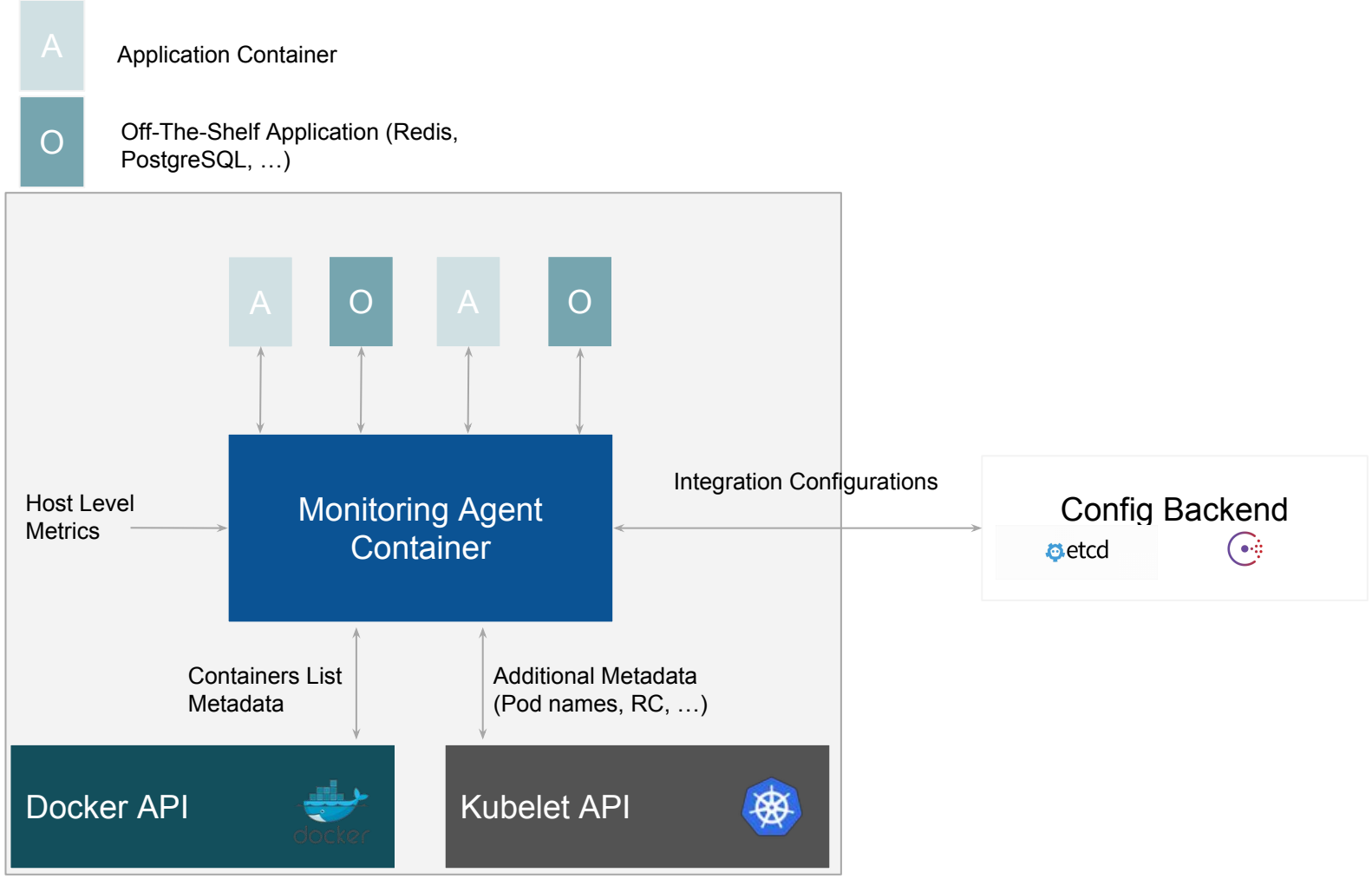
~~Where is my application running ?~~

What's the total throughput of App X ?

What's its response time per tag ? (pod, version, DC)

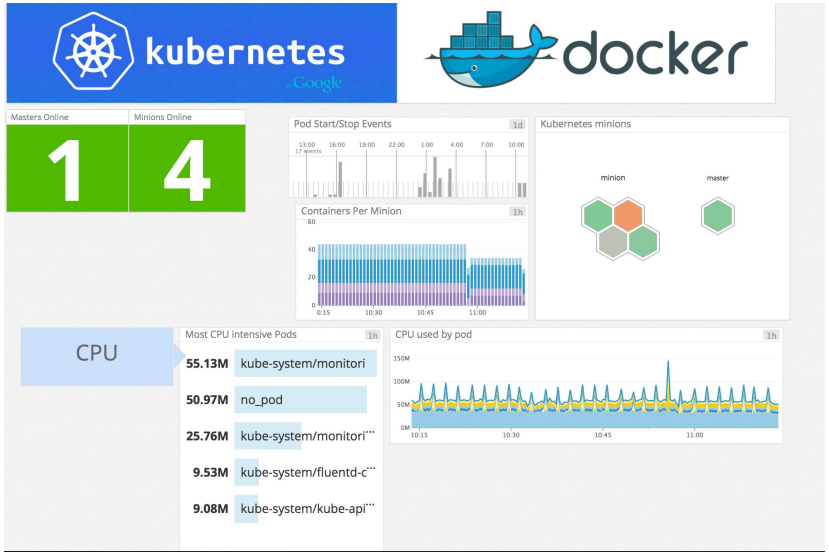
What's the distribution of 5xx from Nginx per pod ?

Auto Discovery

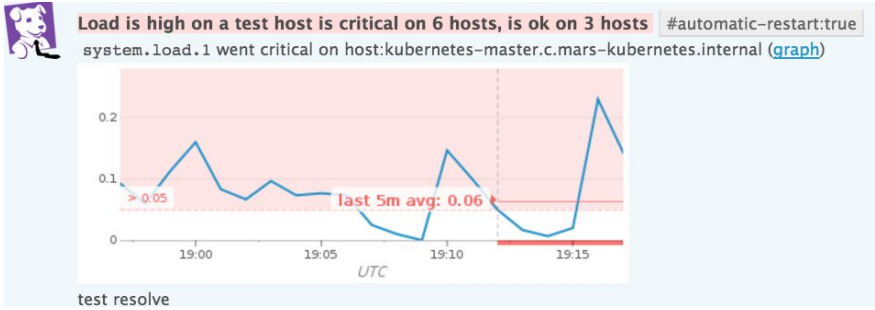

A
Application Container
O
Off-The-Shelf Application (Redis, PostgreSQL, …)
A
O
A
O
Host Level Metrics
Monitoring Agent Container
Integration Configurations
Config Backend
etcd
Containers List Metadata
Additional Metadata (Pod names, RC, …)
Docker API
docker
Kubelet API

Some Pictures

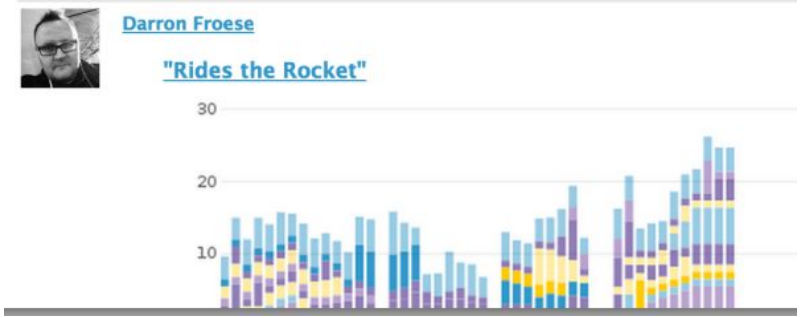
Dashboards and Metrics



Alerts



Sharing



Demo time