Getting the Most out of Your Mesos

David R. Morrison, PhD
drmorr@yelp.com
Yelp’s Mission

Connecting people with great local businesses.
What can you learn from this talk?

How Yelp grew its SOA infrastructure on top of Apache Mesos

How Yelp has gained Observability into its Mesos clusters to increase reliability

How Yelp uses data about its infrastructure to move from Observability to Predictability
(A few) Examples of Mesos Applications at Yelp

https://github.com/Yelp/paasta
https://github.com/Yelp/tron
https://github.com/Yelp/task_processing
Mesos Adoption at Yelp
Why are we (still) using Mesos?
Why are we (still) using Mesos?
Observability: What are our Mesos clusters actually doing?
Metrics and Monitoring

Memory usage (% of limit) 20s
Per-container memory usage. Going over 100% will kill a process in...

CPU Usage 1m
Per-container cpu usage. Includes the configured upper bound as ...

Instances 20s
Number of copies running. Includes lines for the autoscaling setpoint...
Tracing and Logging

ZIPKIN

Splunk
We had a few problems in 2017
How many services can we support?
How many services can we support?
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How many services can we support?
How many services can we support?
How many frameworks can we run?
How many frameworks can we run?
Moving from Observability to Predictability (Part 1)
Load Testing Apache Mesos

- Experimental Design (YAML file)
- Benchmarking Script (Git Repo)
- Real Live Mesos Cluster
- Docker Image + Jupyter Notebook
Docker Containerizer vs UCR
Docker Containerizer vs UCR

![Chart comparing Docker Containerizer and UCR performance over time in seconds with UCR counts on the y-axis and time in seconds on the x-axis. The chart shows a distribution of UCR counts over time, with peaks and troughs indicating variability in performance.]
Moving from Observability to Predictability (Part 2)
Clusterman: Yelp's Pluggable Autoscaling Engine for Apache Mesos
Clusterman: Yelp's Pluggable Autoscaling Engine Simulator for Apache Mesos
Clusterman Example: what happened
Clusterman Example: what happened

Cost per vCPU for February 2018

Average cost per vCPU:

Day of month

02-01 02-08 02-15 02-22
00:00 03:00 06:00 09:00 12:00 15:00 18:00 21:00 00:00

average best fit line interquartile range
Clusterman Example: What will happen
Clustermap Example: What will happen

Average oversubscribed capacity: 30 vCPUs
What comes after Predictability?
Feedbackability
Feedbackability
Feedbackability
Feedbackability
What did we learn?

We collect *a lot* of data about our infrastructure -- using that data intelligently can make us more reliable and save us money!
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