Red Hat

KNATIVE&TEKTON

BUILD&PIPELINES

Red Hat Summit 2019

VINCENT BATTS

Engineer

```
$> finger $(whoami)
Login: vbatts                          Name: Vincent Batts
Directory: /home/vbatts                Shell: /bin/bash
Such mail.
Plan:
OHMAN
$> id -Gn
devel opencontainers docker appc redhat golang slackware
```

DISCLAIMER

The content set forth herein does not constitute in any way a binding or legal agreement or impose any legal obligation or duty on Red Hat. This information is provided for discussion purposes only and is subject to change for any or no reason.

SERVERLESS

SERVERLESS

FaaS

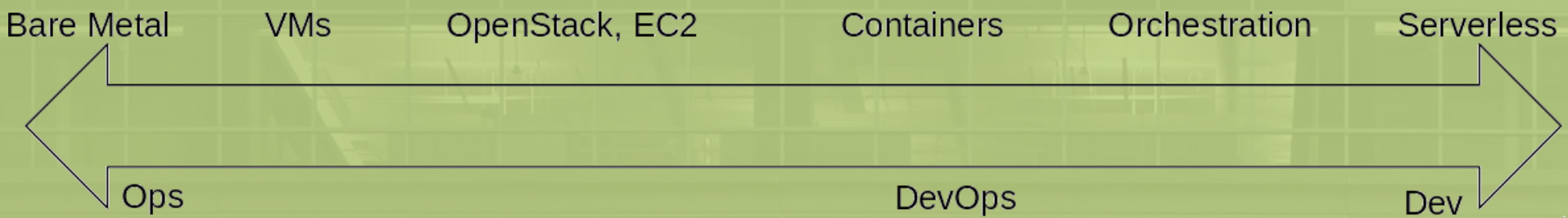# SERVERLESS

FaaS

Actually Servers?

SERVERLESS

FaaS

Actually Servers?

Events

Containers?

SERVERLESS

Bare Metal   VMs   OpenStack, EC2   Containers   Orchestration   Serverless

Ops   DevOps   Dev

KNATIVE

- What is Knative (knative.dev and github.com/knative)
  - A framework built on top of Kubernetes and Istio to build, trigger, and run Serverless functions
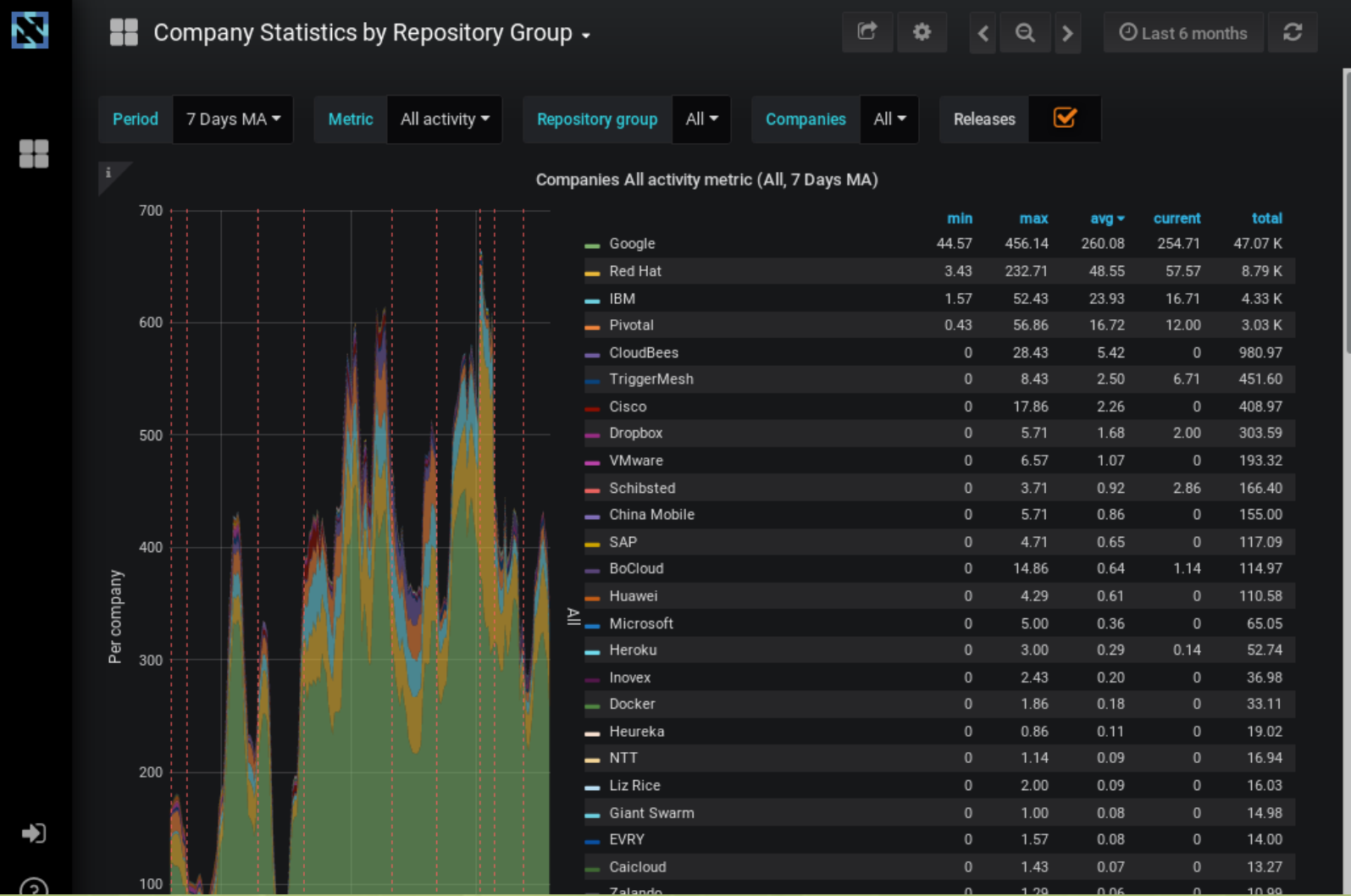
KNATIVE

- What is Knative (knative.dev and github.com/knative)
    - A framework built on top of Kubernetes and Istio to build, trigger, and run Serverless functions
- What is in Knative
    - A collection of CRDs and Controllers
        - Serving: Route requests; auto scale; invoke serverless functions.
        - Eventing: Receive, persist, filter, and deliver Event
        - Build: steps to build from source to image

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- Who are developing Knative
  - Led by Google, joined by Red Hat, IBM, Pivotal...

Knative DevStats - Comp ×   +

https://knative.teststats.cncf.io/d/4/company-statistics-by-repository

Company Statistics by Repository Group ▾

Last 6 months

| Period | 7 Days MA ▾ | Metric | All activity ▾ | Repository group | All ▾ | Companies | All ▾ | Releases | ☑ |

Companies All activity metric (All, 7 Days MA)

	min	max	avg ▾	current	total
Google	44.57	456.14	260.08	254.71	47.07 K
Red Hat	3.43	232.71	48.55	57.57	8.79 K
IBM	1.57	52.43	23.93	16.71	4.33 K
Pivotal	0.43	56.86	16.72	12.00	3.03 K
CloudBees	0	28.43	5.42	0	980.97
TriggerMesh	0	8.43	2.50	6.71	451.60
Cisco	0	17.86	2.26	0	408.97
Dropbox	0	5.71	1.68	2.00	303.59
VMware	0	6.57	1.07	0	193.32
Schibsted	0	3.71	0.92	2.86	166.40
China Mobile	0	5.71	0.86	0	155.00
SAP	0	4.71	0.65	0	117.09
BoCloud	0	14.86	0.64	1.14	114.97
Huawei	0	4.29	0.61	0	110.58
Microsoft	0	5.00	0.36	0	65.05
Heroku	0	3.00	0.29	0.14	52.74
Inovex	0	2.43	0.20	0	36.98
Docker	0	1.86	0.18	0	33.11
Heureka	0	0.86	0.11	0	19.02
NTT	0	1.14	0.09	0	16.94
Liz Rice	0	2.00	0.09	0	16.03
Giant Swarm	0	1.00	0.08	0	14.98
EVRY	0	1.57	0.08	0	14.00
Caicloud	0	1.43	0.07	0	13.27
Zalando	0	1.29	0.06	0	10.99

Per company

All

ALSO BUILDS

Containers

CI/CD

Don't we have enough of those?

CONTAINERS

CONTAINERS

Source

KNATIVE/BUILD

- Templated API resource to take an input (like a git repo URL) and produce a container to serve

- Narrowly focused on serverless use-case

- A number of templates available, including s2i images and Dockerfile with buildah

- something almost, but not quite entirely unlike CD

TEKTON

- Also a container build resources, but allows for much broader than *only* serverless

- Split from Knative into its own org (also now a part of https://cd.foundation/)

- Expected to underpin the basics needed by knative/build

- Very analogous to our BuildStrategy and Pipelines in OpenShift

Company Statistics by Repository Group ▾

⏱ Last 2 years

| Period | 7 Days MA ▾ | Metric | All activity ▾ | Repository group | All ▾ | Companies | All ▾ | Releases | ☑ |

Companies All activity metric (All, 7 Days MA)
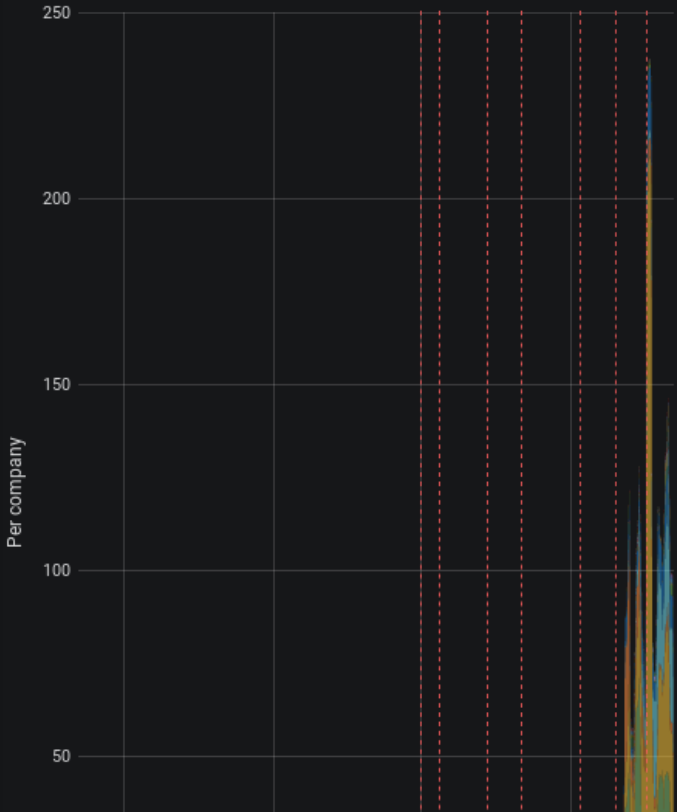
|	min	max	avg▾	current	total
Google	0.14	71.29	10.41	28.86	3.00 K
Red Hat	0	184.29	9.65	18.29	2.78 K
Pivotal	0	35.71	3.06	1.14	882.08
IBM	0	37.29	2.88	18.43	830.53
CloudBees	0	17.57	1.86	5.86	535.94
Heroku	0	4.00	0.18	2.71	52.00
Alauda	0	3.43	0.11	0	31.99
China Mobile	0	1.29	0.11	0	31.07
Huawei	0	1.86	0.10	0	30.01
CNCF	0	3.14	0.10	0	28.95
TriggerMesh	0	1.43	0.09	0	27.04
config	0	1.43	0.08	1.43	23.56
Fairfax Media	0	1.00	0.04	0	12.04
Independent	0	0.71	0.04	0	11.94
VMware	0	0.57	0.03	0	8.96
NTT	0	0.57	0.03	0	8.90
Inovex	0	1.00	0.03	1.00	8.87
Armory	0	0.86	0.02	0	6.02
SalesForce	0	0.71	0.02	0	5.95
Yunify	0	0.29	0.02	0.14	4.97
Ticketmaster	0	0.14	0.02	0	4.00

WHERE WE ARE

	Run as root	Run as non-root
Privileged		root | non-root Privileged Non-Privileged		root | non-root Privileged Non-Privileged
Non-Privileged		root | non-root Privileged Non-Privileged		root | non-root Privileged Non-Privileged
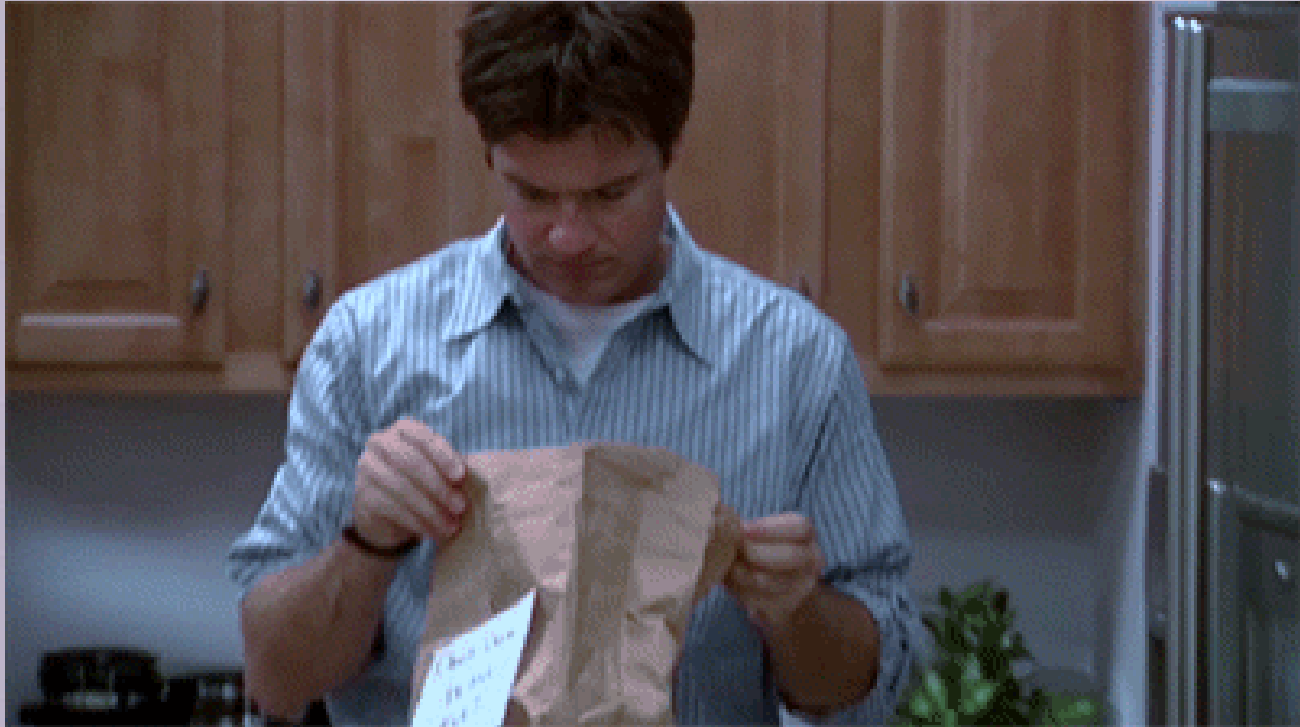
WHY THESE PROJECTS?

Kubernetes is the platform

feeling of built in primitives

enable consistency

MORE INFORMATION

bit.ly/rht-summit19-serverless-build

github.com/redhat-developer-demos/knative-tutorial

github.com/openshift-cloud-functions/Documentation