KubeCon | CloudNativeCon

North America 2017

Local Dev w/ K8s

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http://bit.ly/kubecon-dev

presented by @ryanj, Developer Advocate at Red Hat

We Are Terrible at Pitching Kubernetes to Developers

Why?

Kubernetes

(an ops tool)


CHEF CRAFT
Weekly Pill Organizer
Organizador semanal de tabletas
Seven Day Supply


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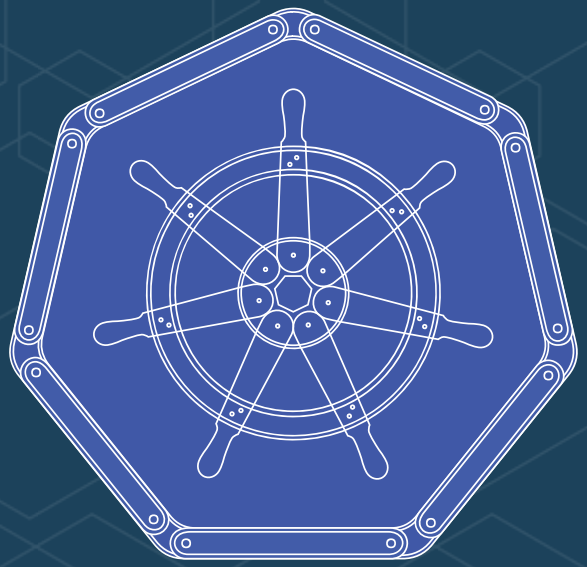
When used as directed, provides relief for the following:

1. standardized terminology & packaging - containers, volumes, podspecs, charts
2. load balancing - services
3. scaling automation - replica sets
4. delivery automation - deployments
5. high availability - automated health checking and replacement
6. distributed scheduling and resource management - RBAC, namespaces, labels, federation
7. ???



meanwhile...

What is an App?

1. ~~repo code~~
2. ~~docker image~~
3. kubernetes spec files
4. charts
5. kubectl get all -l app=myapp -n mynamespace

Proposal: Label Recommendations

How should we be talking to Developers about Kubernetes?

Q: Why Kubernetes?

A: Development Velocity


WILLIE
JANIS
TOWNES
STEVIE RAY
ROKY
AUSTIN
Live Music
CAPITAL
of the WORLD!
TEXAS

A Case Study: Enterprise Records, Inc.

The Ops team has heard great things about Kubernetes, and is interested in giving it a try - but they're having difficulty convincing other teams of the value

Product team needs:

More

(always more)

The web team is confused by all the new terminology, and is under a lot of pressure to focus on delivering new tracks to customers


Don’t blow this for us Gene!

Convincing the team (minimal onboarding):

1. Getting started is easy
2. Share what you know (and model your I/O)
3. Choose the right toolchain

1. The Easy Part

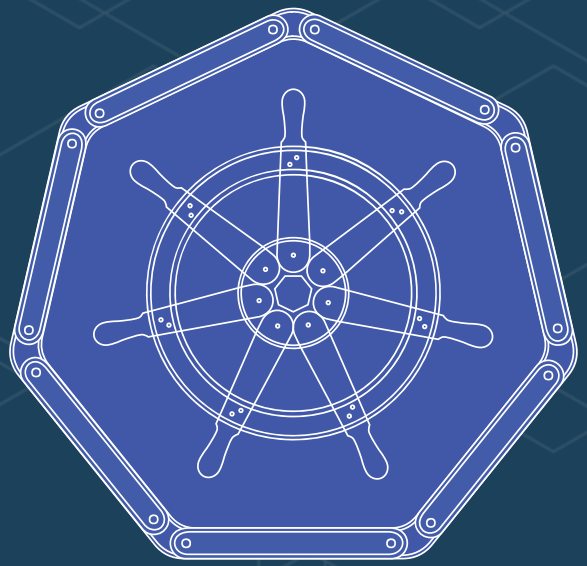
is

```
minikube start
```

- Staging down?
- Ops not Ready?

  No Excuses!

!!Everyone get a K8s!!



Minikube

- Minikube Docs
- bit.ly/k8s-minikube

2. Share What You Know

and model your I/O

Share What You Know `--dry-run`

Generate kubernetes `deployment` and `service` specifications, both named `metrics-review`:

```
kubectl run metrics-review --image=quay.io/ryanj/metrics-k8s \
--expose --port=2015 --service-overrides='{ "spec": { "type": "NodePort" } }'
--dry-run -o yaml > metrics-review.yaml
```

Share What You Know `--dry-run`

Test your generated spec:

```
kubectl create -f metrics-review.yaml
```

Minikube users will be able to open the resulting service in their browser by running:

```
minikube service metrics-review
```

Model Your I/O

Example Repo

Create a local clone of this `metrics-k8s` repo:

```
git clone http://github.com/ryanj/metrics-k8s
```

Preview - local files

Next, share your local repo contents with minikube:

```
minikube mount $(pwd):/var/www/html
```

Preview - hostPath

Then, produce a new deployment spec that includes (minimal) support for live development workflows:

1. `cp metrics-review.yaml metrics-dev.yaml`
2. replace `metrics-review` with `metrics-dev` (global)
3. Add a `hostPort` volume to access your local repo:

```
      spec:
        containers:
        - image: quay.io/ryanj/metrics-k8s
          name: metrics-dev
          ports:
          - containerPort: 2015
          resources: {}
+         volumeMounts:
+         - mountPath: /var/www/html
+           name: metrics-src
+       volumes:
+       - name: metrics-src
+         hostPath:
+           path: /var/www/html
  status: {}
```

Share what you know

The resulting file should look just like the included metrics-dev.yaml file from the `metrics-k8s` git repo.

Try launching it with:

```
kubectl create -f metrics-dev.yaml
```

Share what you know - Rollout Testing

Eval this

```
minikube docker-env
```

to send newly-built images to minikube's docker daemon:

```
docker build .
```

3. The Hard Part

Keeping it simple, and choosing the right tools for the job

The future is already here — it's just not very evenly distributed.
(W.Gibson)

Typical container adoption path:

1. docker
2. volumes, PVs
3. minikube
4. k8s modeling and scalability via spec files, pods, and other abstractions
5. charts, openshift templates, or hand-rolled manifest / spec templating
6. monocular, kubeapps, ServiceCatalog
7. PaaS?

Draft

Make it easy to get started

Charts

Share what you know

Helm & Tiller

Share more

Brigade and Kashti

Do more

Telepresence

Access more

minishift and oc

Security Enhanced Kubernetes

Easy, right?

More Learning Opportunities

1. Kubernetes.io Tutorials
   https://kubernetes.io/docs/tutorials/
2. Katacoda https://katacoda.com/courses/kubernetes
3. RyanJ's K8s-workshops http://bit.ly/k8s-workshops
4. Interactive learning for OpenShift:
   http://learn.openshift.com

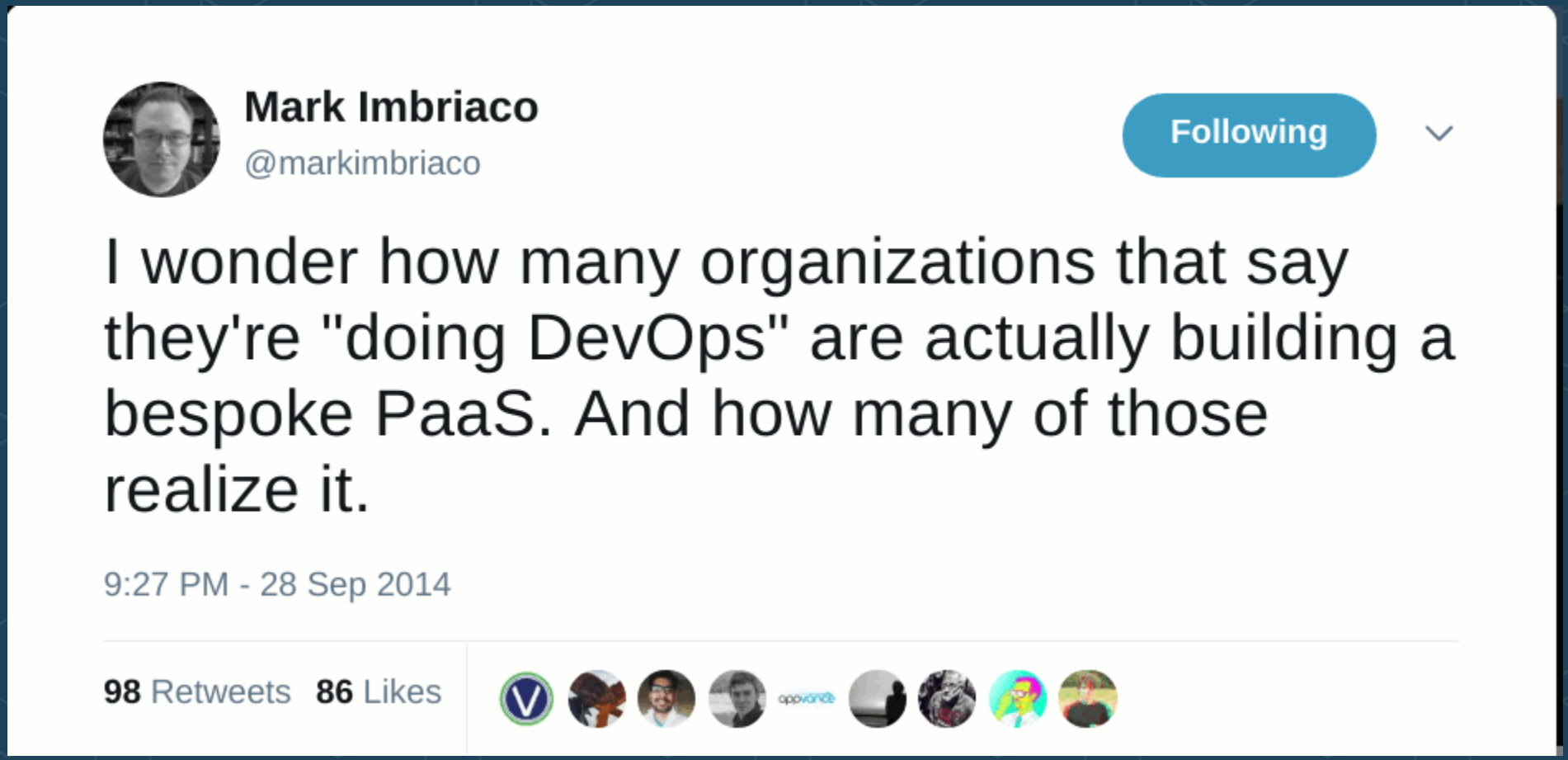
Include the whole team:

- Developers: Want to get ahead? Model your I/O, and Share What You Know!
- Architects: Figure out who owns manifest creation, maintanence, and distribution
- QA folks: look forward to saying: "can't repro - works fine on my Kubernetes"
- Ops: provide cloud resources grants to teams, make sure prod has enough IaaS, ensure platform uptime, upgrades, logging, and metrics
- Security & Compliance: RBAC, config and secrets management; Secret rotation policies; Monitor for CVEs and apply security patches from upstream

Join the community on Slack in #kubernetes-users, and in #SIG-Apps!

Share What You Know: Help us develop a range of solutions that expose and/or hide kubernetes in appropriate ways

Learn to deliver consistently using containers



Choose the right tools for the job

then get back to making gold records

Thank You!

@RyanJ

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