

CLOUD JUMPING

With
Kubernetes!



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James Bowes

ABOUT ME

- Technical Lead @ www.manifold.co
- Overuses Makefiles
- Underuses Shell scripts

FIND ME

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The Agenda

- Our infrastructure story
- Why cloud jump?
- How Kubernetes can help (and hurt)
- Tips along the way
- Some other talks you might enjoy

Growing our Infrastructure



Photo by [Daniel Hjalmarsson](#) on [Unsplash](#)



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Your Infrastructure



Photo by [frank mckenna](#) on [Unsplash](#)



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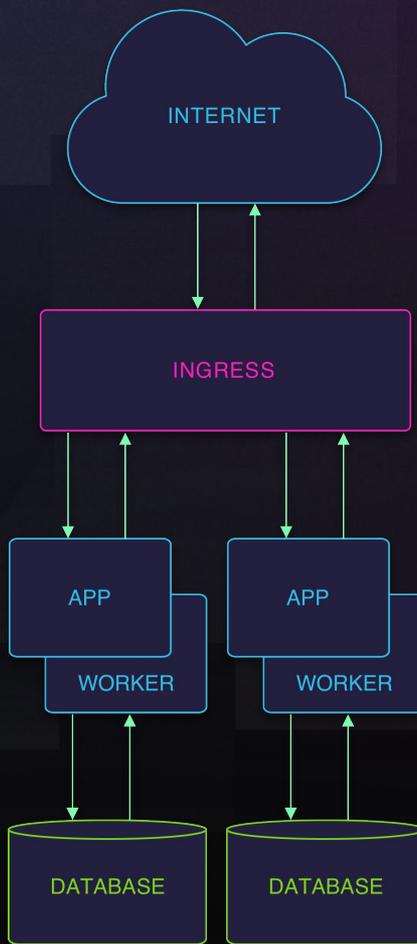
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Our Infrastructure



Our Infrastructure

- ~ 30 primary container images
- ~ 10 secondary container images
- ~ 70 pods
- ~ 10 logical databases
- ~ 10 nodes



Do you have a container shaped promotional item? Send it to me and I'll add it to the [#BowesContainerYard](#)



James Bowes @jrbowes

10:56am - 22 May 2018

Why cloud jump?









	AWS	GCP	Azure	DIY
Managed Control Plane				
Managed Nodes				

**Attend: How Atlassian Built Our
Own Kube Clusters and Why You
Shouldn't Do the Same**

Nick Young

<https://sched.co/GrS7>



Tip: Cloud Jumping is not Multi / Hybrid Cloud

*You can make different choices for a shorter
lifespan*

This is **not** a success story.



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FREE WEB
GRAPHICS
Made by
MATTHEW
PETERS!

Migrating between cloud providers is **hard**

It will take longer than you expect or want.

Kubernetes helps -- a bit.

Tip: Get Help

*Consider professional services if you
have the budget*

Defining your infrastructure



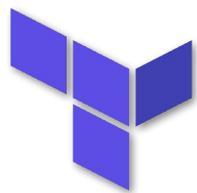
Photo by [Sergey Zolkin](#) on [Unsplash](#)



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Pre Kubernetes Infrastructure



HashiCorp

Terraform

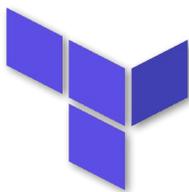


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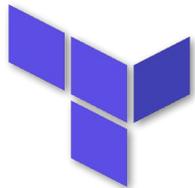
Kubernetes Infrastructure

**Y
A
M
L**



HashiCorp

Terraform



HashiCorp

Terraform



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Tip: Separate your application layer

*Your cluster assumes the cloud exists.
Your applications can assume the cluster exists.*

Tip: Use templates from the start

*Assume your YAML has to deploy to
arbitrary clusters -- if it doesn't, it will*

Attend: Kustomize: Deploy Your App
with Template Free YAML

Ryan Cox

<https://sched.co/GrSn>





What you get for free

Photo by Bernard
Hermant on
Unsplash



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A common API

```
catalog-deployment.yaml

apiVersion: apps/v1
kind: Deployment
metadata:
  labels:
    app: catalog
    component: marketplace
  name: catalog
spec:
  replicas: 4
```

A common API

```
catalog-deployment.yaml
ap
ki
me
sp
identity-statefulset.yaml
  apiVersion: apps/v1
  kind: StatefulSet
  metadata:
    labels:
      app: identity
      component: marketplace
  name: identity
  spec:
    replicas: 3
```



A common API

```
catalog-deployment.yaml
identity-statefulset.yaml
migrate-job.yaml

apiVersion: batch/v1
kind: Job
metadata:
  labels:
    app: migrate
    name: migrate
spec:
  template:
    metadata:
```



Tip: Use Jobs for schema and data migrations

You configure in-cluster connections already



Tip: Put your trust in Kubernetes

NetworkPolicy works in cluster and is portable.



Buy in to the ecosystem

Photo by [Luca Bravo](#) on [Unsplash](#)



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Buy in to the ecosystem

- Ingress
- cert-manager
- external-dns
- ...and many more!

Tip: Override self-service during migration

Many tools assume a single cluster.

Decoupling your workloads from the cloud

Photo by [James Coleman](#) on [Unsplash](#)



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Decoupling your workloads

- object storage
- message passing / queues
- AI / ML (not too bad with TensorFlow)

Decoupling your workloads

Knative eventing, KubeFlow, etc may help,
some day

Standard
API



Managed
Service

What to migrate, when



Photo by [Gary Bendig](#) on [Unsplash](#)



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Low importance

Start here

High dependencies

Low dependencies

Business critical

Low importance

Start here

End here,
too

High
dependencies

Low
dependencies

Business critical

Tip: You don't have to migrate everything

*Even to Kubernetes. You'll probably miss
something regardless*

**Attend: Connecting Kubernetes
Clusters Across Cloud Providers**

Thomas Graf

<https://sched.co/GrWc>

The elephant in the room



Photo by [Harshil Gidka](#) on [Unsplash](#)

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The elephant in the room

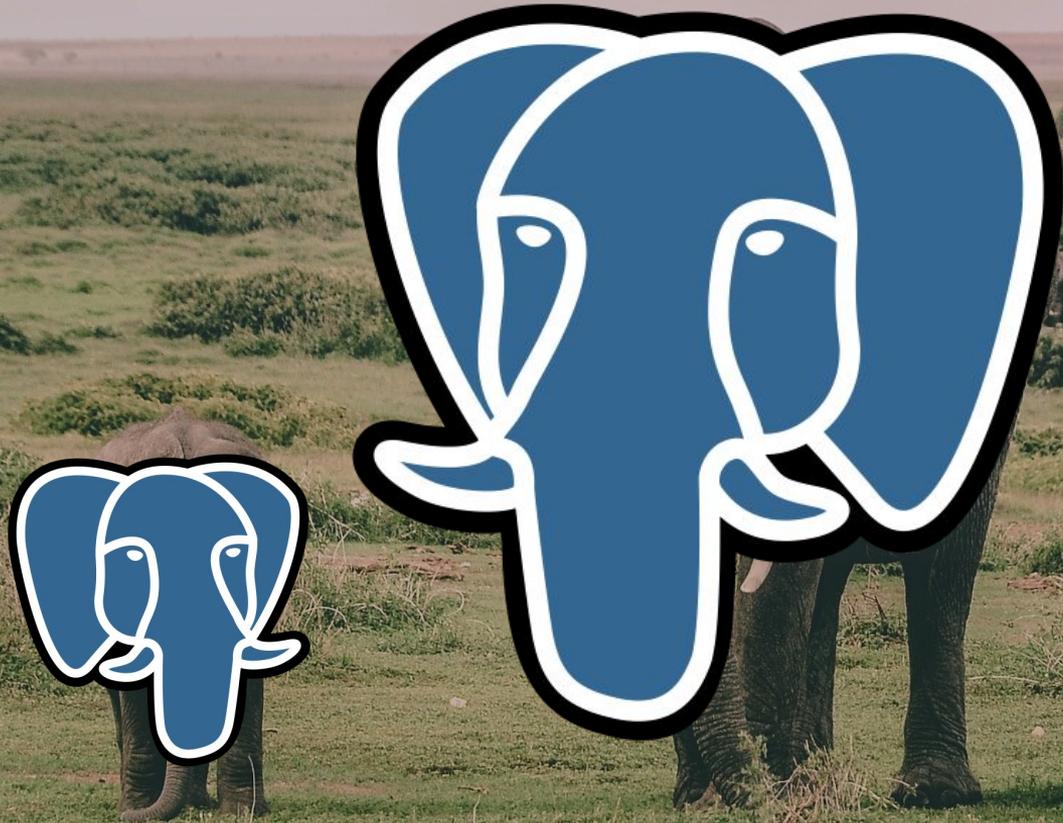


Photo by [Harshil Gidka](#) on [Unsplash](#)

State and data

- We use a cloud provider managed PostgreSQL
 - This limits our options for replication 🙄
- Find help here
- Maybe you can tolerate some downtime?

Tiny data



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Tip: Use shared ephemeral volumes in Pods

Your state might not be as permanent as you think

Tip: Try mounted ConfigMaps

*You might not need a full volume. Mounted
ConfigMaps automatically update.*

Attend: Exploring Application Portability
Across Public Cloud Providers Using K8s

Erin Boyd & Ivan Font

<https://sched.co/GrWH>

THE FOLLOWING **PREVIEW** HAS BEEN APPROVED FOR
ALL AUDIENCES

www.manifold.co



Deploying Rock Solid Applications with Kubernetes

Jelmer Snoeck

Thank you!



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