

CLOUD JUMPING

With
Kubernetes!



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James Bowes

ABOUT ME

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

FIND ME

- ⌚ github.com/jbowes
- 🐦 [@jrbowes](https://twitter.com/jrbowes)

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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Our Infrastructure

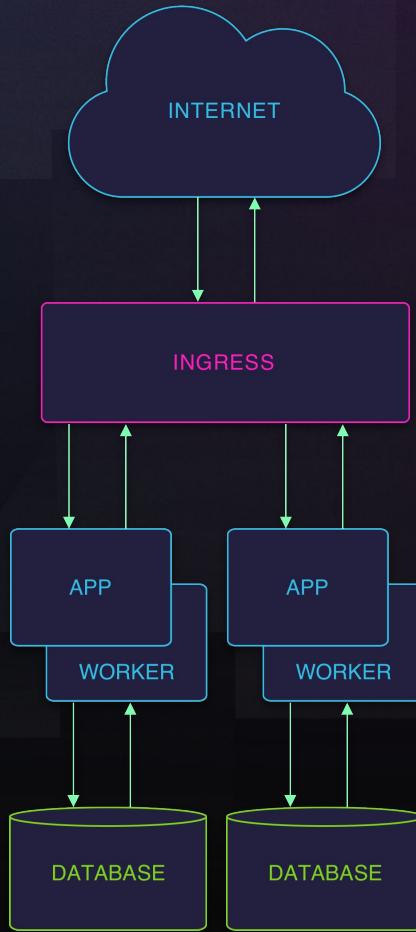


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Our Infrastructure

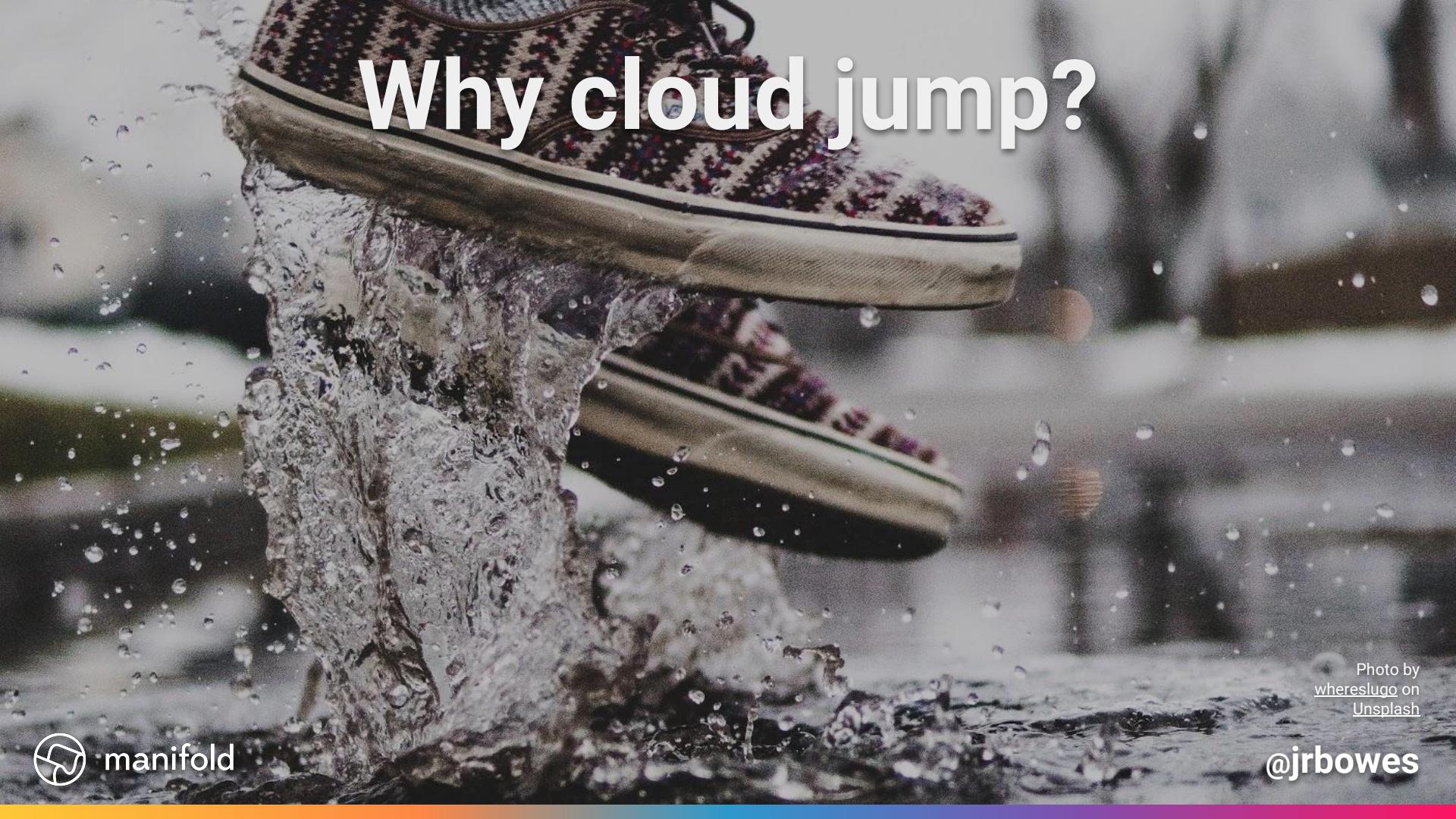
- ~ 30 primary container images
- ~ 10 secondary container images
- ~ 70 pods
- ~ 10 logical databases
- ~ 10 nodes



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?

Photo by
[whereslugo](#) on
Unsplash



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	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>



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Tip: Cloud Jumping is not Multi / Hybrid Cloud

*You can make different choices for a shorter
lifespan*

This is not a success story.



FREE WEB
GRAPHICS

Made by
MATTHEW
PETERS!



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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

A close-up photograph of a drafting table covered with architectural blueprints. A compass is positioned on the left side of the table, and a ruler lies across the middle. The background is blurred, showing more drafting tools and papers.

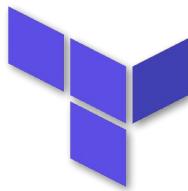
Photo by [Sergey Zolkin](#) on [Unsplash](#)



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Pre Kubernetes Infrastructure



HashiCorp

Terraform

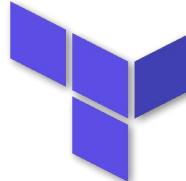


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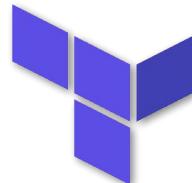
Kubernetes Infrastructure

YAML



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
```



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A common API

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



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A common API



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

A photograph of a small, fast-moving stream flowing through a dense forest. The water is clear and turbulent, cascading over dark, mossy rocks. The banks of the stream are covered in lush, green vegetation, including various ferns and broad-leaved plants. A fallen tree trunk lies across the lower part of the stream, partially submerged. The overall scene is one of a healthy, natural ecosystem.

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

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](#)

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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High
dependencies

Low importance

Start here

Low
dependencies

Business critical

High
dependencies

Low importance

Start here

End here,
too

Low
dependencies

Business critical



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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 Gudka](#) on [Unsplash](#)



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The elephant in the room

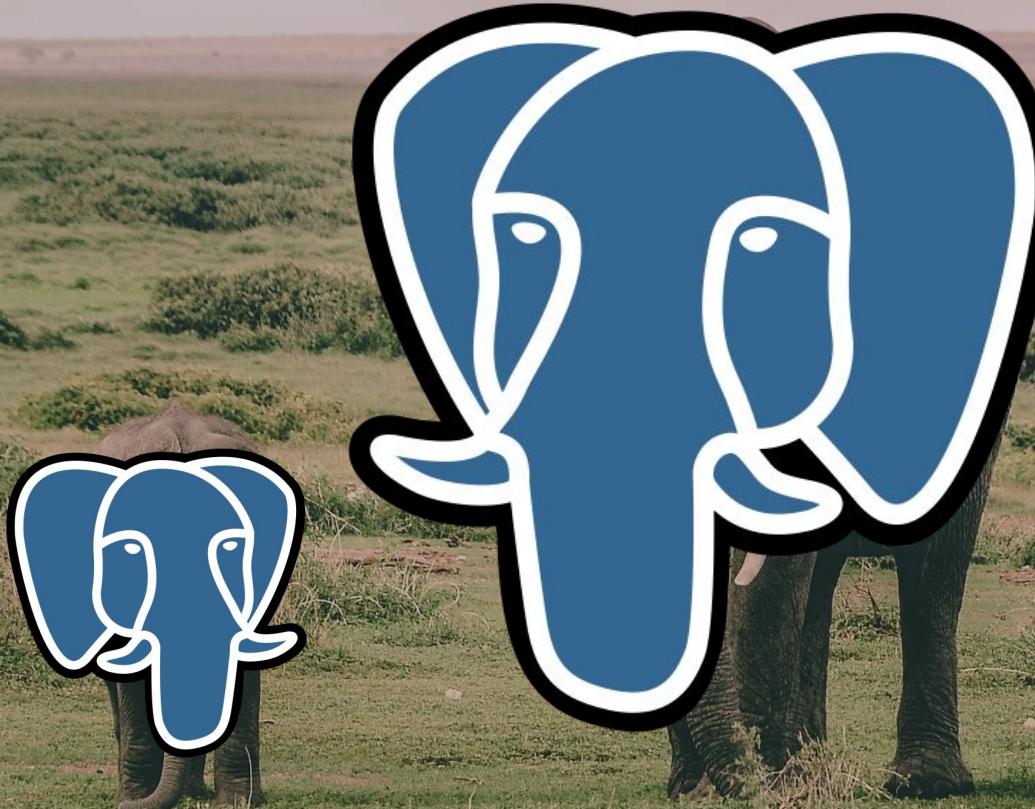


Photo by [Harshil Gudka](#) on [Unsplash](#)

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



Photo by [Vincent Botta](#) on [Unsplash](#)



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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

11:40 am Tomorrow
Ballroom 6E



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Thank you!



FIND ME

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↗ twitter.com/jrbowes

TITLE ILLUSTRATION

↗ twitter.com/megthesmith



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