



**From Monolith to**

**Microservices**

# Introductions

Mason Jones  
@masonoise

Staff Software Engineer  
Infrastructure Services



# Introductions



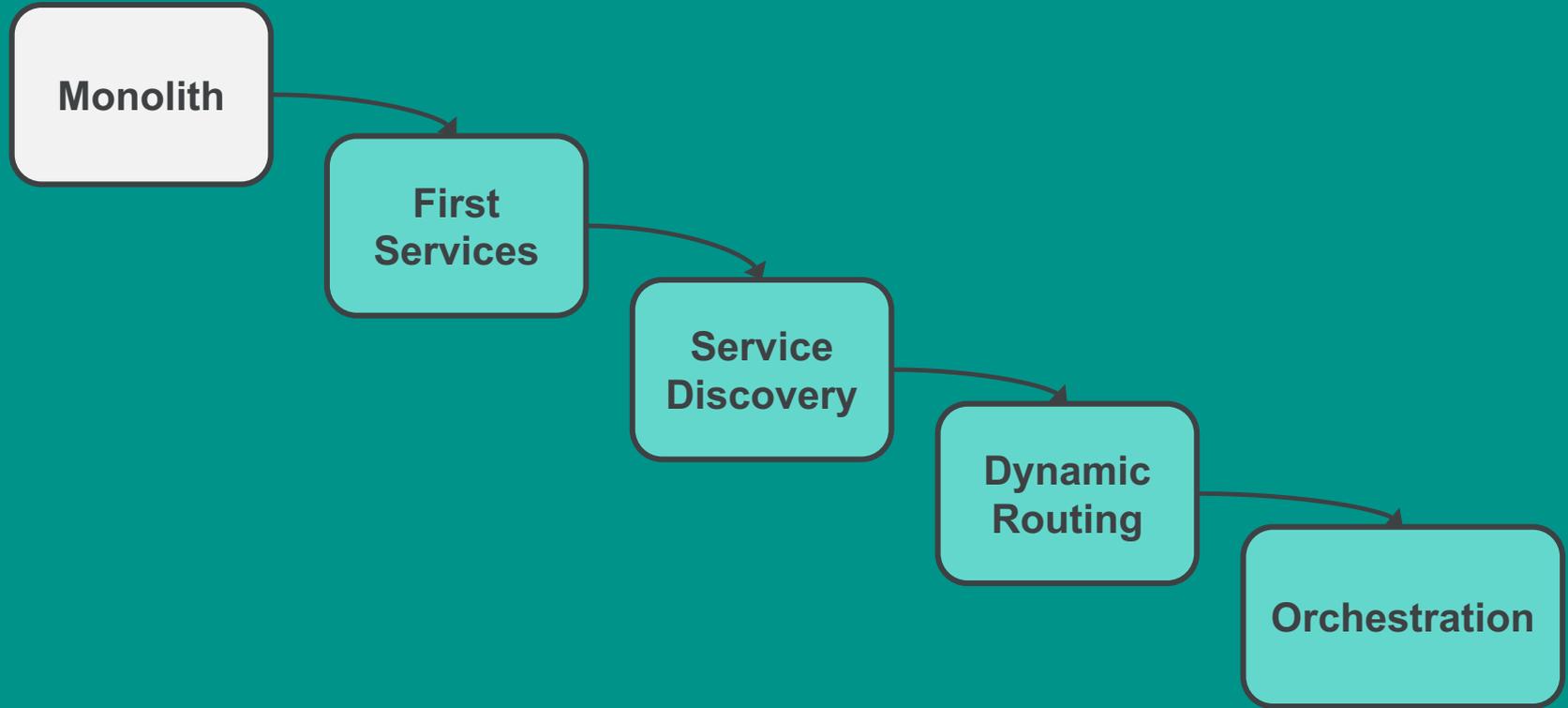
credit karma™

~800 employees

50% engineering

> 75 million members

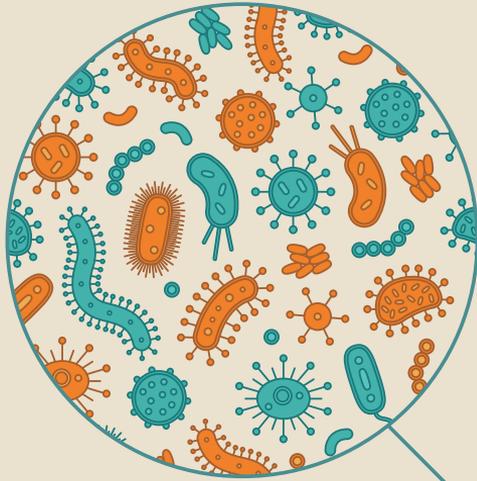
# Evolution of our Microservices Systems



# Why Microservices?

Monolith + Growth =  
Sadness

Team independence  
&  
Agility





# Baby Steps

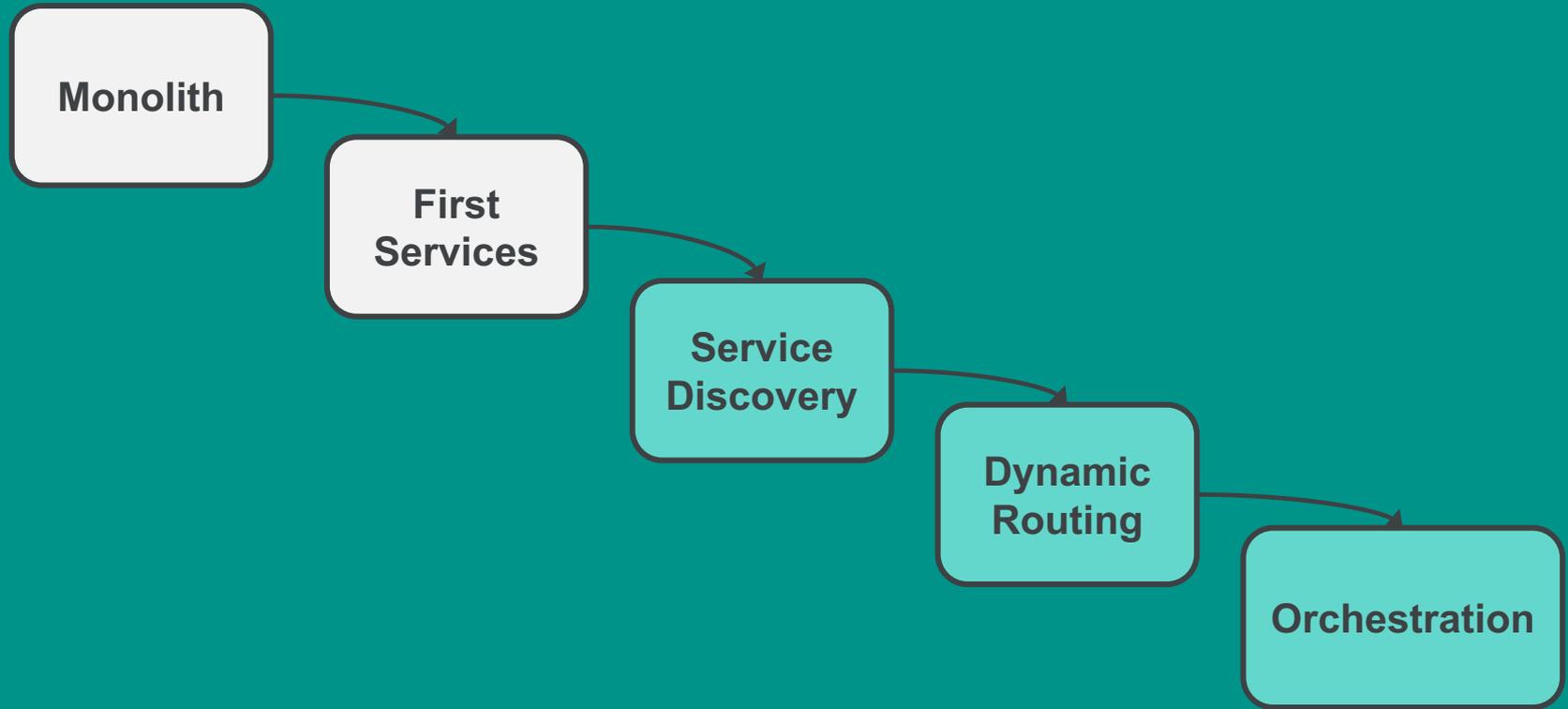
- Got our first couple of services in production with Docker
- Used the tools we knew: Salt, Supervisor

# Entering 2017

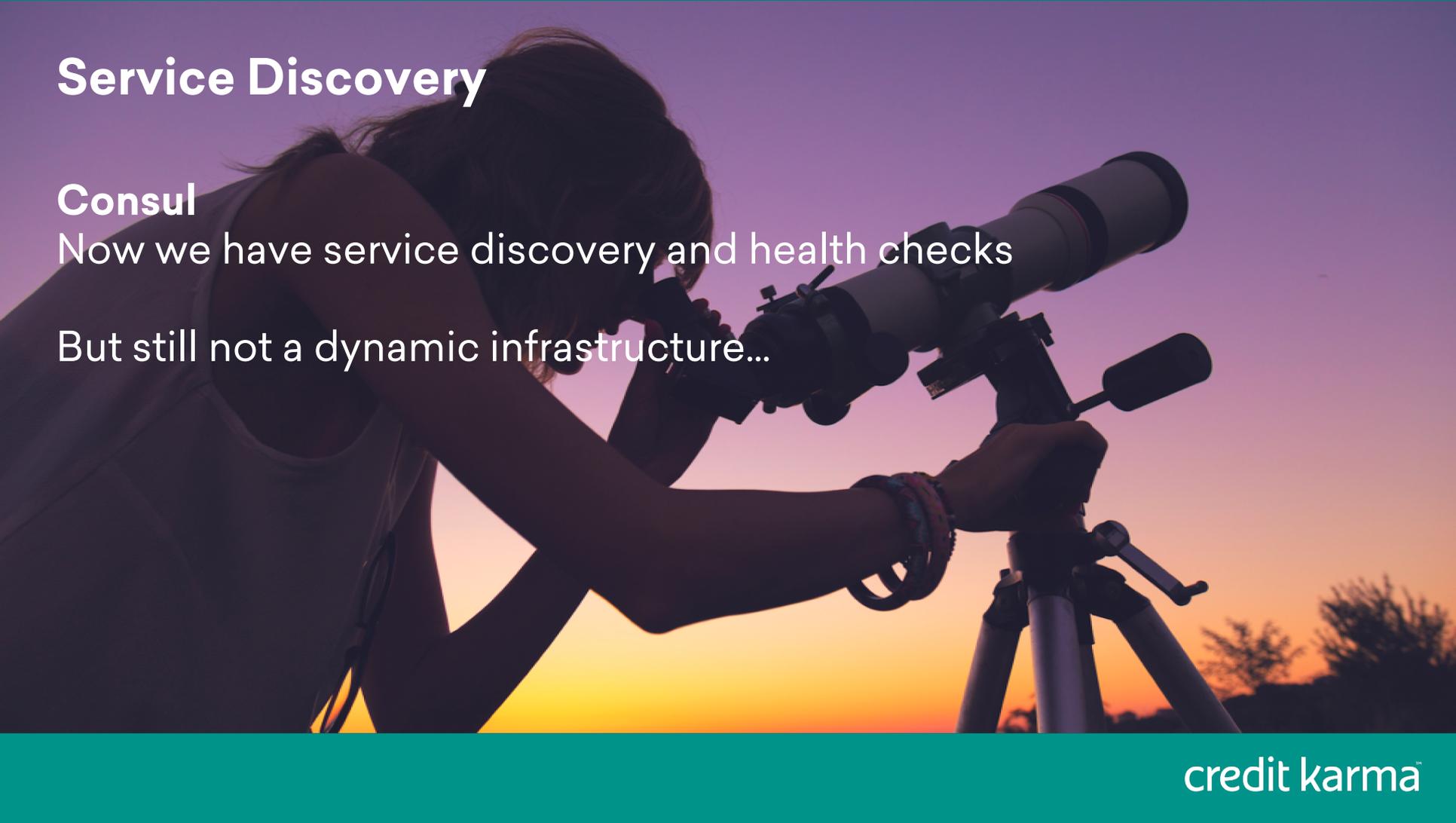


- ~15 services on 20 servers
- Inflexible architecture: No service discovery
- Orchestration == Google spreadsheet!
- Dev/test/prod dissimilar

# Evolution of our Microservices Systems



# Service Discovery

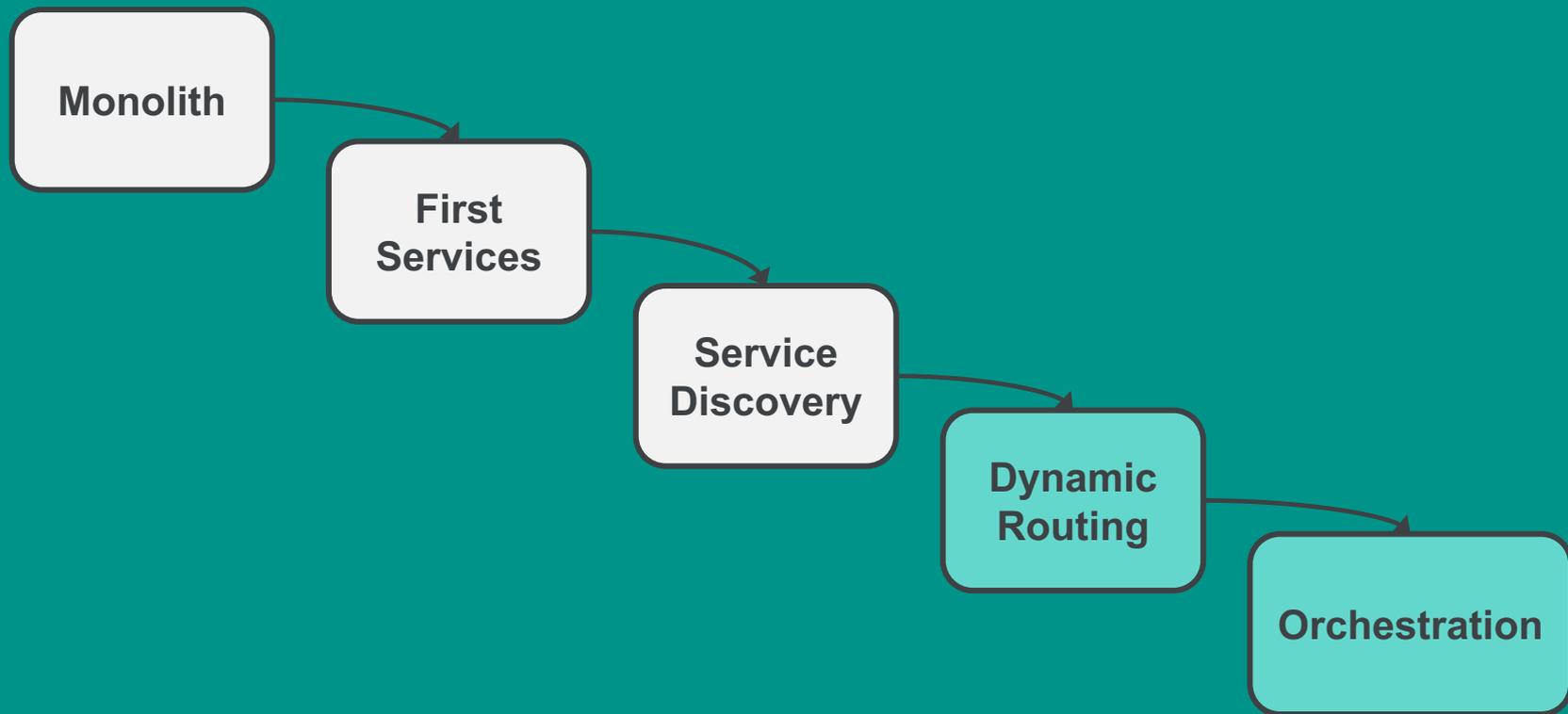
A silhouette of a person looking through a large telescope mounted on a tripod. The background is a sunset sky with orange and purple hues. The person is wearing a dark tank top and has their hair tied back. The telescope is a large, professional-grade model with a long lens.

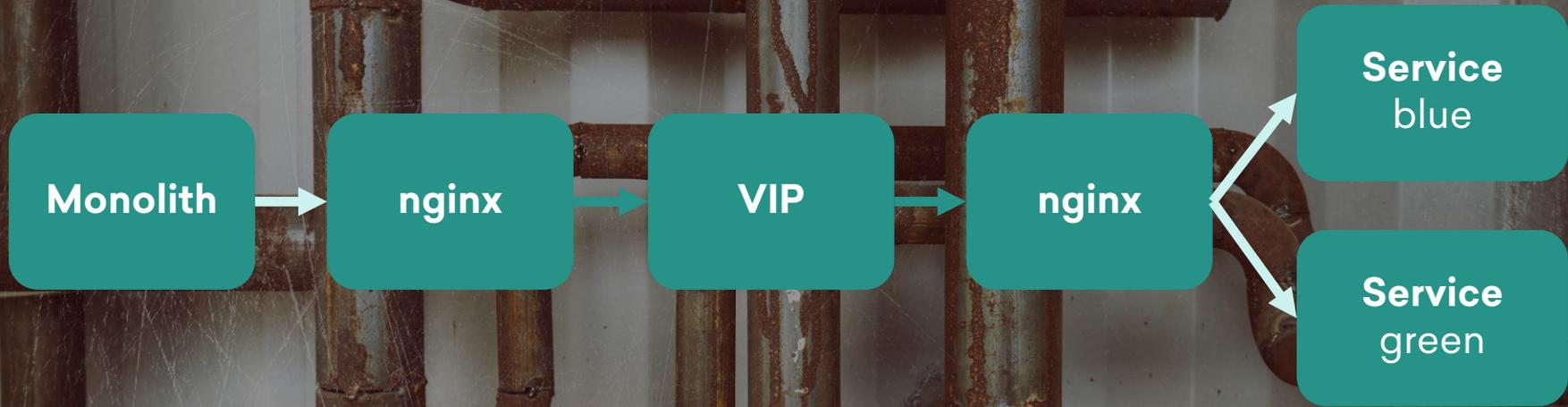
## Consul

Now we have service discovery and health checks

But still not a dynamic infrastructure...

# Evolution of our Microservices Systems



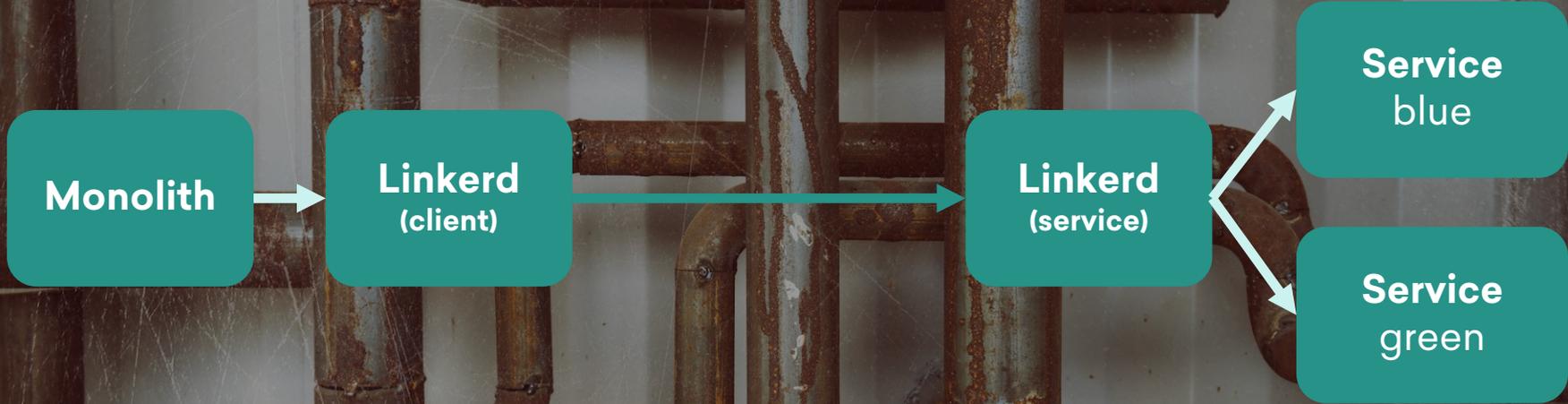


# Linkerd

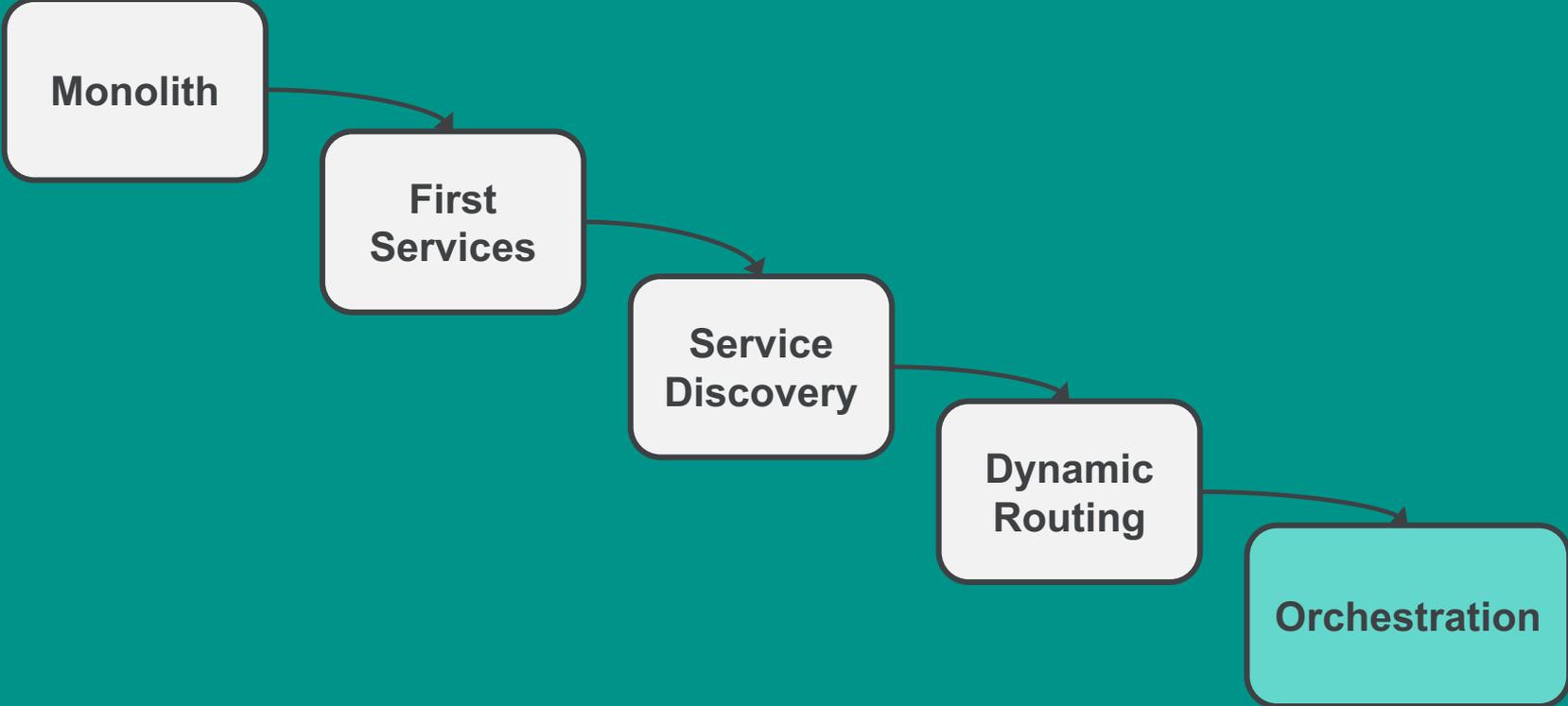
- Dynamic routing backed by Consul
- No more manual VIP & nginx setup
- Readied us for proper orchestration

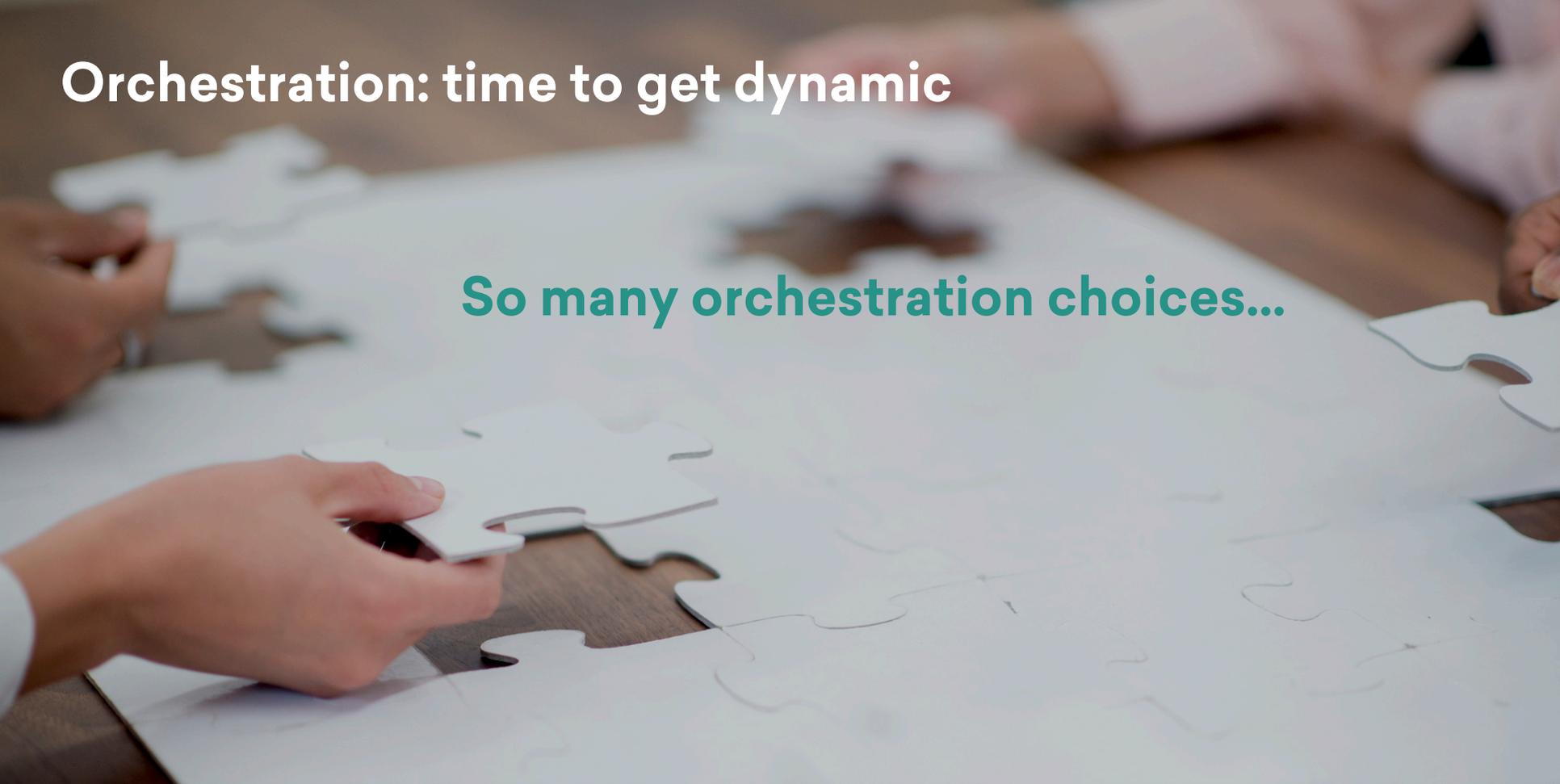


linkerd



# Evolution of our Microservices Systems





**Orchestration: time to get dynamic**

**So many orchestration choices...**

# Kubernetes

But why?



## Installing?

**Bare metal, but need to support cloud also...**

kops: no bare metal support

kubeadm: doesn't provide full H-A config

tectonic: we can't run CoreOS

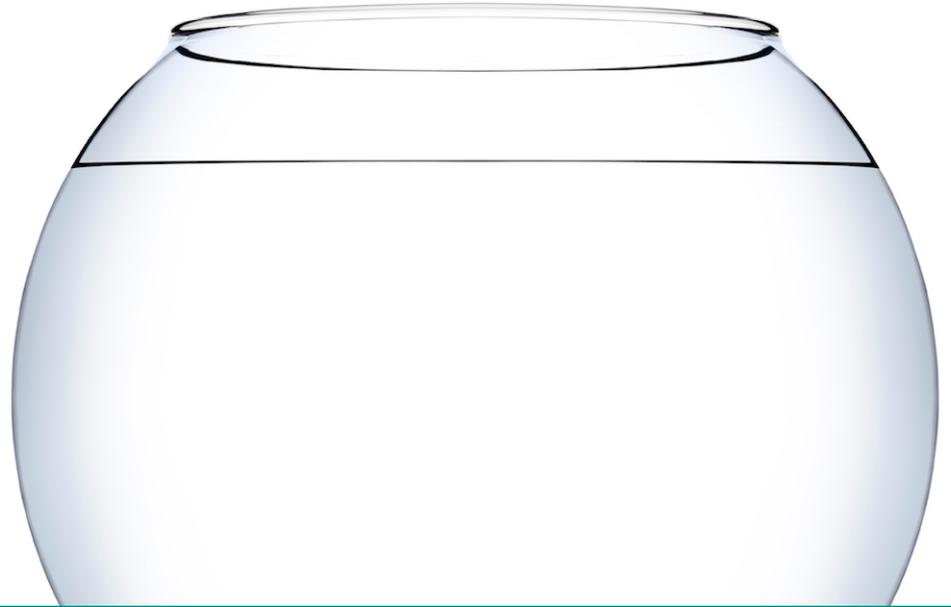
...many others...

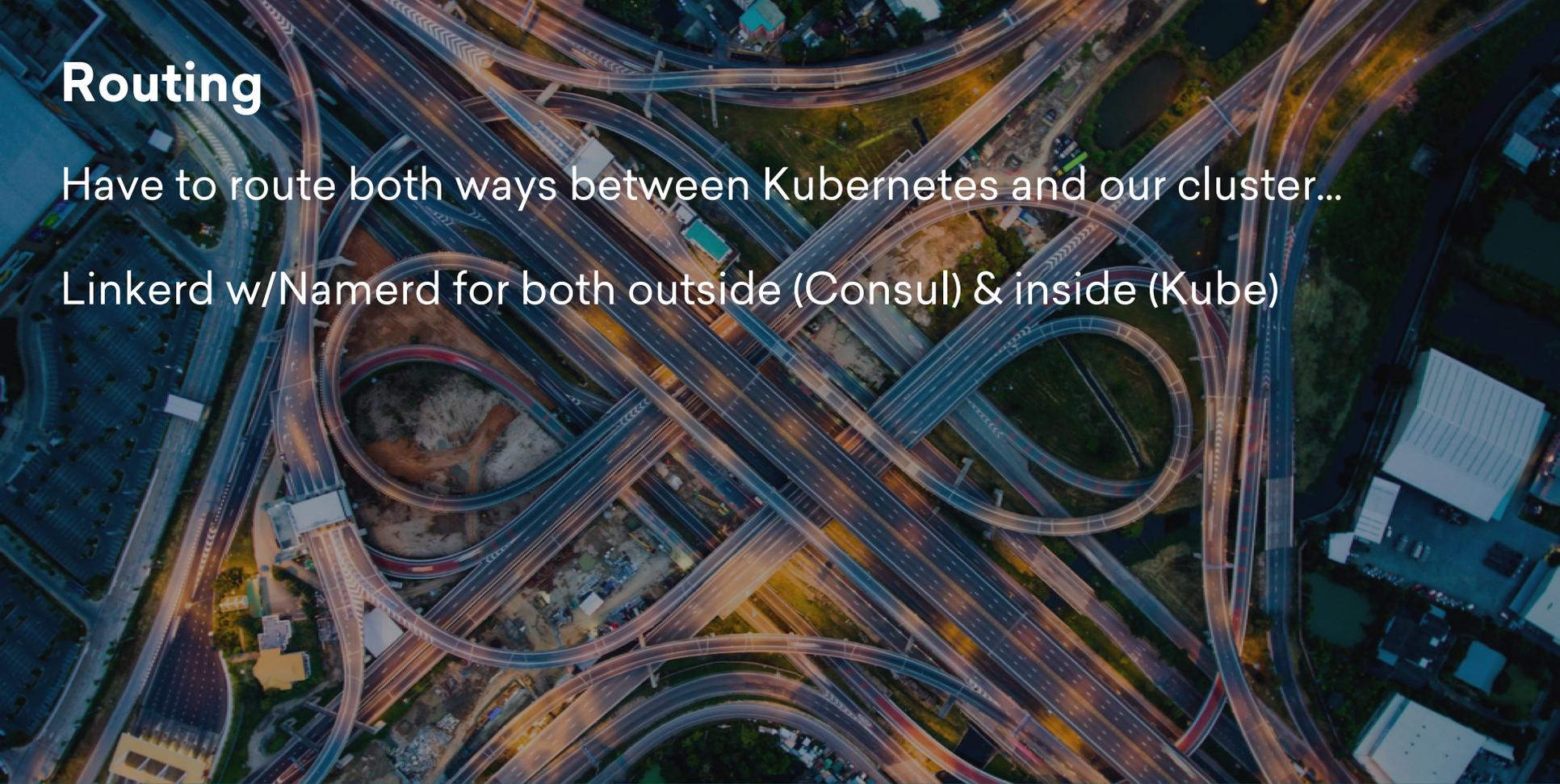
**kismatic**: supports bare metal, cloud, OS-agnostic

**Jump!  
But how?**



**Carefully.**



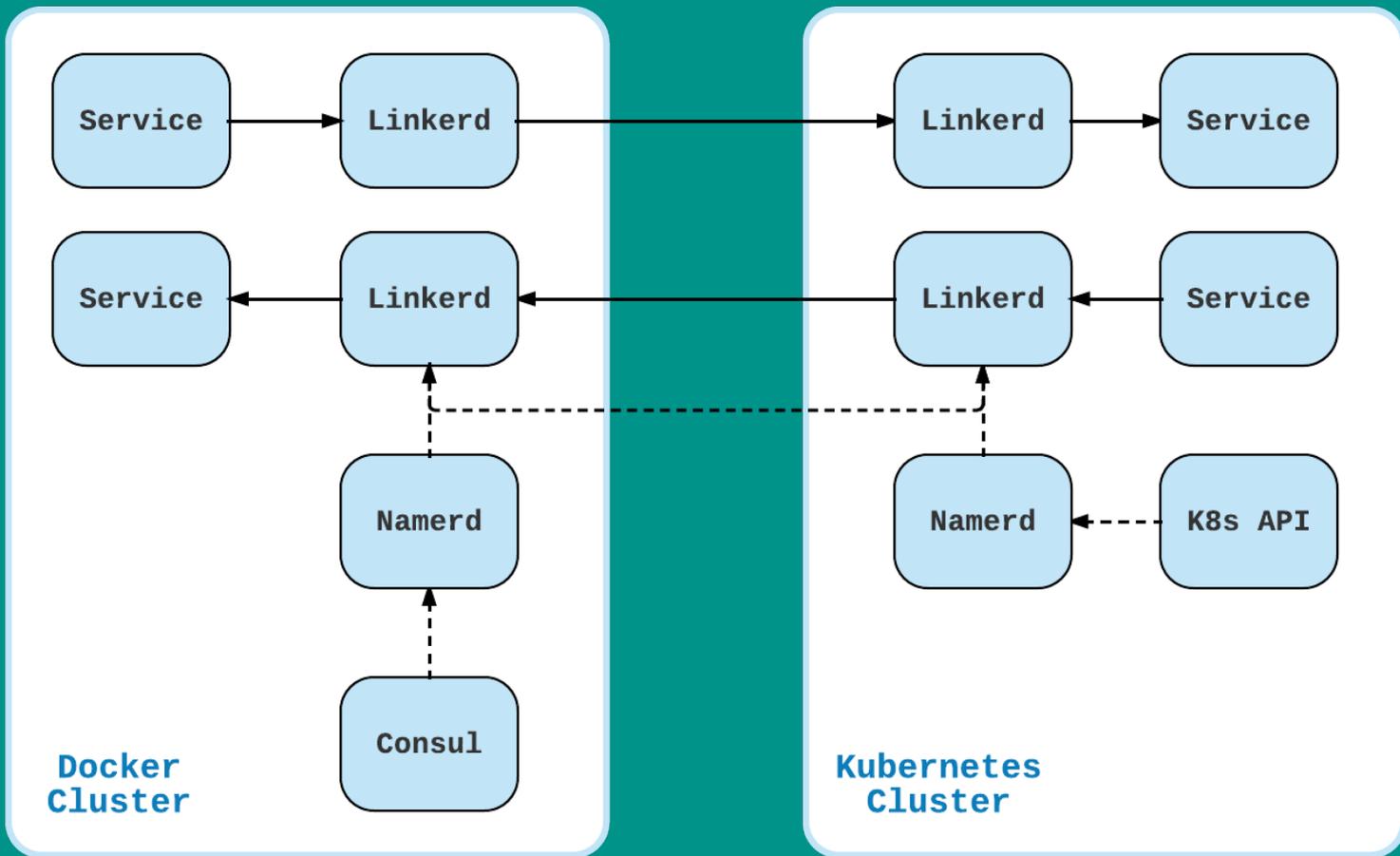


# Routing

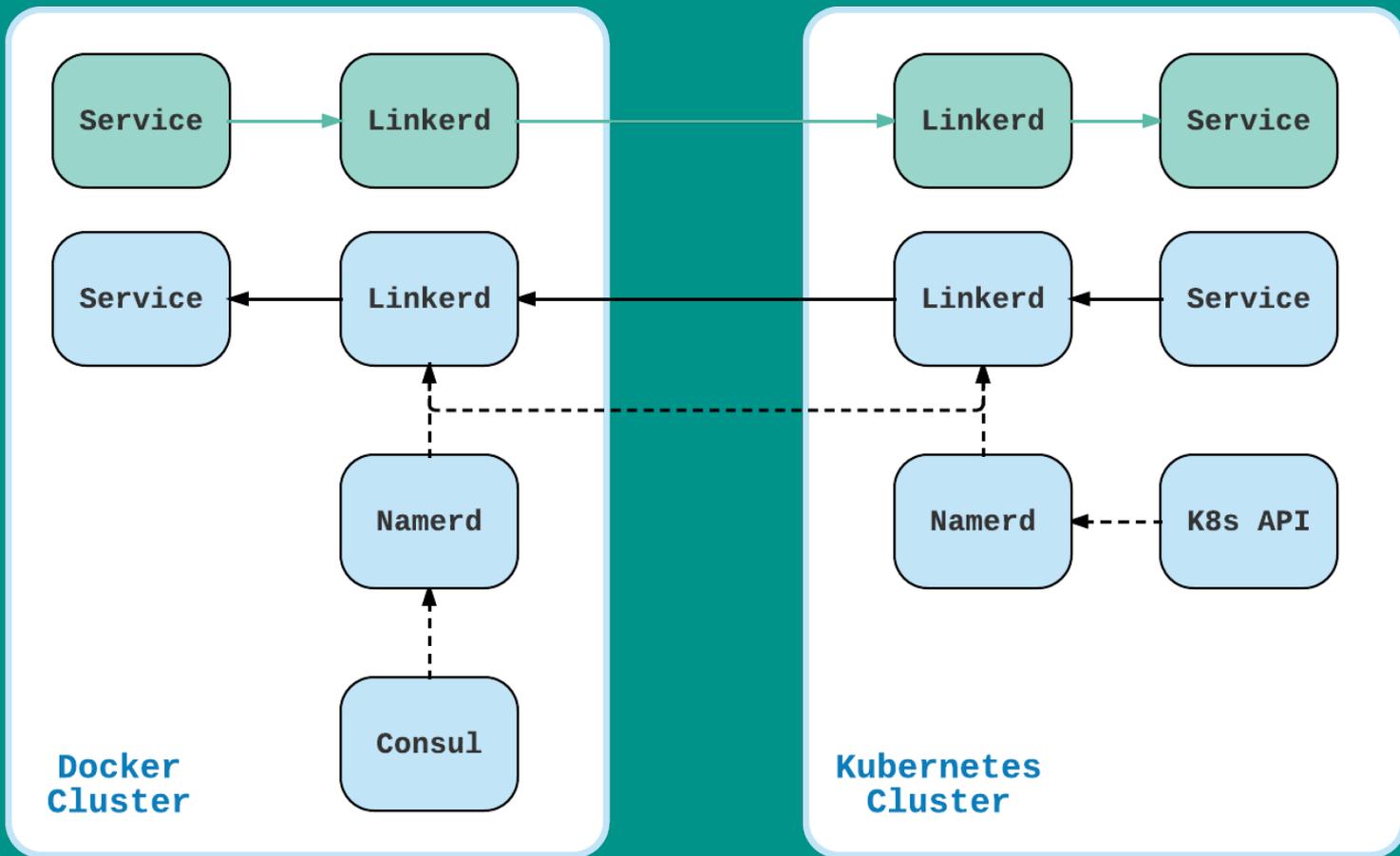
Have to route both ways between Kubernetes and our cluster...

Linkerd w/Namerd for both outside (Consul) & inside (Kube)

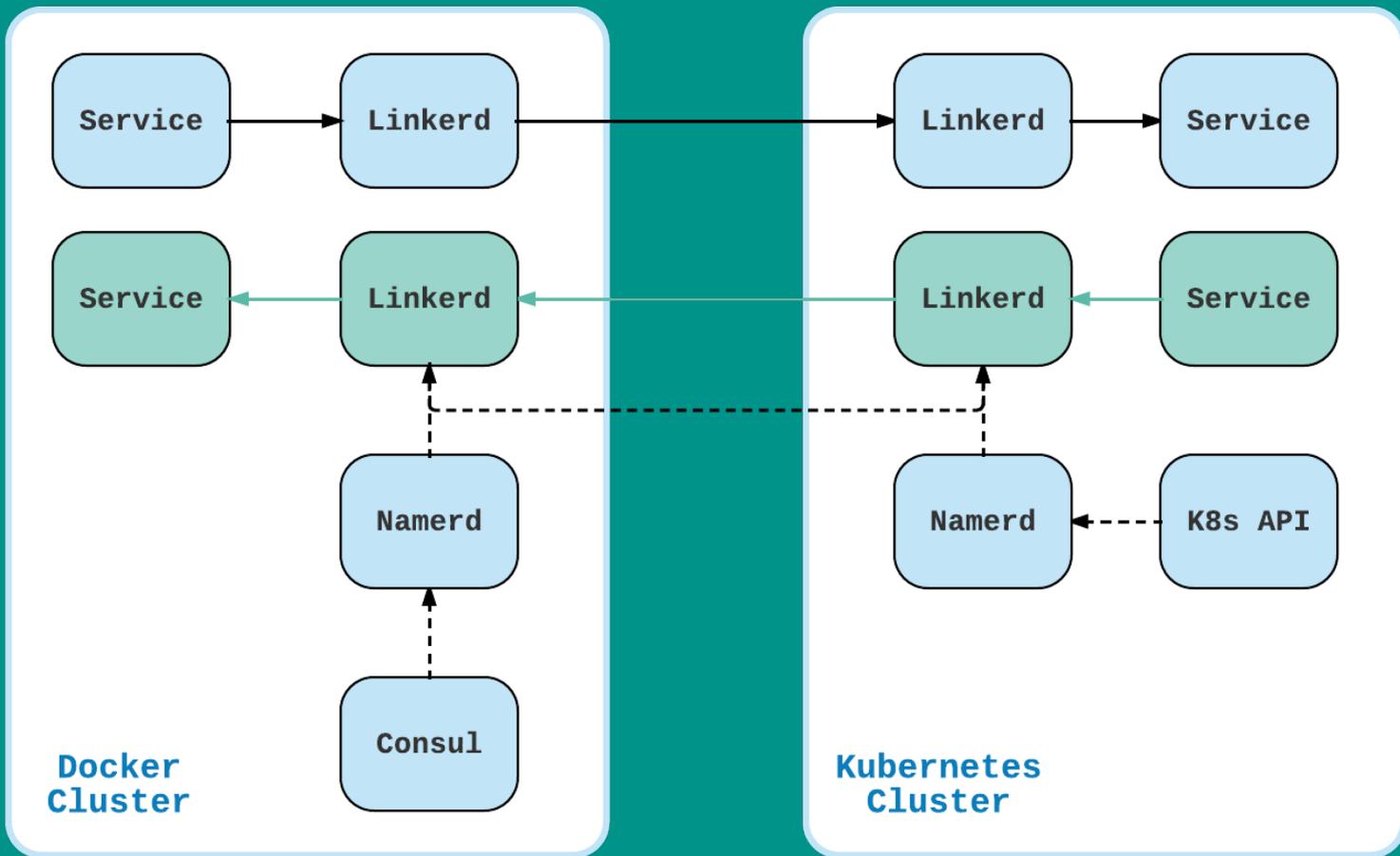
# Clusters & Routing



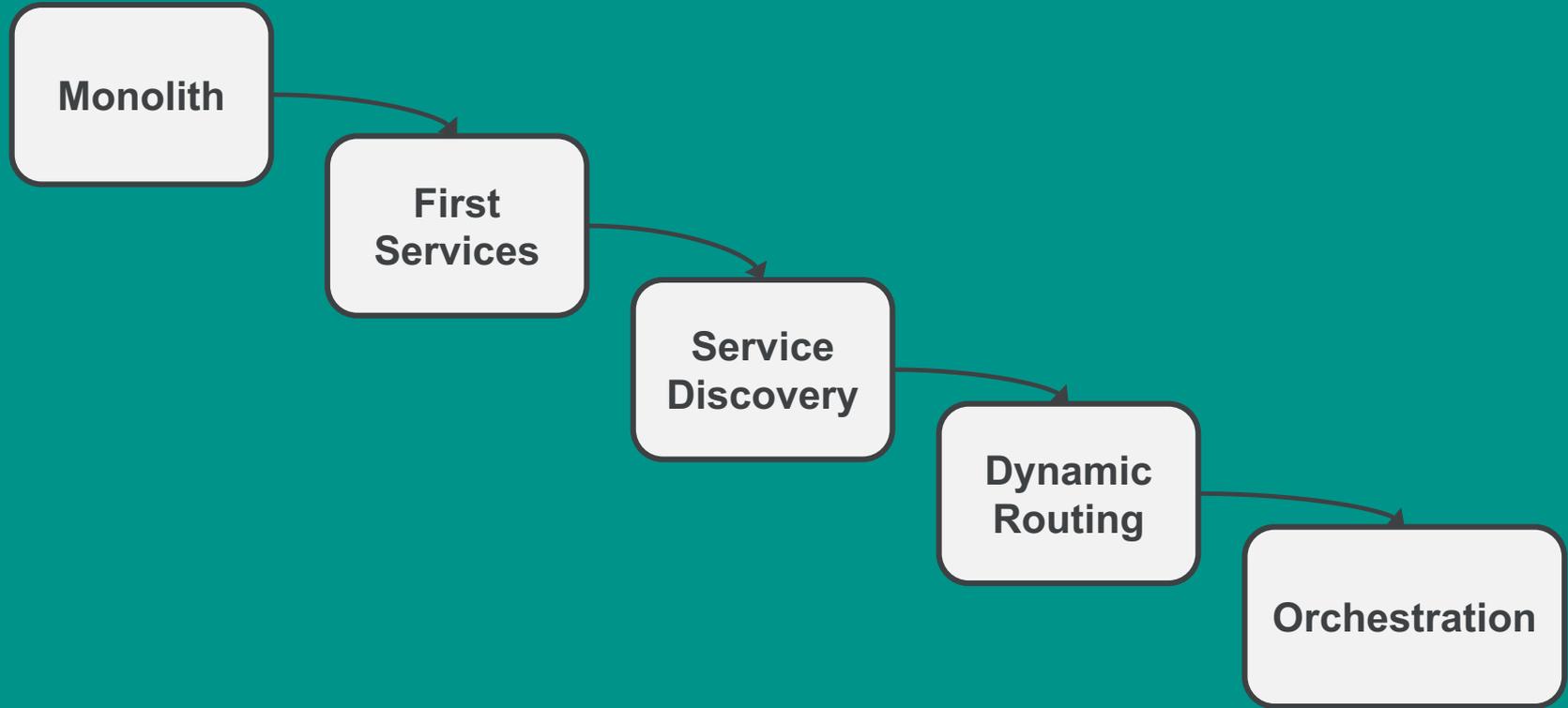
# Clusters & Routing



# Clusters & Routing



# Evolution of our Microservices Systems



# Service Configuration

Before: Salt puts files onto servers, files mounted into containers

After: Pull configs from Consul, secrets from Hashicorp Vault



The background of the slide is a complex 3D maze with a dark, textured appearance. The maze is composed of thick, greyish-brown walls that create a series of concentric and irregular paths. The lighting is dramatic, with deep shadows and highlights that give the maze a three-dimensional feel. At the bottom of the slide, there is a solid teal-colored horizontal bar.

**Thank you!**

**Questions?**

Mason Jones  
@masonoise

@CreditKarmaEng

CK Engineering blog: [engineering.creditkarma.com](http://engineering.creditkarma.com)