



From Monolith to Microservices

Introductions

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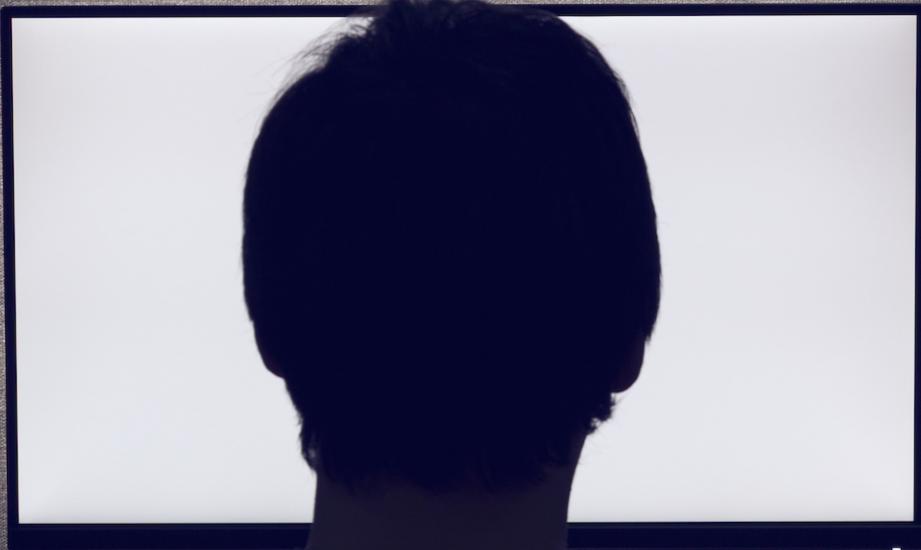
Introductions

credit karma™

~800 employees

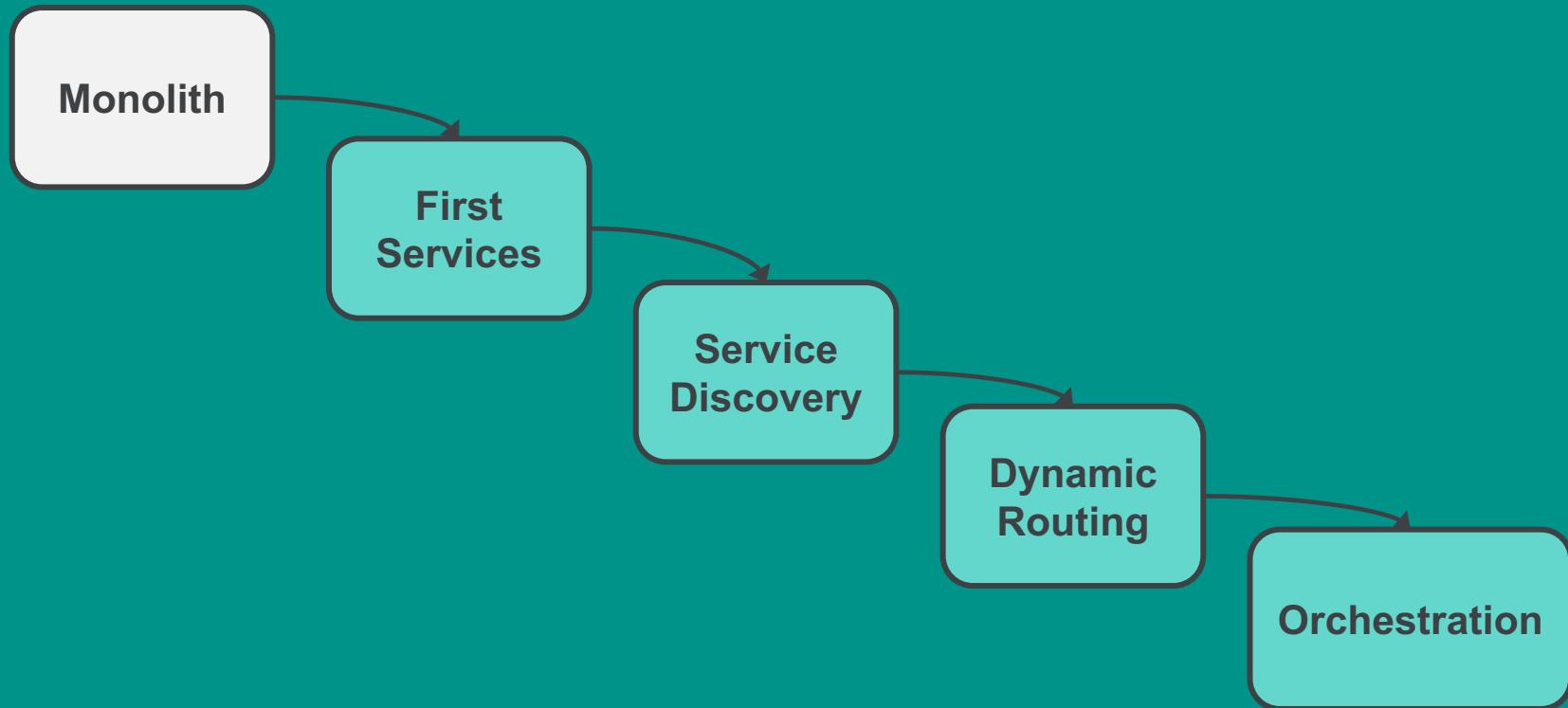
50% engineering

> 75 million members



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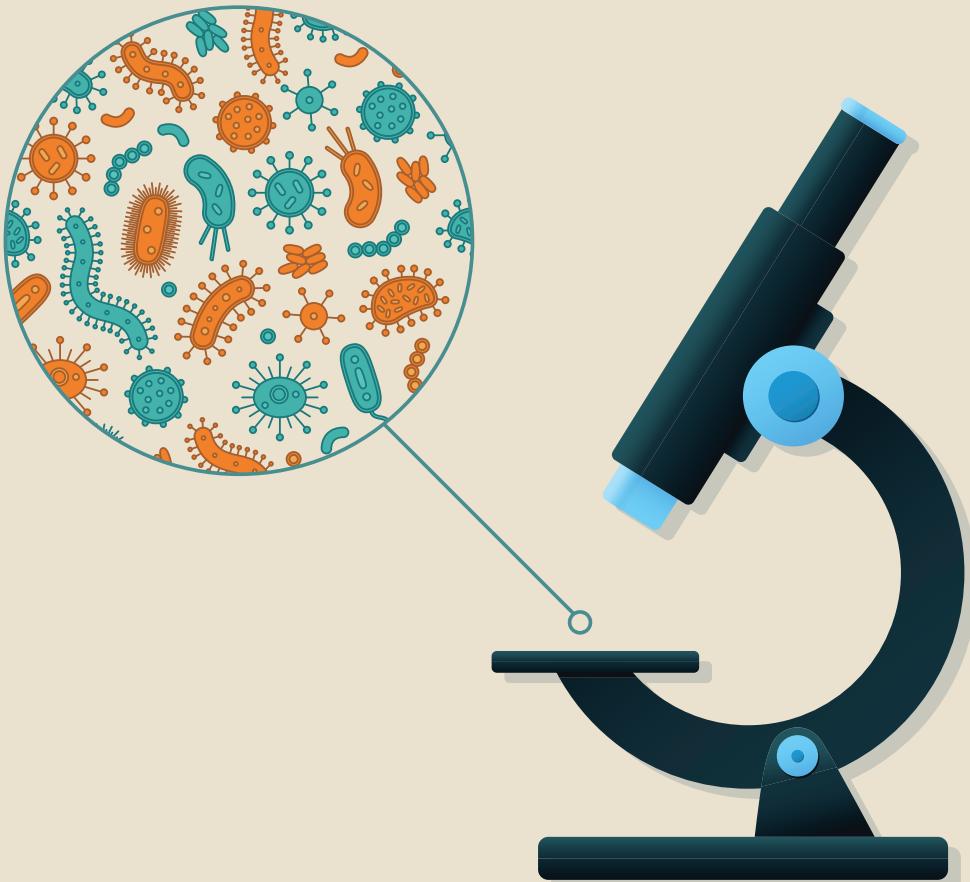
Evolution of our Microservices Systems



Why Microservices?

Monolith + Growth =
Sadness

Team independence
&
Agility



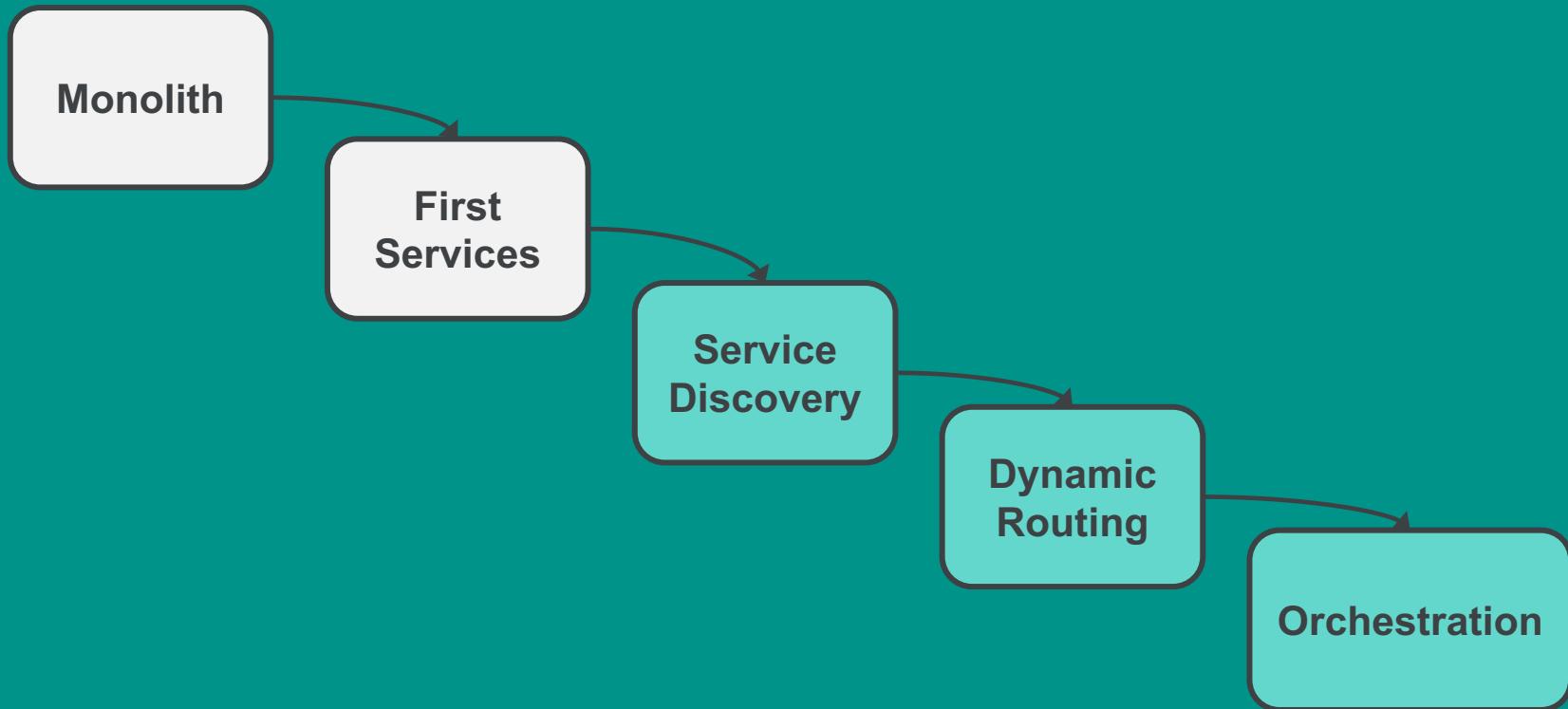
Baby Steps

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

Entering 2017

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

Evolution of our Microservices Systems



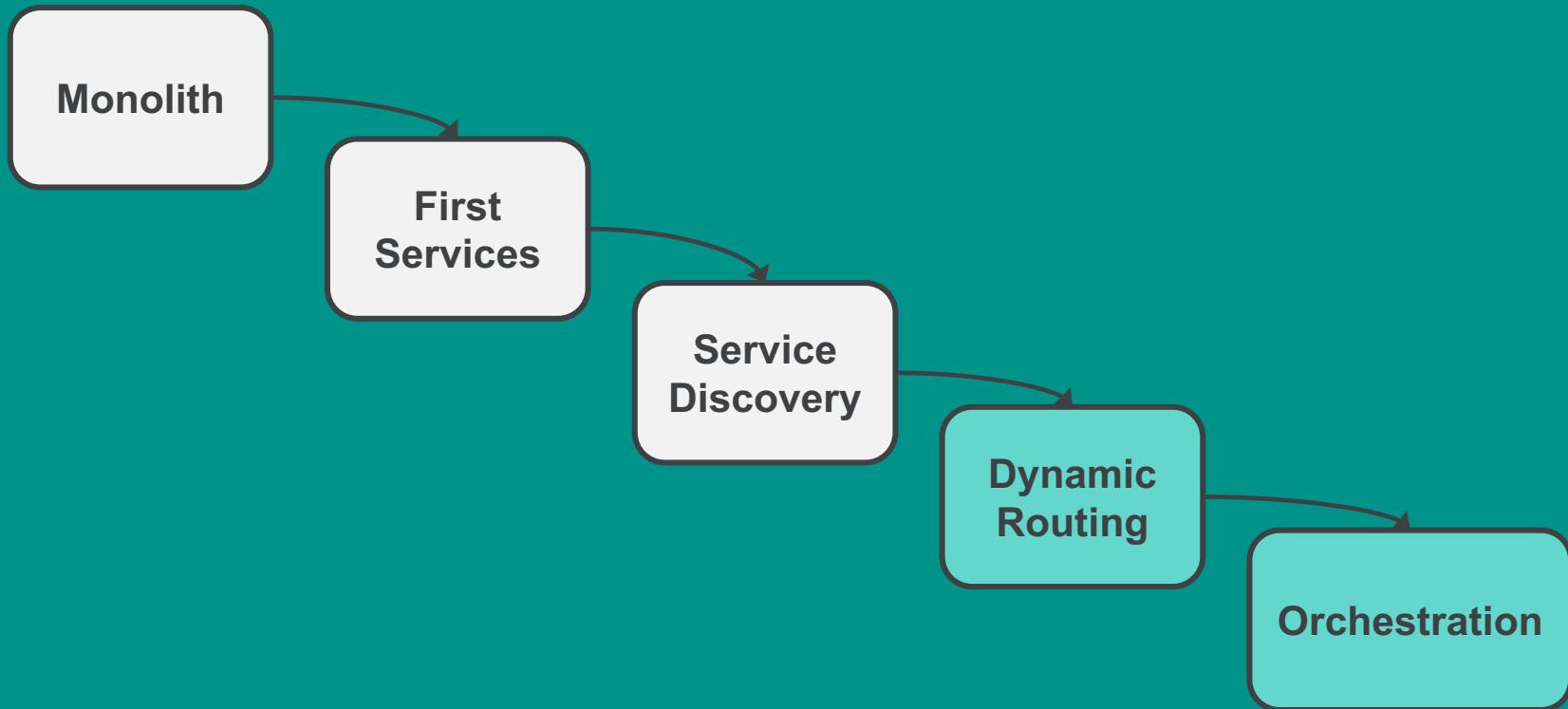
Service Discovery

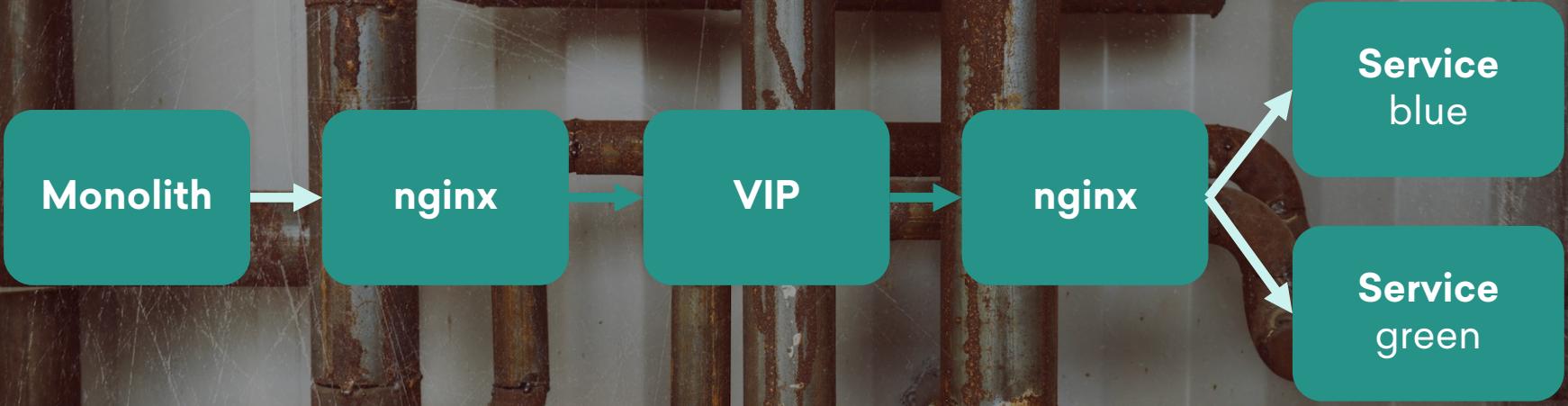
Consul

Now we have service discovery and health checks

But still not a dynamic infrastructure...

Evolution of our Microservices Systems





Linkerd

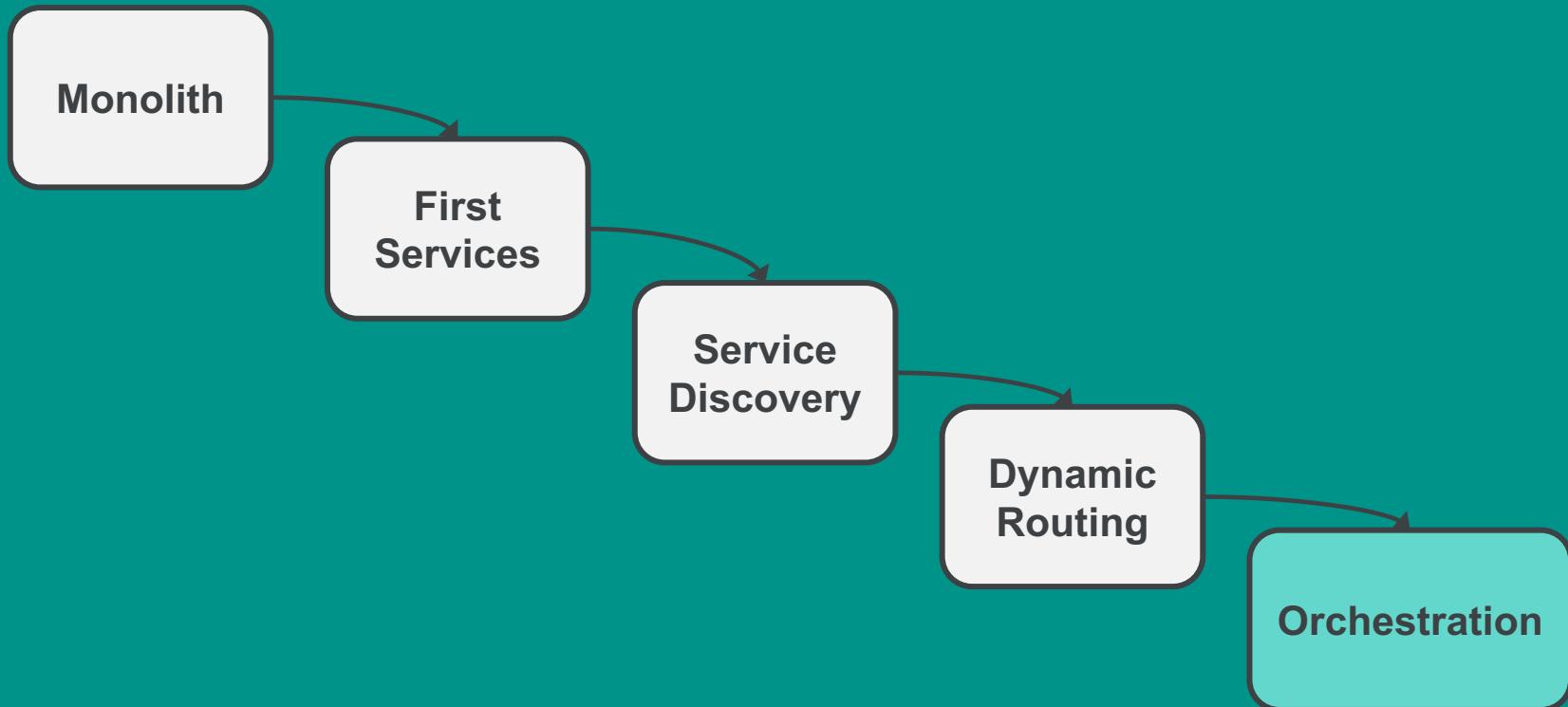
- Dynamic routing backed by Consul
- No more manual VIP & nginx setup
- Readied us for proper orchestration



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

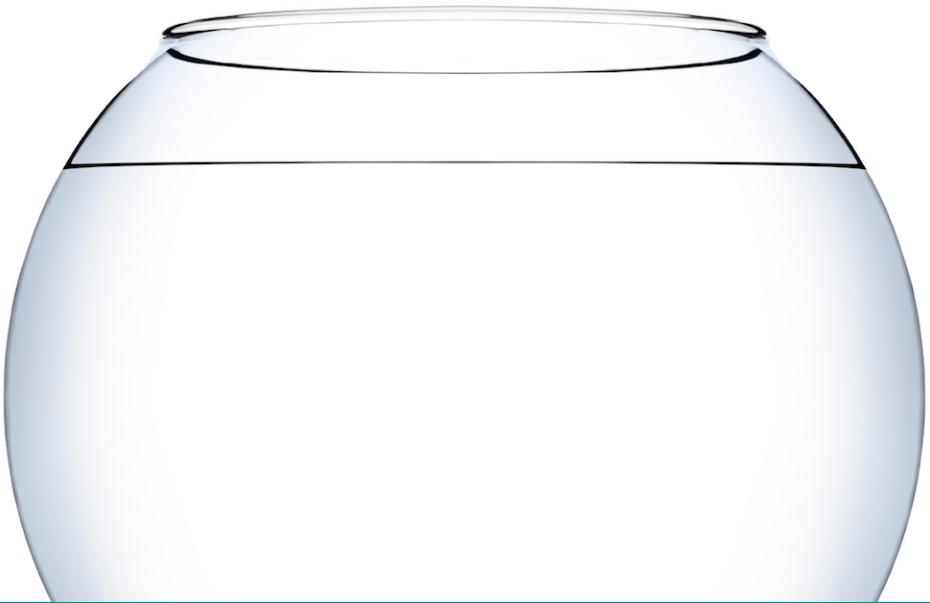
...many others...

kismatic: supports bare metal, cloud, OS-agnostic

**Jump!
But how?**



Carefully.



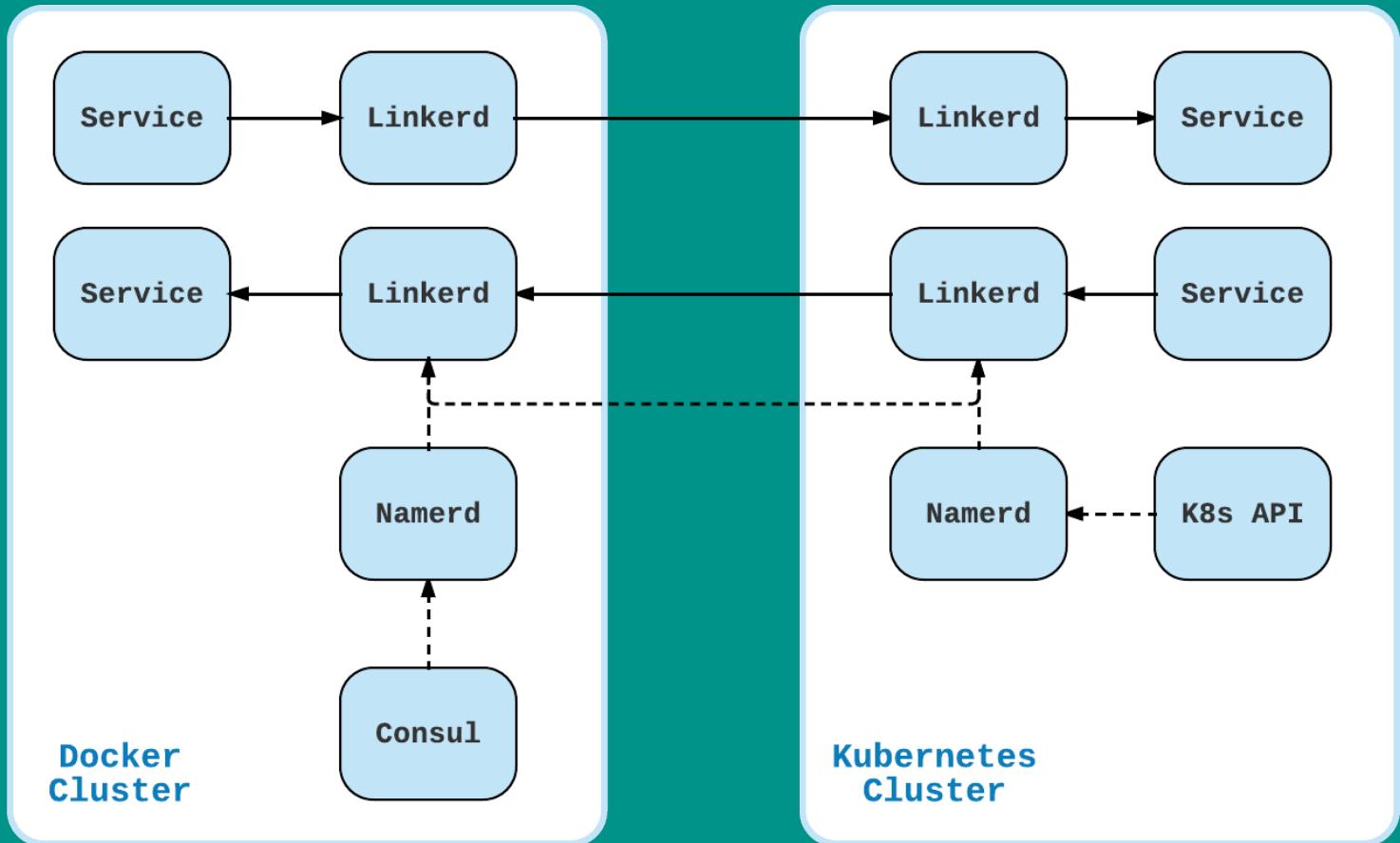
credit karma™

Routing

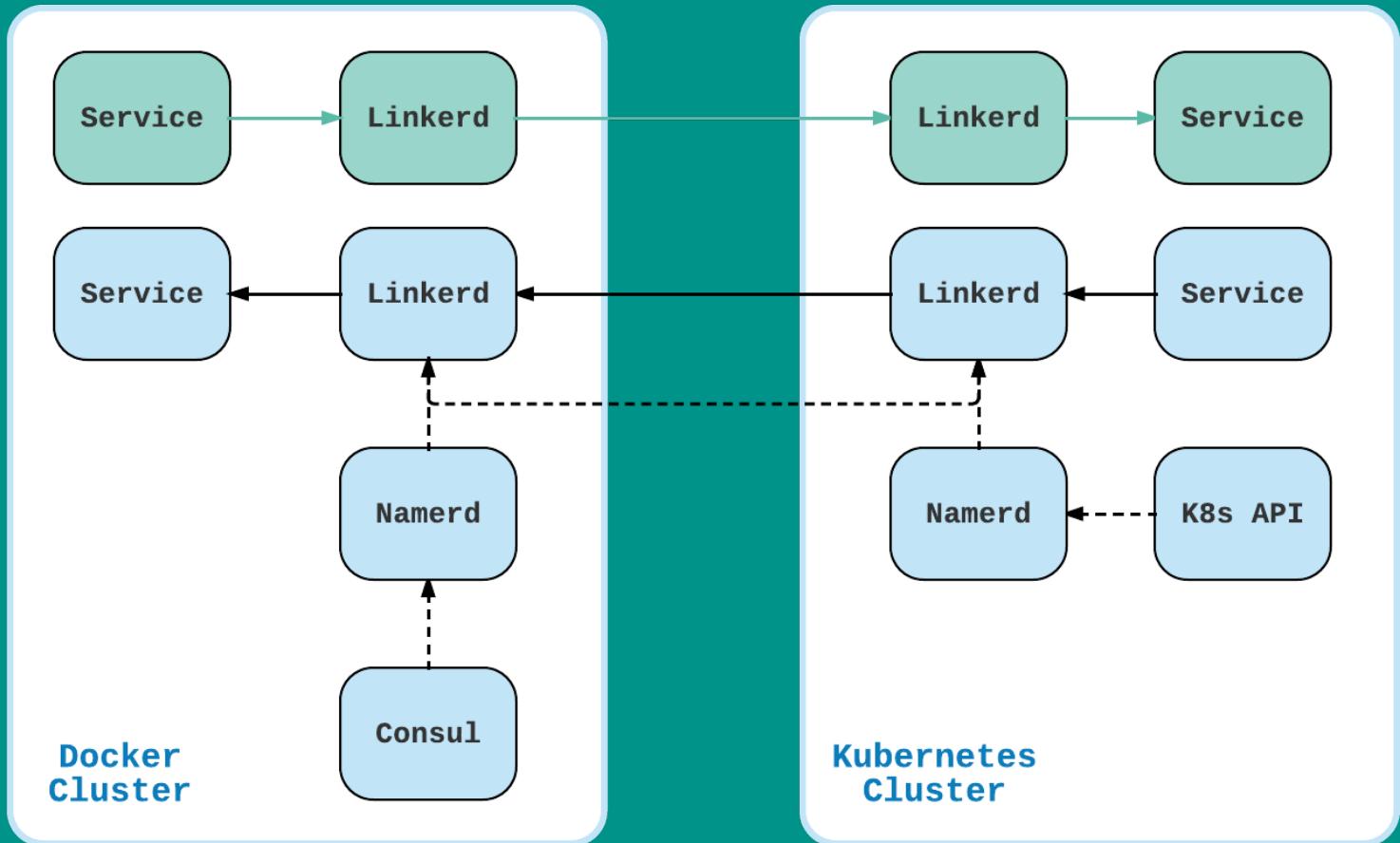
Have to route both ways between Kubernetes and our cluster...

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

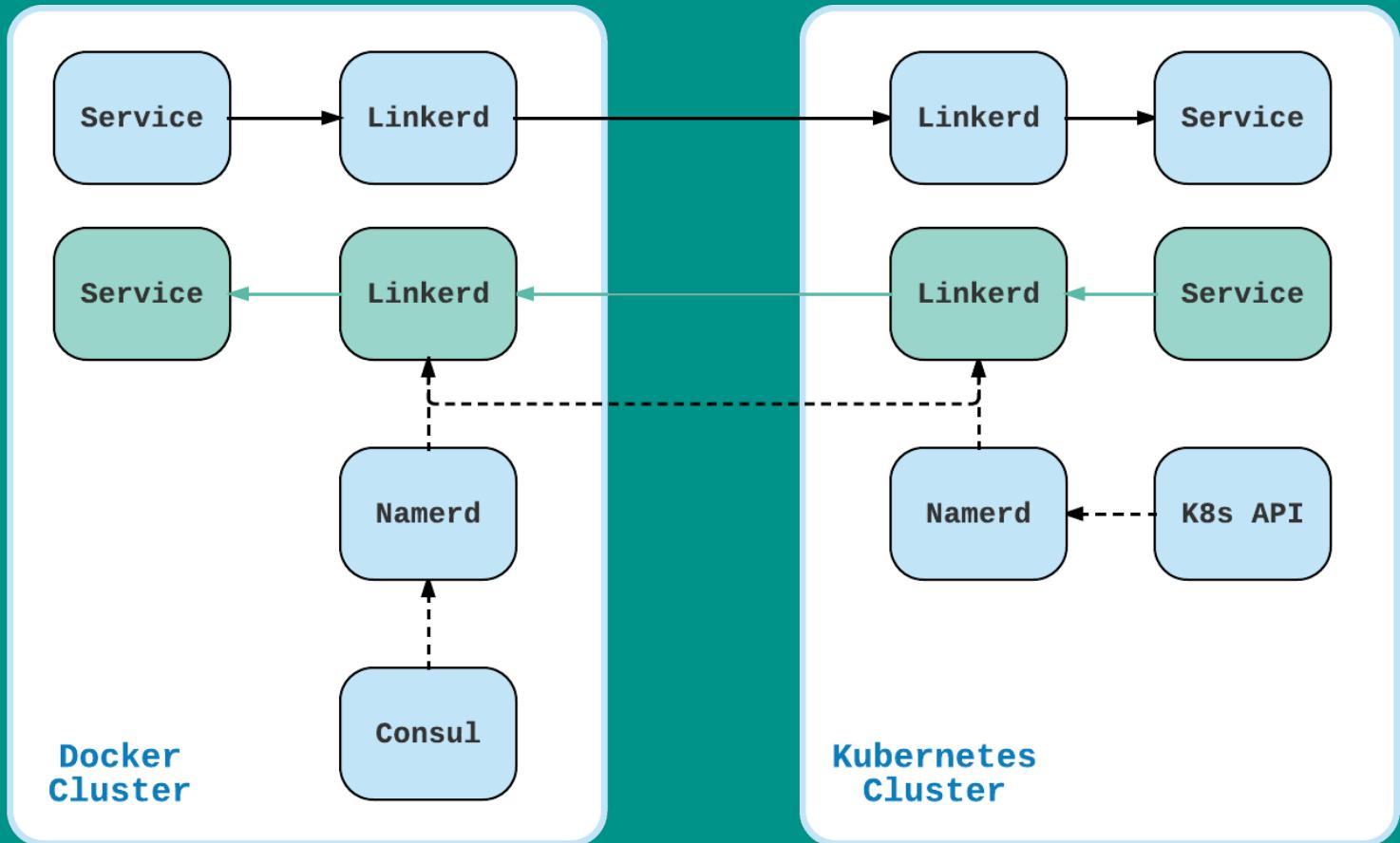
Clusters & Routing



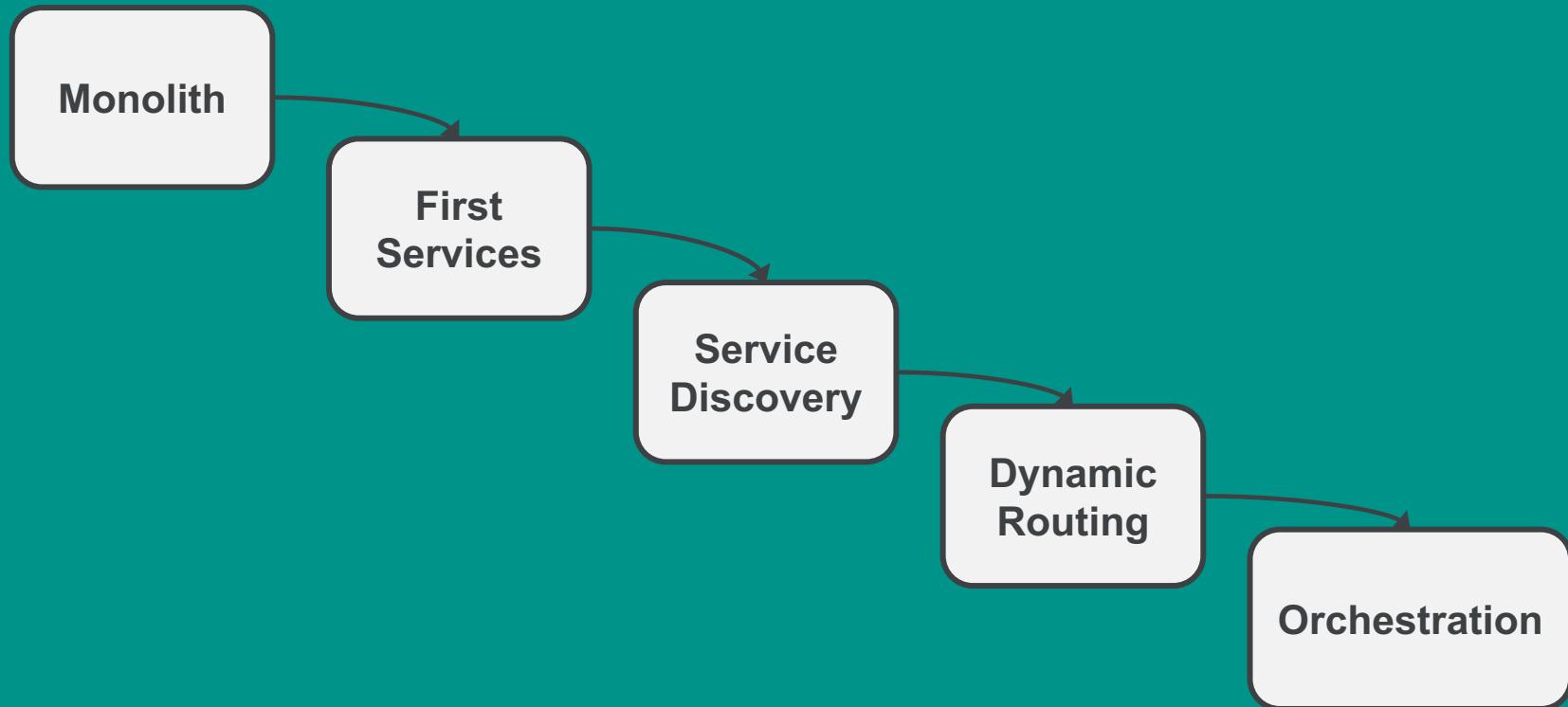
Clusters & Routing



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

Learnings

- Start small & simple
- Integrating existing tools w/Kubernetes
- Installers: far too many
 - Community should rally behind one
- Security: tricky with so many moving parts

Thank you!

Questions?

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CK Engineering blog: engineering.creditkarma.com