

Docker

Beyond Containers to Clusters



Me

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I wrote a little cloud book...

FREE - Compliments of Pivotal
<http://bit.ly/cloud-native-book>

O'REILLY®

Migrating to Cloud-Native Application Architectures

Compliments of
Pivotal



Matt Stine

What's missing?

- Capacity Management
- Scheduling / Bin Packing
- Health Checks
- Persistent State / Volume Management
- Networking
- Service Discovery
- Routing / Load Balancing
- Log / Metrics Aggregation

We'll Cover
a Few
of These



We're rebuilding the entire world...

Post

I need a place that I can
run Docker...

Docker Machine

<https://docs.docker.com/machine/>

DEMO

OK Cool...how do I run containers on that?

Back to Docker

DEMO

Great...I'd like to
declaratively compose
containers!

Docker Compose

<https://docs.docker.com/compose/>

docker-compose.yml

```
web:  
  build: .  
  command: python app.py  
  ports:  
    - "5000:5000"  
  volumes:  
    - .:/code  
  links:  
    - redis  
redis:  
  image: redis
```

DEMO

So back to bigger issues...

- Capacity Management
- Scheduling / Bin Packing
- Health Checks
- Persistent State / Volume Management
- Networking
- Service Discovery
- Routing / Load Balancing
- Log / Metrics Aggregation

We Did This
Once

App/Service Delivery vs. Infrastructure

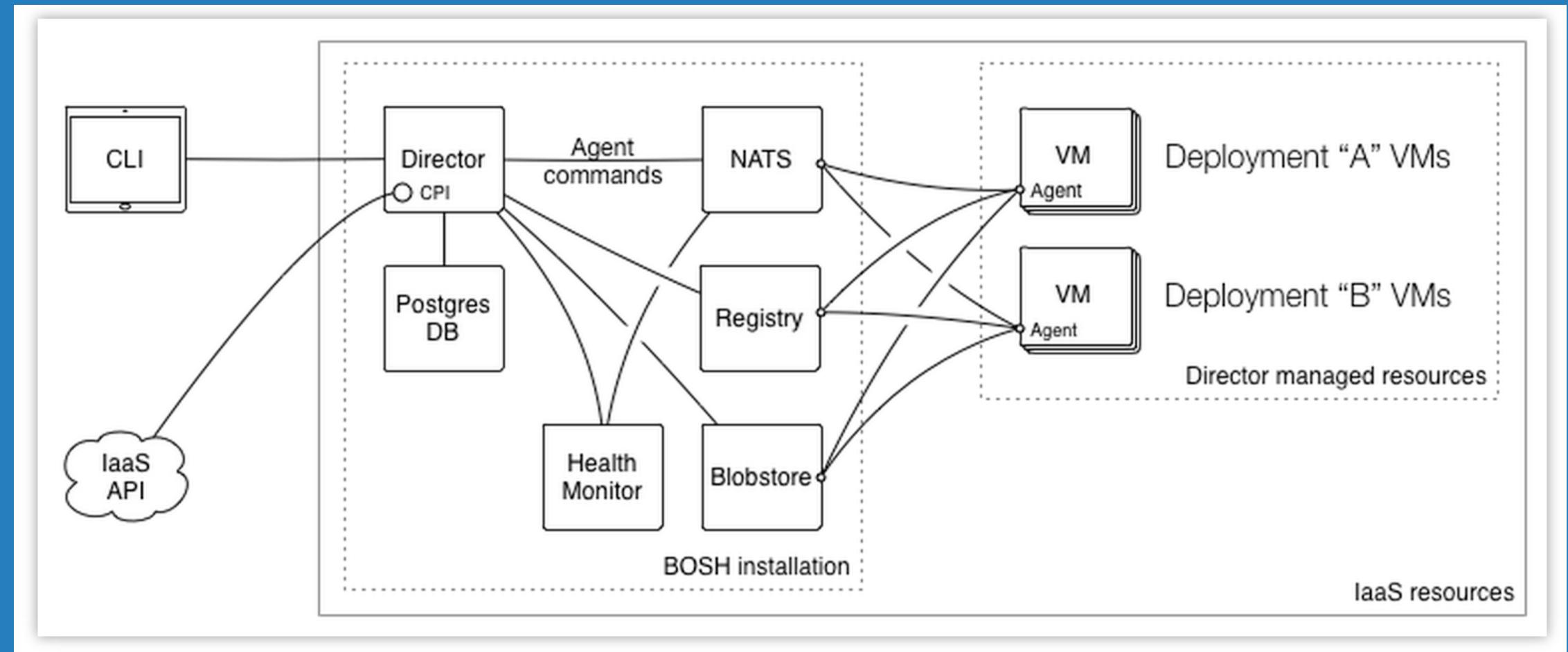
All

Bleeding Edge

Capacity Management

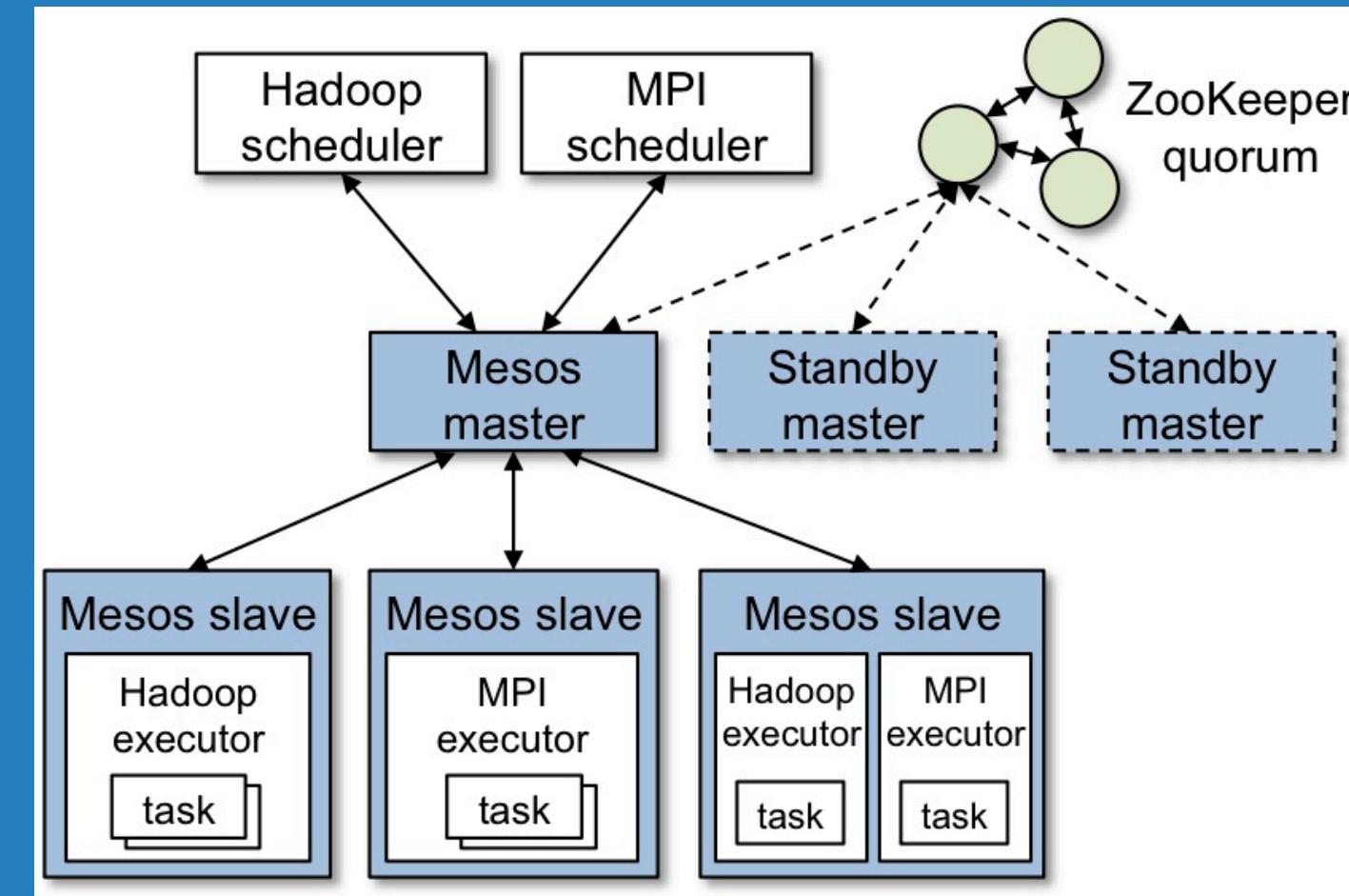
- BOSH (and some Volume Mgmt!)
- Mesos

BOSH



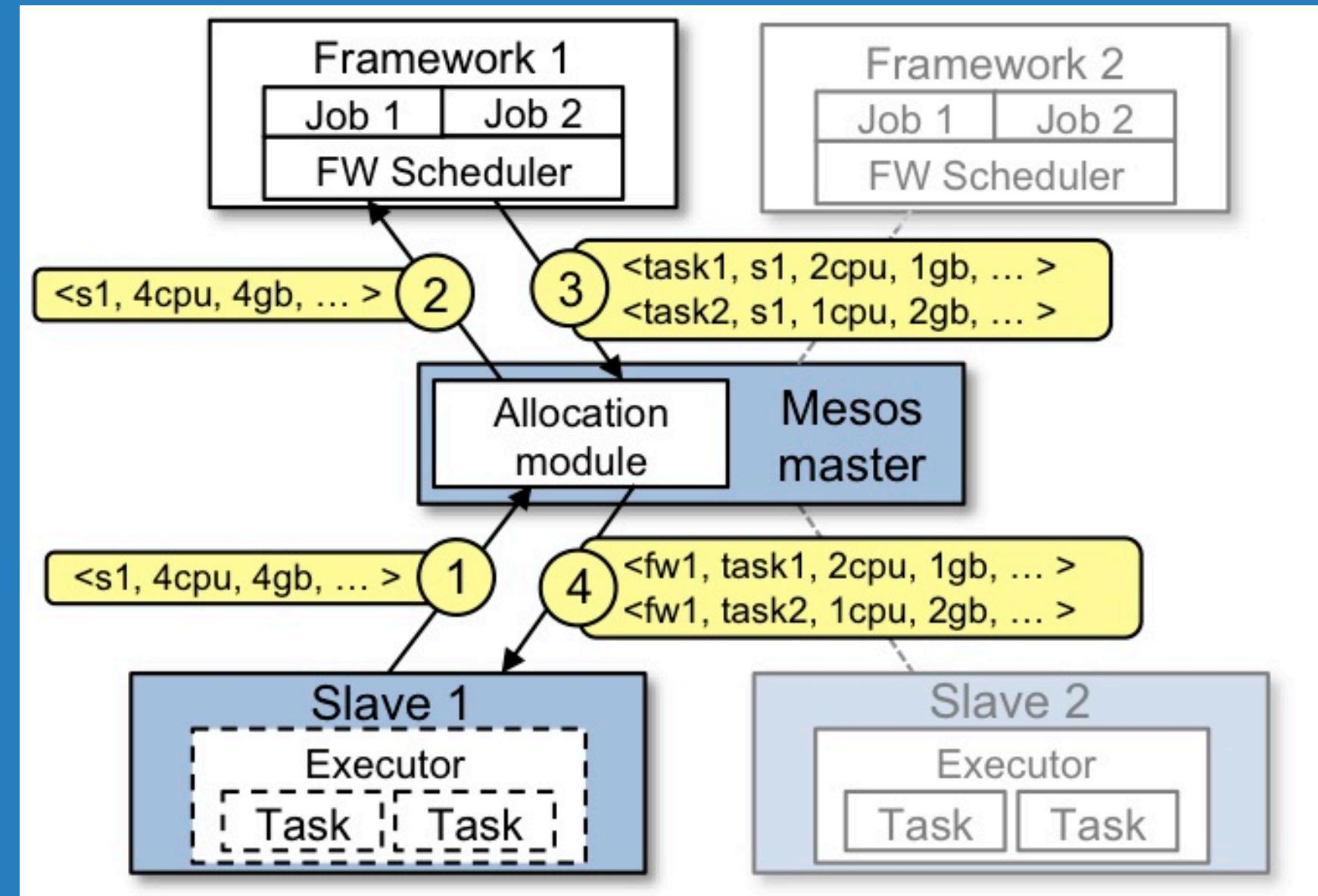
<http://bosh.io>

Mesos



<http://mesos.apache.org/>

Mesos Resource Offer



Scheduling / Health Checks

- Swarm
- Diego
- Kubernetes
- Marathon

Docker Swarm

<https://docs.docker.com/swarm/>

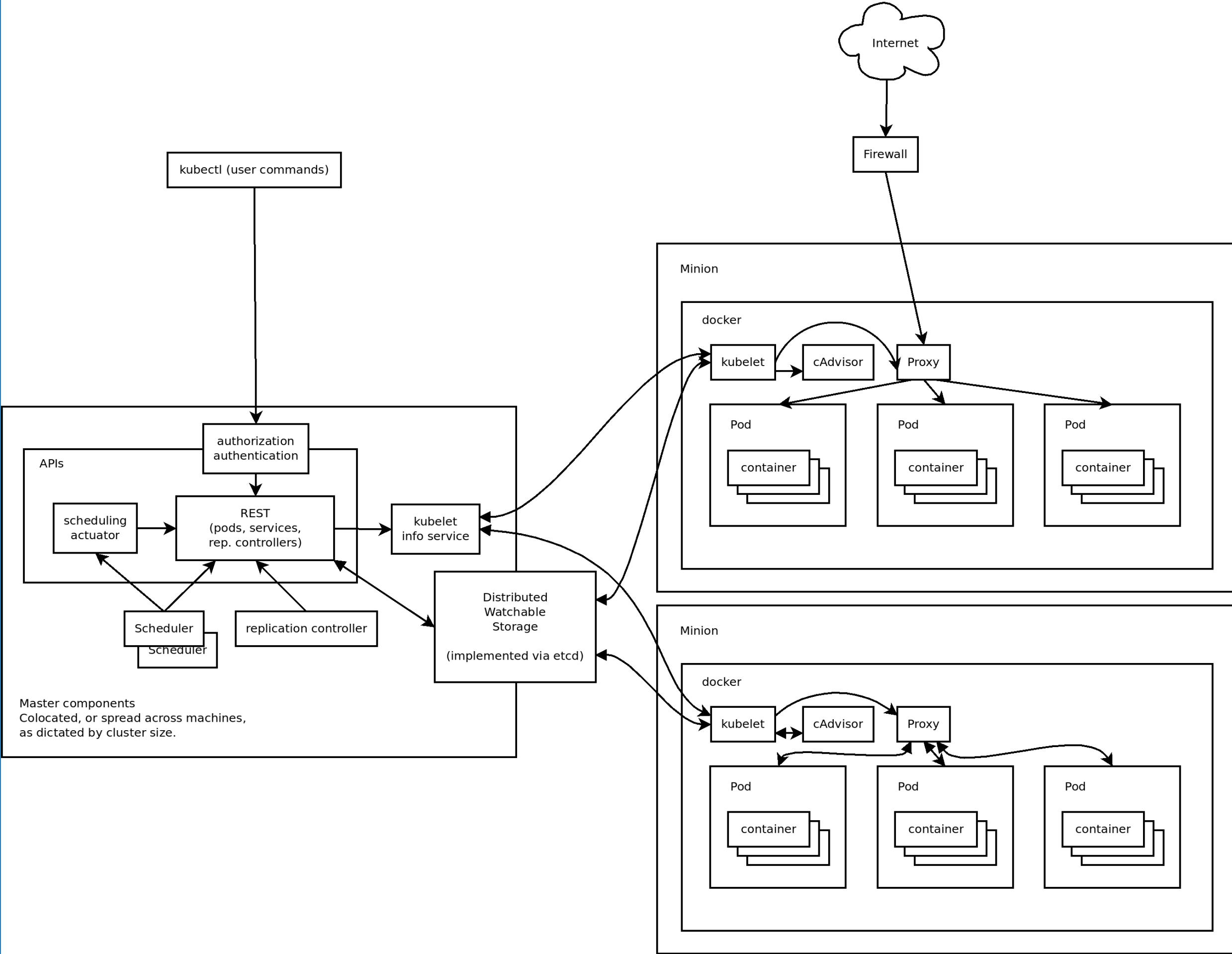
DEMO

Kubernetes



<http://kubernetes.io/>

Minions
Pods
Replication Controllers
Services

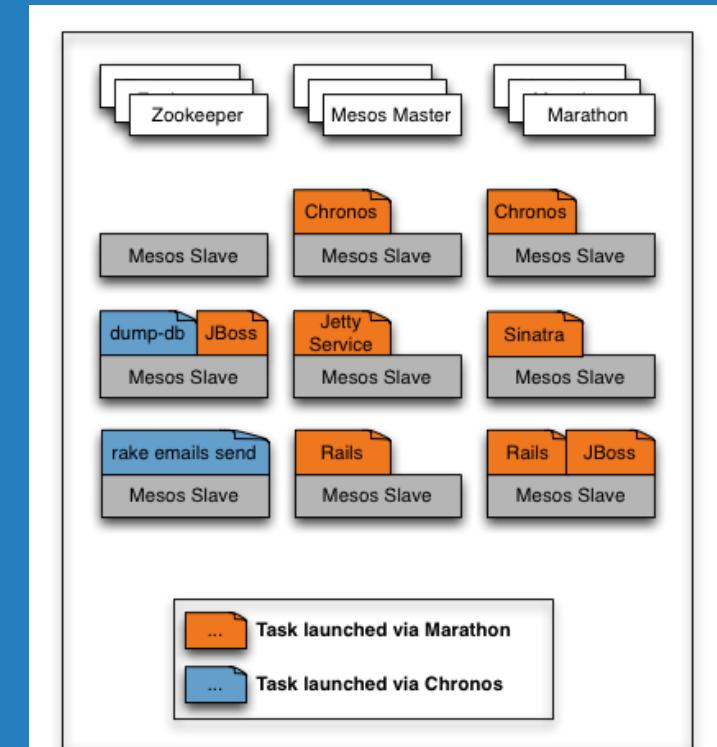
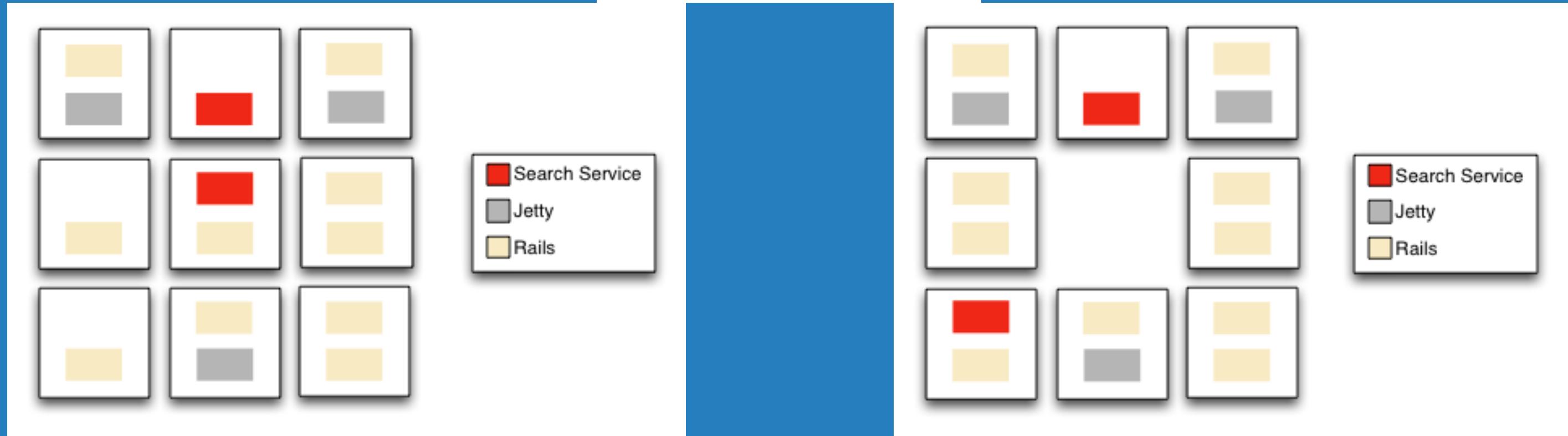


```
{  
  "id": "lattice-app-controller",  
  "kind": "ReplicationController",  
  "apiVersion": "v1beta1",  
  "desiredState": {  
    "replicas": 3,  
    "replicaSelector": {"name": "lattice-app"},  
    "podTemplate": {  
      "desiredState": {  
        "manifest": {  
          "version": "v1beta1",  
          "id": "lattice-app-controller",  
          "containers": [{  
            "name": "lattice-app",  
            "image": "mstine/lattice-app",  
            "command": ["/lattice-app"],  
            "env": [{  
              "key": "PORT",  
              "value": "8080"  
            }],  
            "cpu": 100,  
            "memory": 50000000,  
            "ports": [{"containerPort": 8080}]  
          }]  
        }  
      },  
      "labels": {  
        "name": "lattice-app"  
      }  
    },  
    "labels": {"name": "lattice-app"}  
  }  
}
```


DEMO

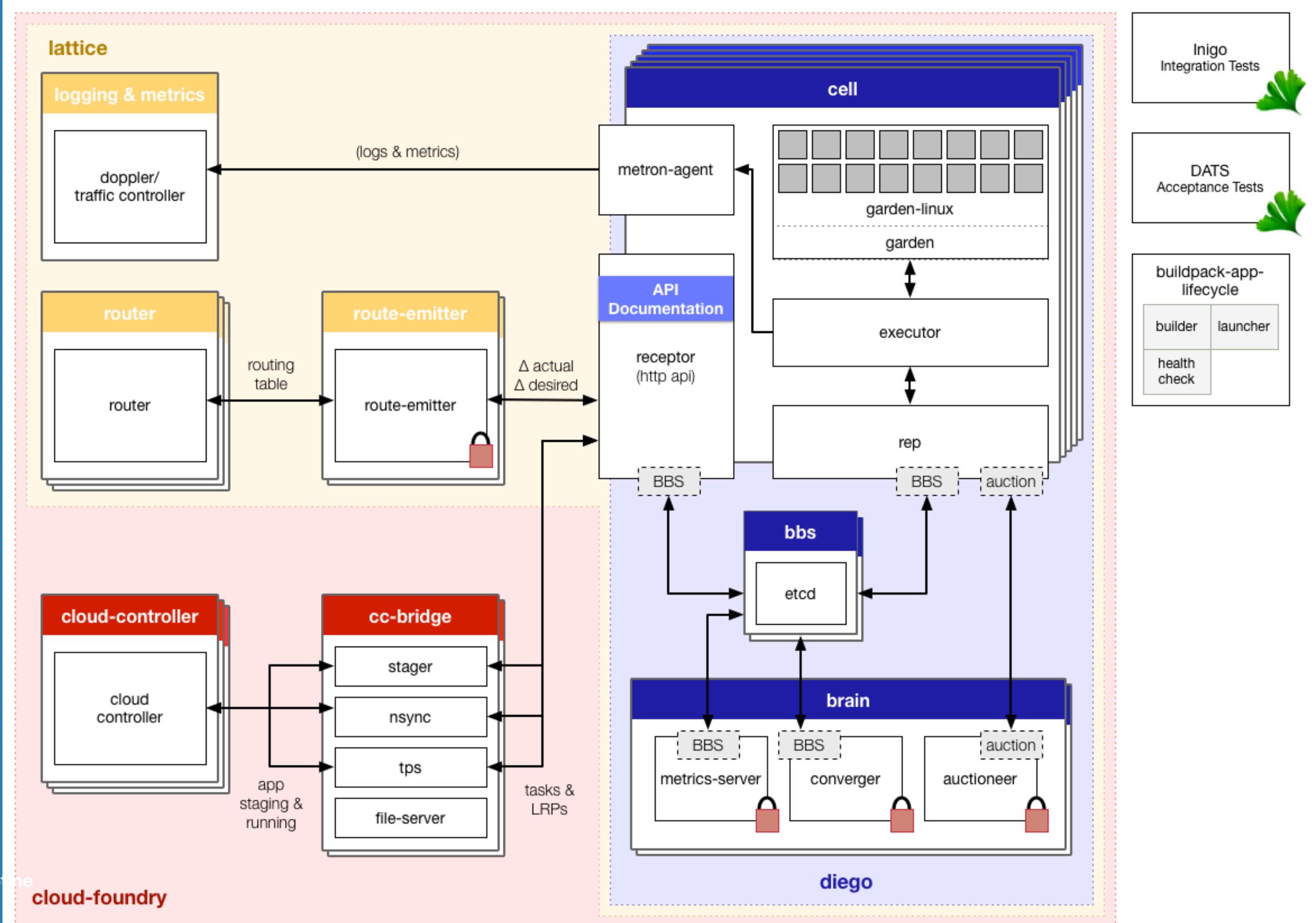
Marathon

<https://mesosphere.github.io/marathon/>



DEMO

Diego

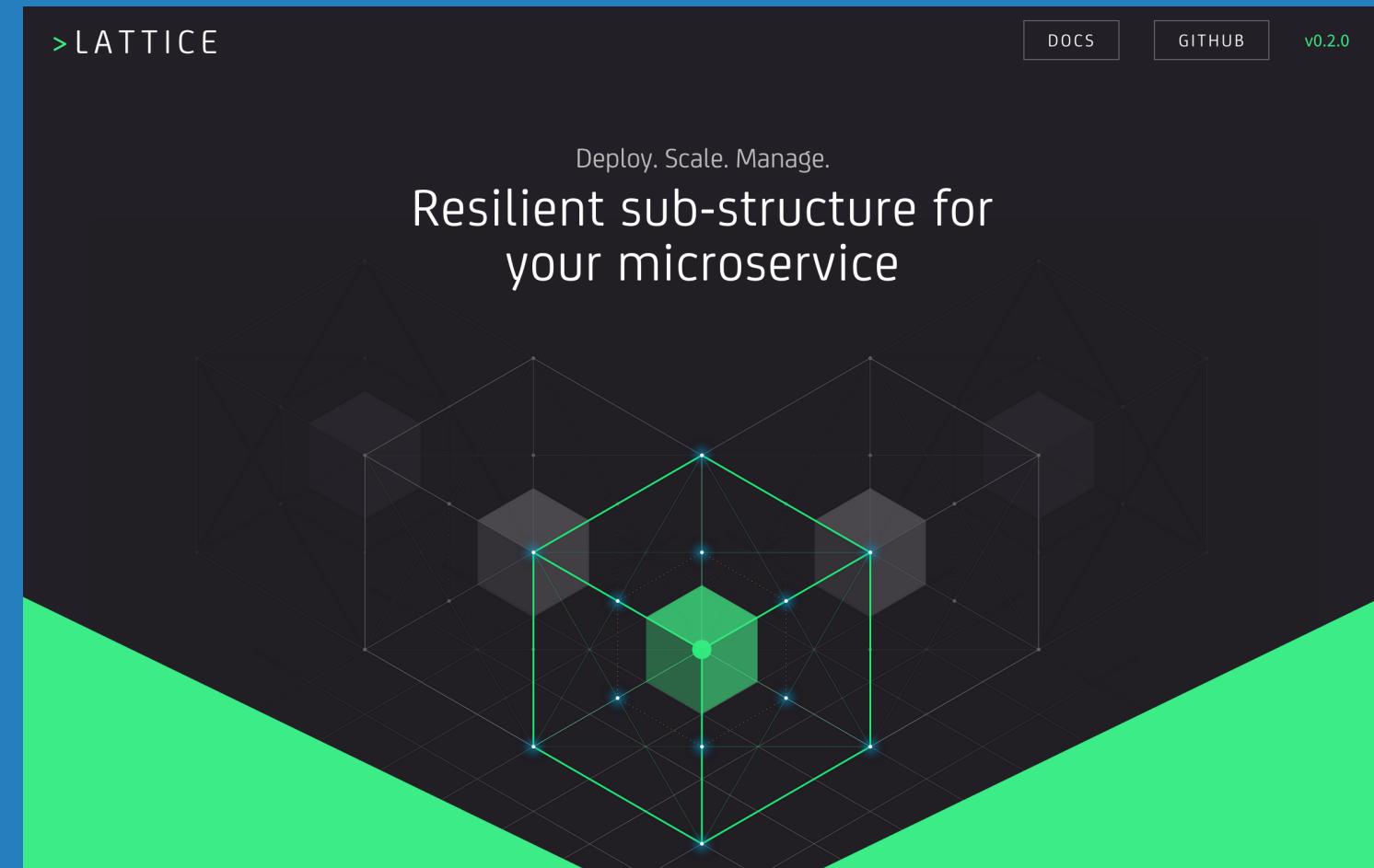


DEMO

Diego also touching...

- Service Discovery
- Routing / Load Balancing
- Log / Metrics Aggregation

Lattice

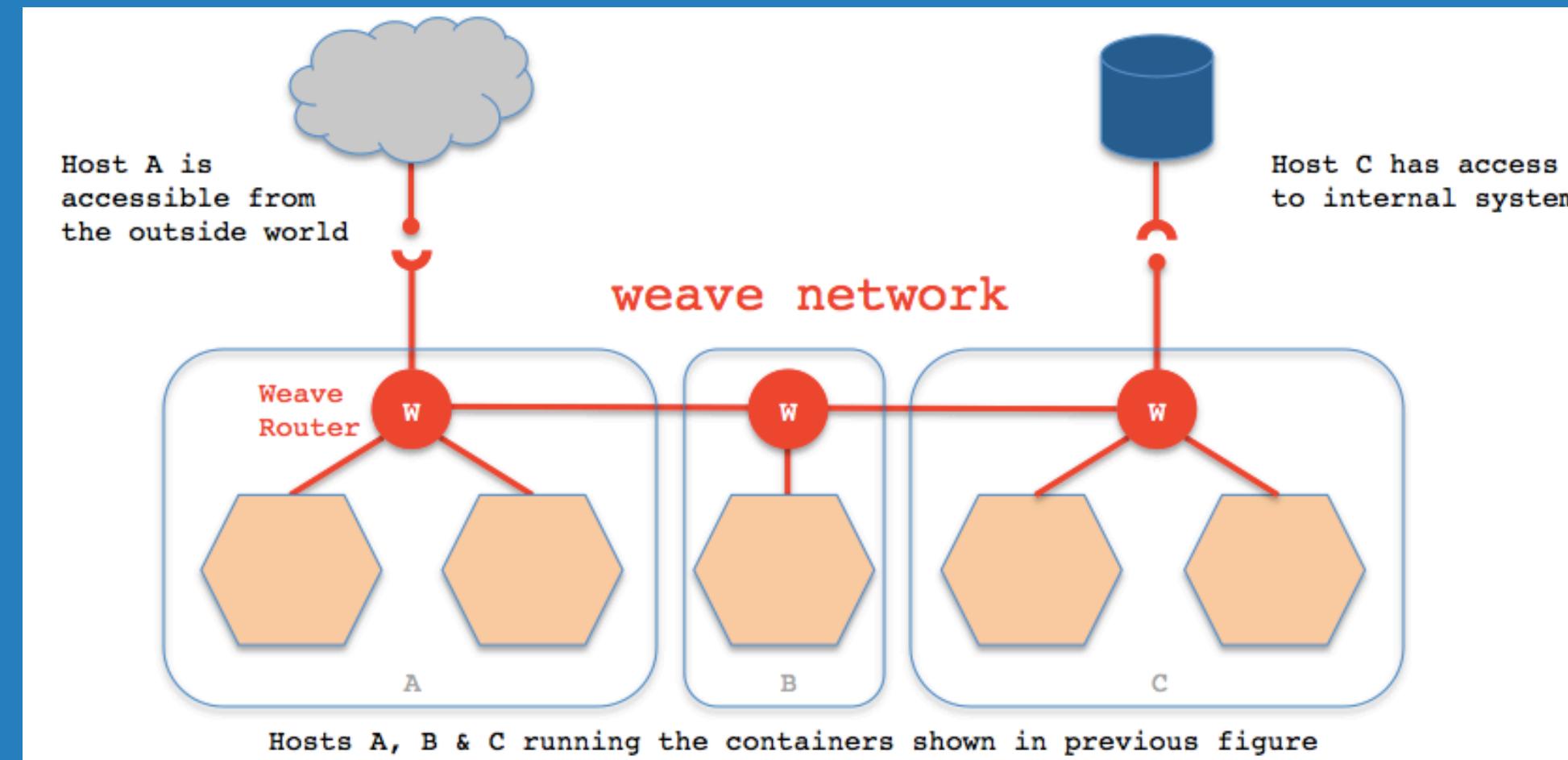


<https://lattice.cf>

DEMO

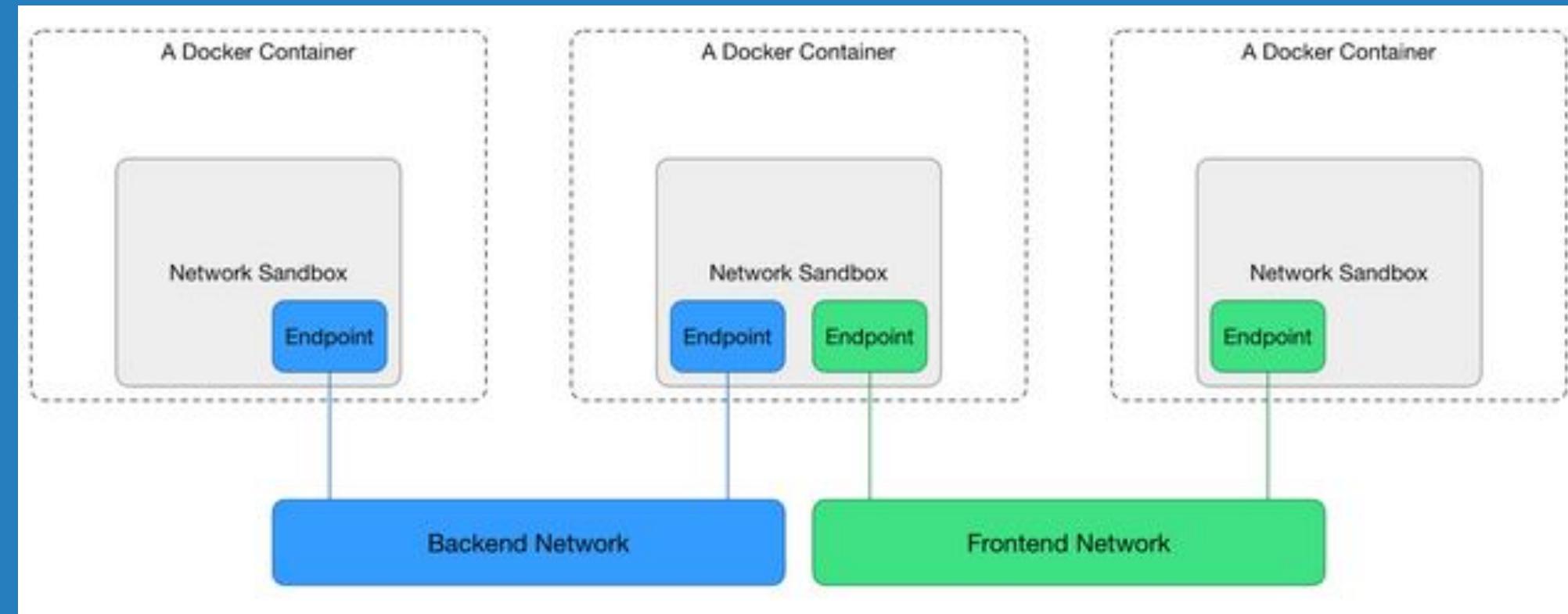
Networking?

Weave



<http://zettio.github.io/weave/>

Docker Networking



<https://blog.docker.com/2015/06/networking-receives-an-upgrade/>

Thanks!

Matt Stine (@mstine)