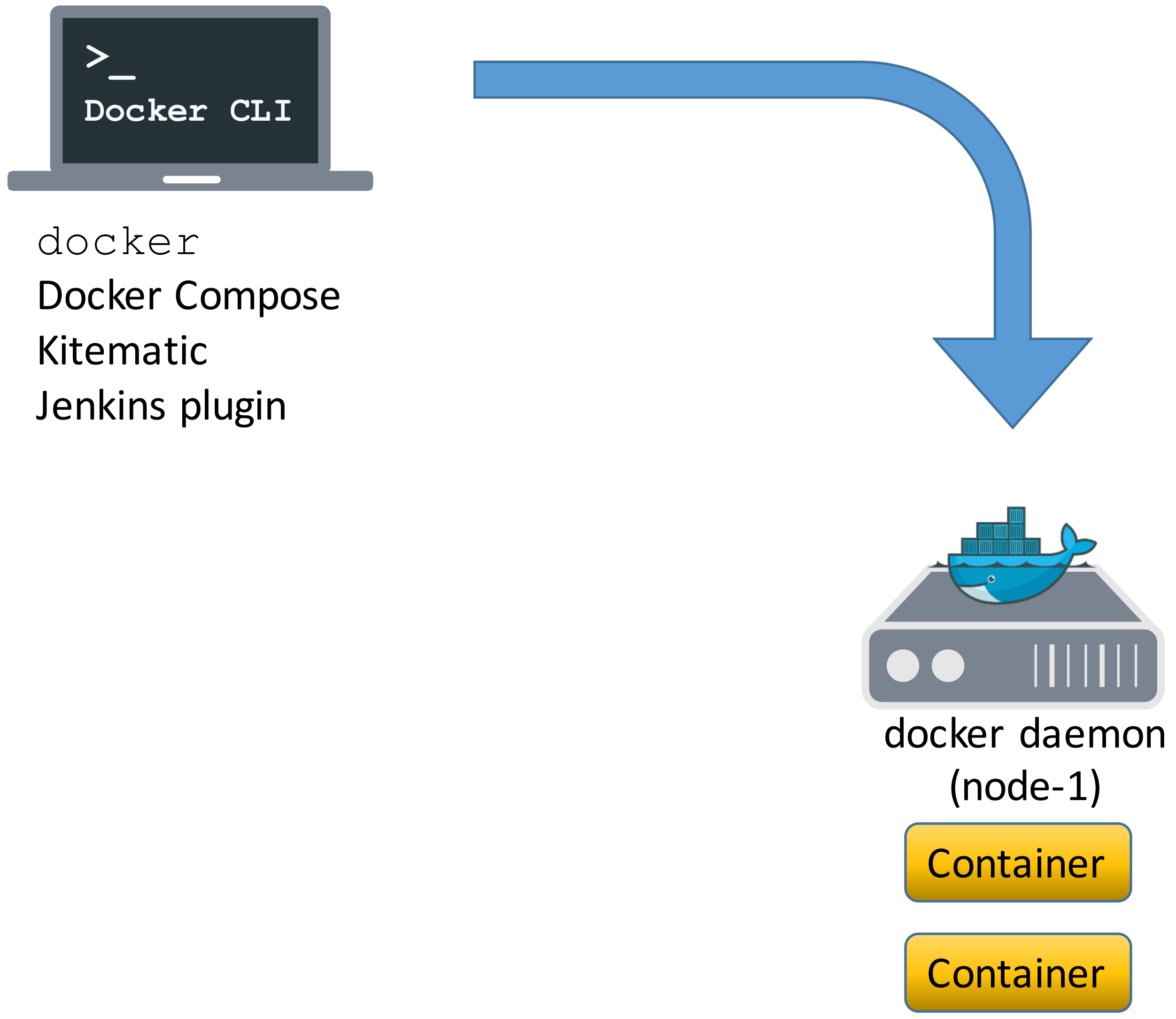
Swarm: Docker Native Clustering

Mike Goelzer
mgoelzer@docker.com
GH: @mgoelzer
Freenode/Twitter: @mikegoelzer

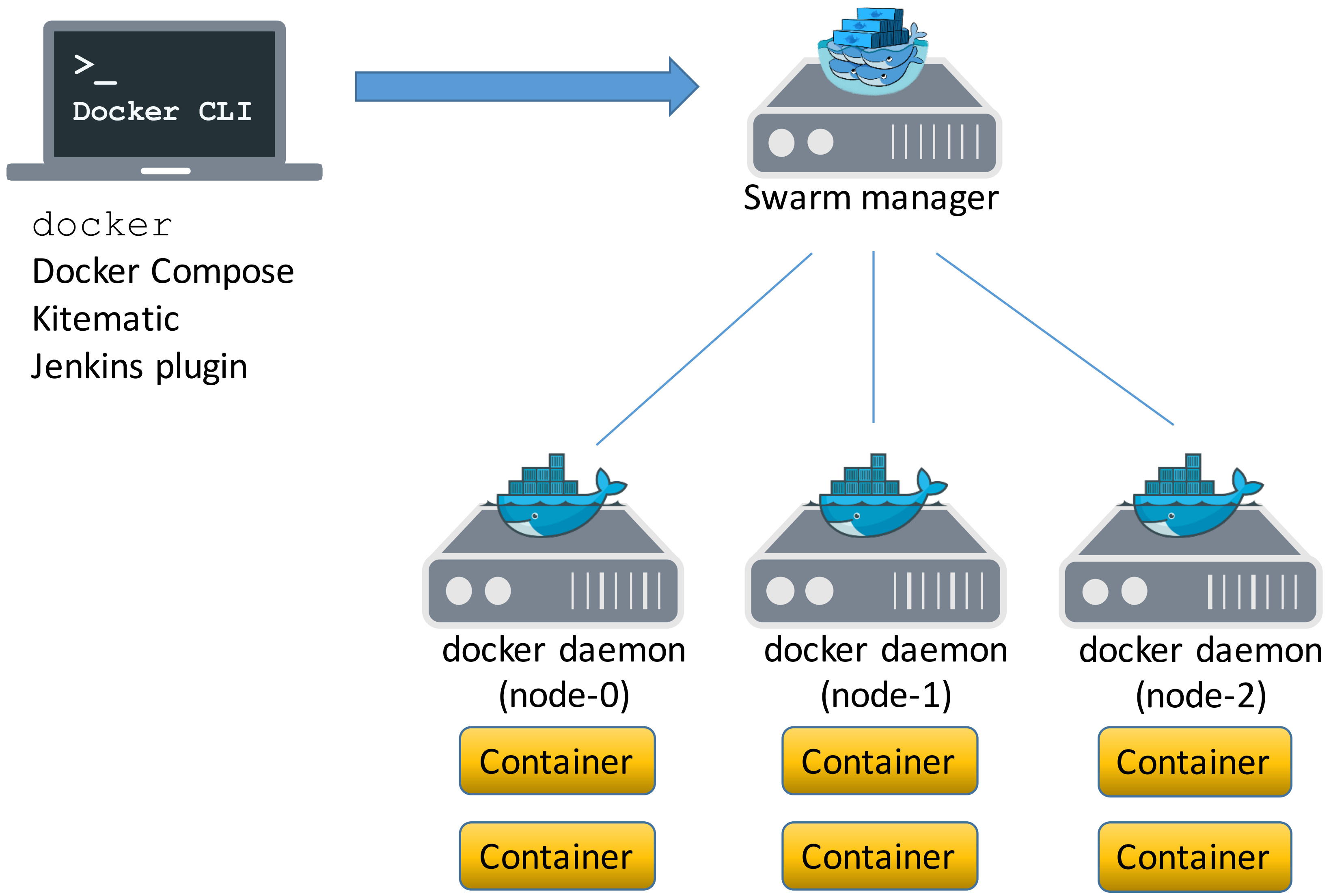
Swarm: Simplicity, Flexibility, Ease of Setup

- What is Swarm?
- How do you set it up?
- Sample microservice application on Swarm

Swarm turns multiple Docker hosts into a single, virtual Docker host.

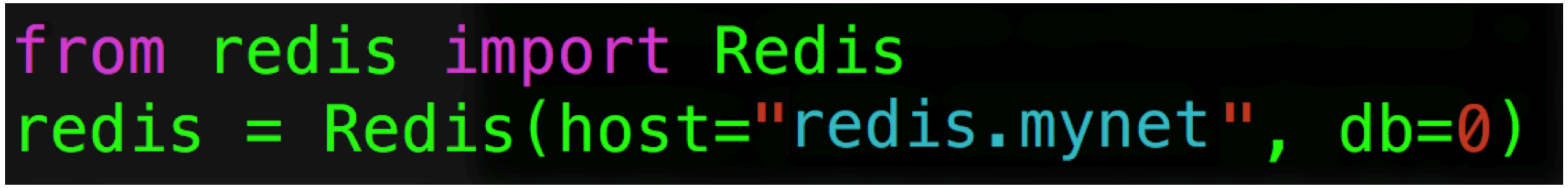


`docker`
Docker Compose
Kitematic
Jenkins plugin


>_
Docker CLI
docker
Docker Compose
Kitematic
Jenkins plugin
Swarm manager
docker daemon (node-0)
docker daemon (node-1)
docker daemon (node-2)
Container
Container
Container
Container
Container
Container

Swarm Features

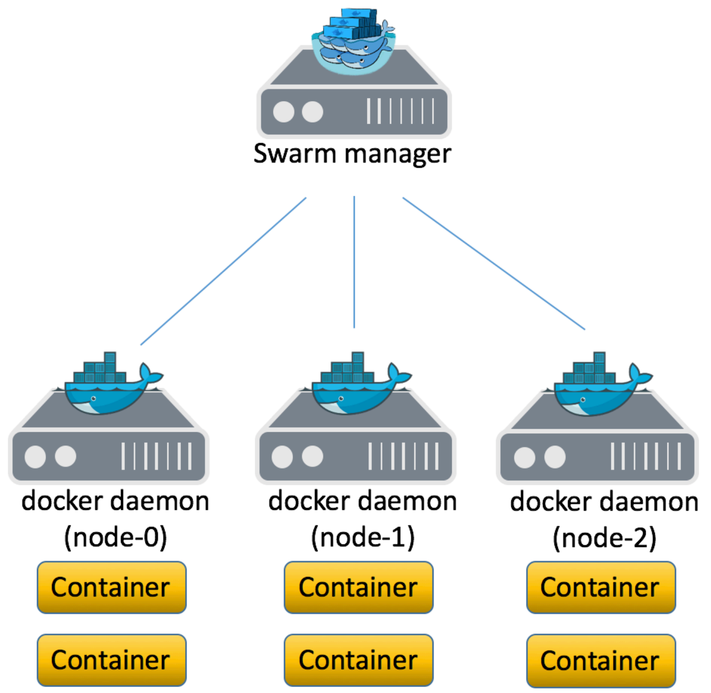
- Scheduling
- Rescheduling on failure
- HA (multiple masters)
- Labels, affinities and constraints to control scheduling decisions
- DNS-based service discovery

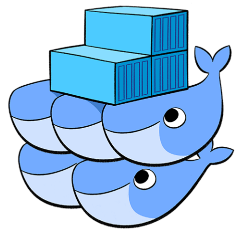


```
from redis import Redis
redis = Redis(host="redis.mynet", db=0)
```

Simple: 2 steps to create a cluster

1. Run Swarm Manager
2. Restart your Docker daemons with some extra arguments





Step 1: Start Swarm manager

```
docker run -d -p 3375:2375 swarm manage consul://192.168.33.10:8500/
```

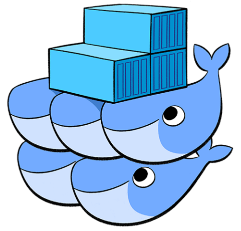
Refs:
https://docs.docker.com/swarm
https://docs.docker.com/swarm/install-manual/

Step 2: Add some args to your daemons

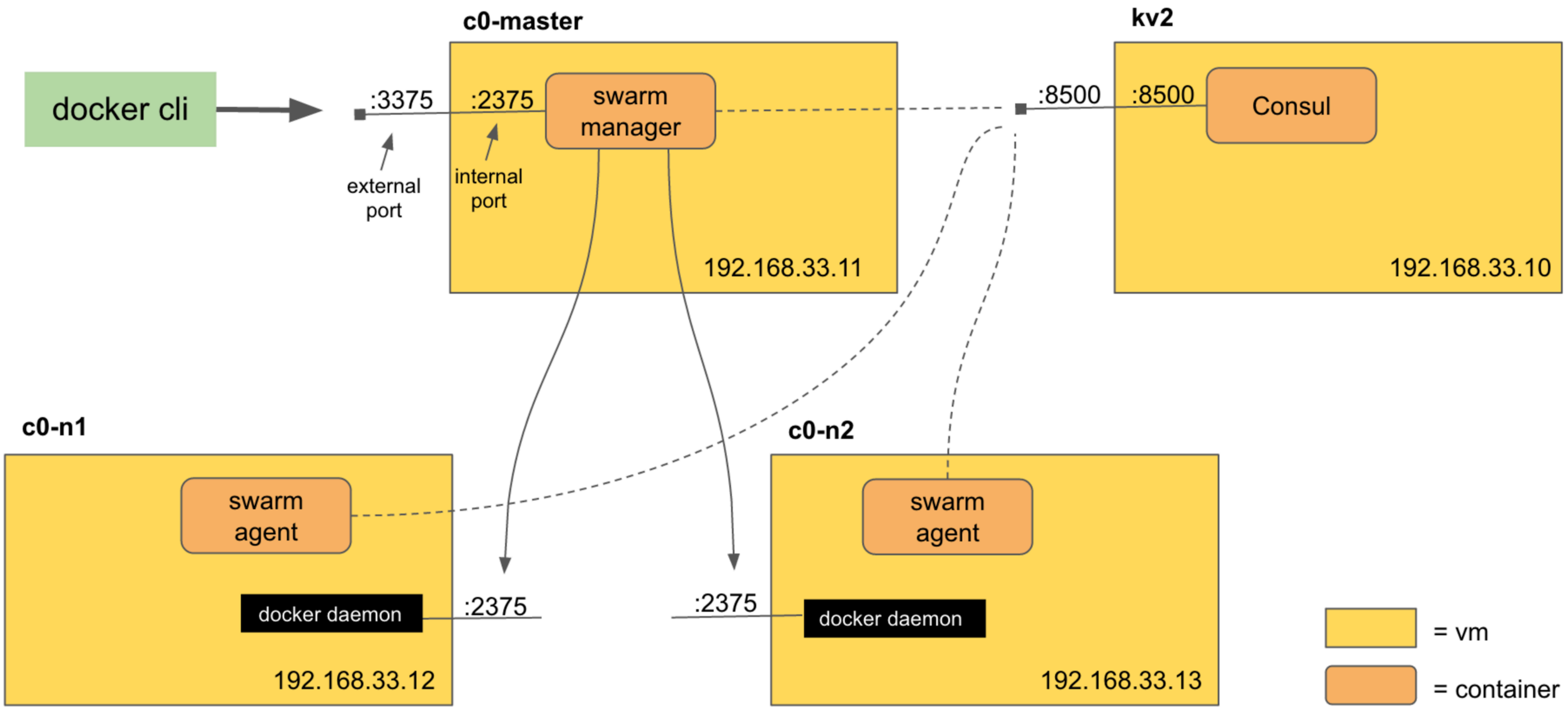
Restart Docker daemons with:

```
DOCKER_OPTS=
  -H=tcp://0.0.0.0:2375
  --cluster-store=consul://192.168.33.11:8500
  --cluster-advertise=eth1:2375
```

Refs:
https://docs.docker.com/swarm
https://docs.docker.com/swarm/install-manual/



Voilà, a cluster

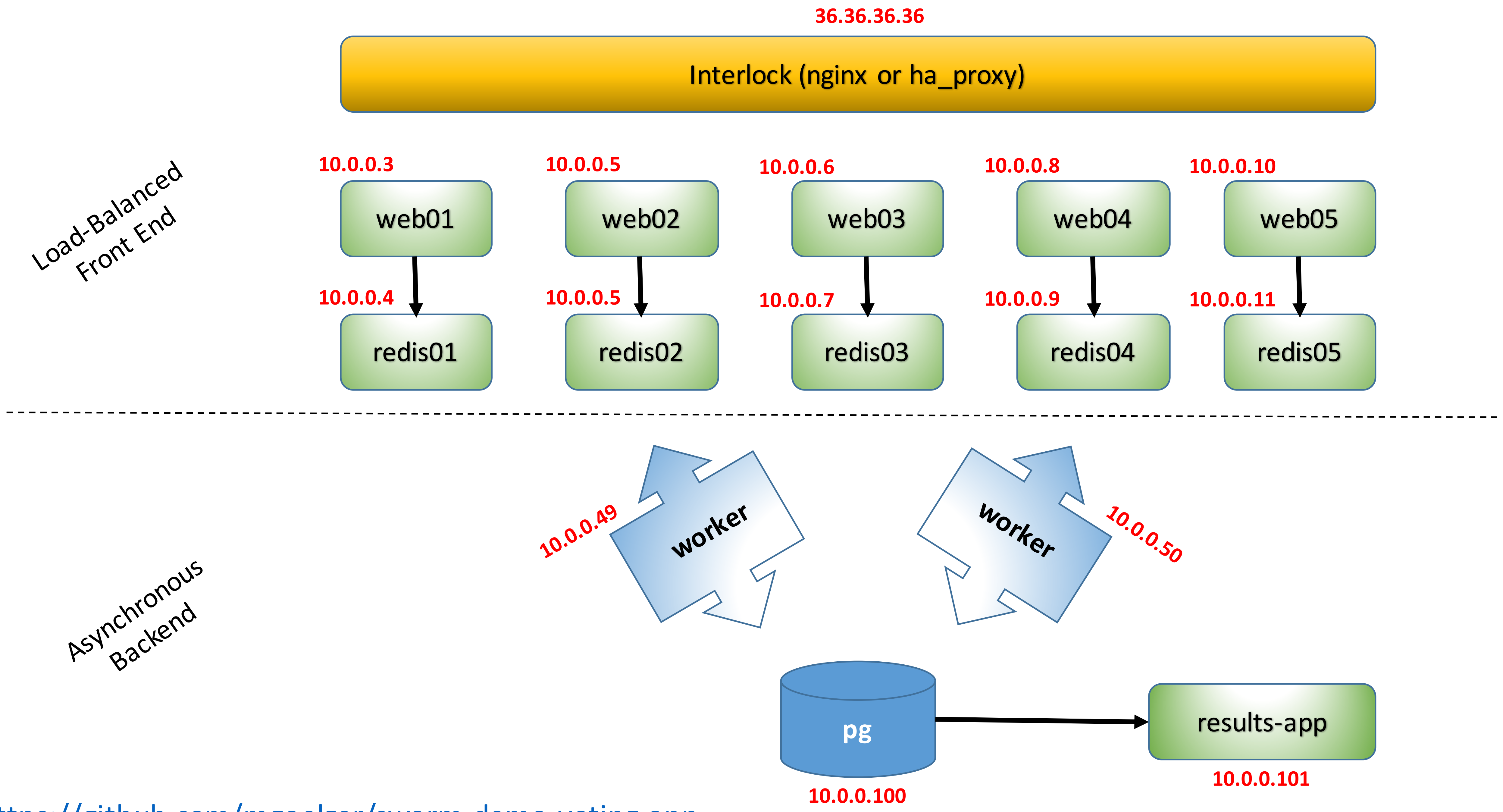


Example Repo: Microservice App on Swarm

https://github.com/mgoelzer/swarm-demo-voting-app

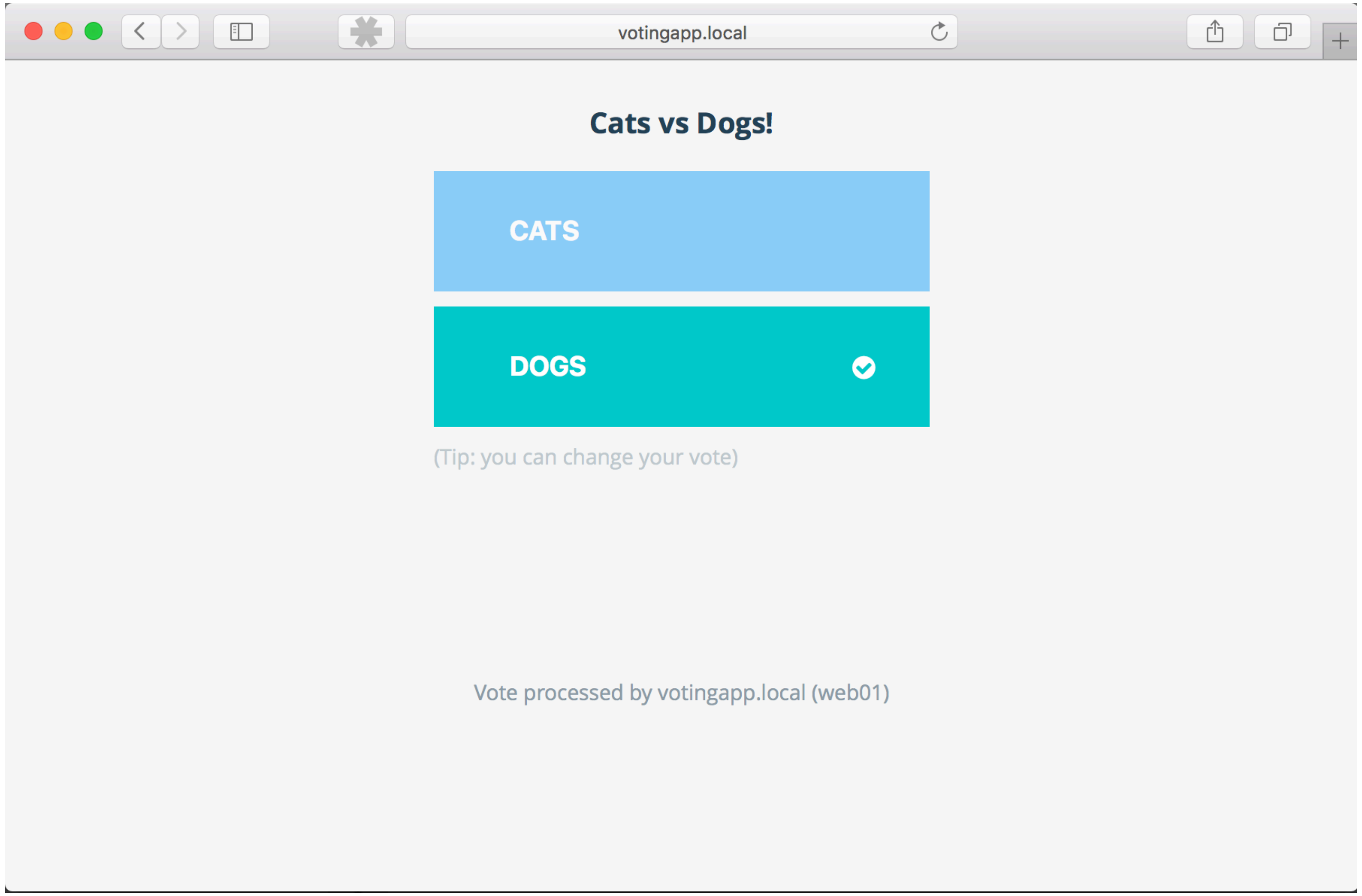
Demonstrates a microservice app on Swarm including:
- Vagrantfile and AWS Cloud Formation template to deploy the cluster
- Load balanced web front end
- DNS-based service discovery

Upcoming Swarm Meetup:
http://www.meetup.com/Docker-Mountain-View/events/228284089/



https://github.com/mgoelzer/swarm-demo-voting-app

Clustered Voting App



Cats vs Dogs!

CATS

DOGS ✓

(Tip: you can change your vote)

Vote processed by votingapp.local (web01)

https://github.com/mgoelzer/swarm-demo-voting-app

Jérôme's Example: Coin Miner

Slides: http://view.dckr.info/
Repo: https://github.com/jpetazzo/orchestration-workshop

Demonstrates:
- How to do batch workloads on Swarm
- ELK stack for logging and metrics
- Other load balancing patterns beyond Interlock

Mike Goelzer | mgoelzer@docker.com | GH: @mgoelzer | @mikegoelzer