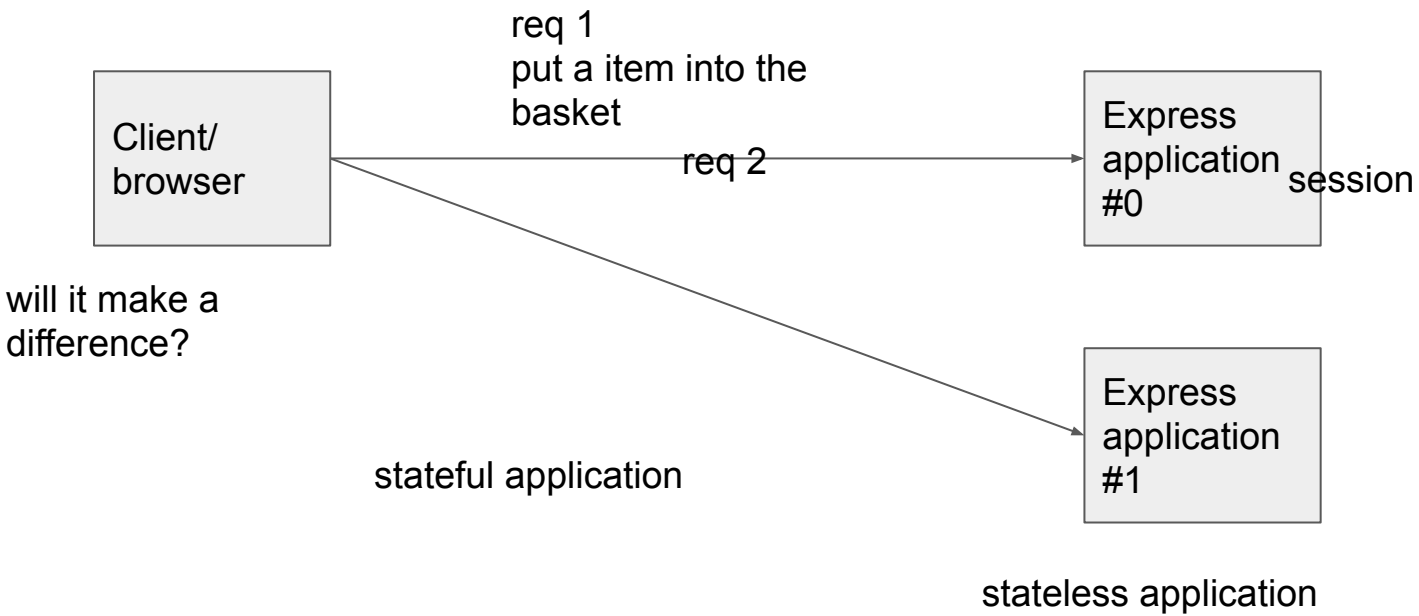
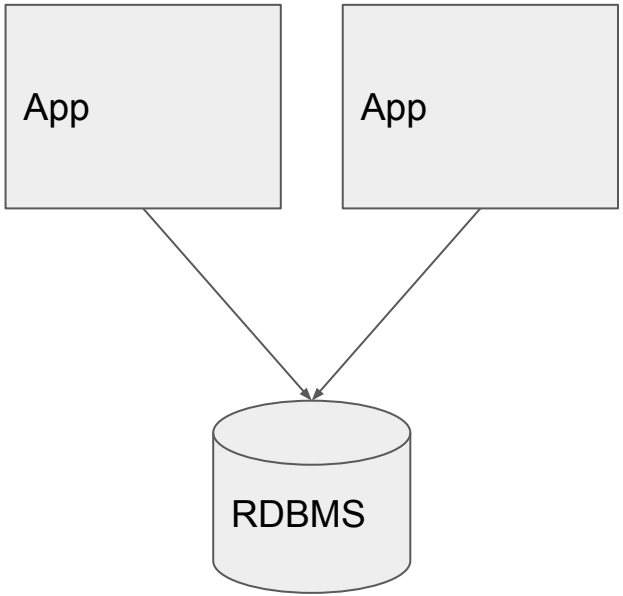
Container

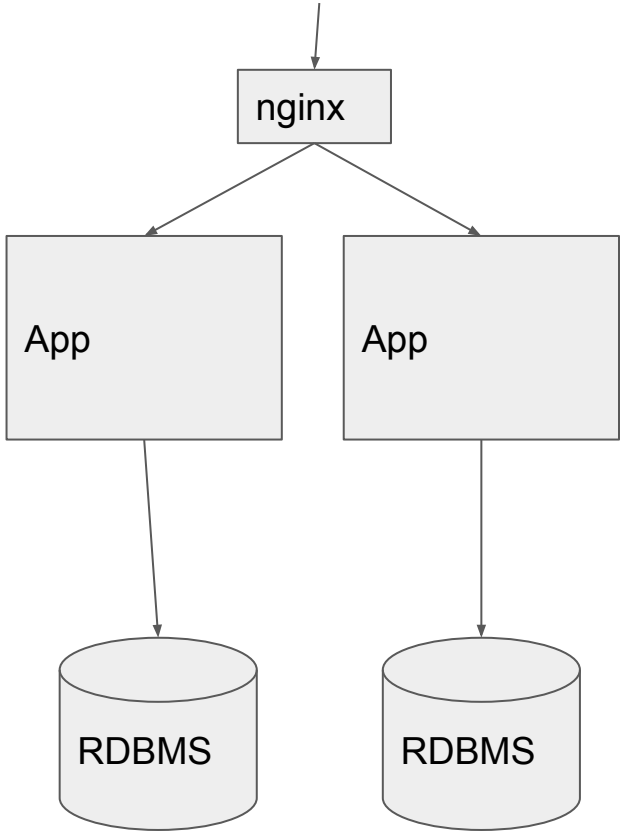
May 19 - 22

Day 1


req 1
put a item into the basket
Client/ browser
req 2
Express application #0
session
will it make a difference?
Express application #1
stateful application
stateless application

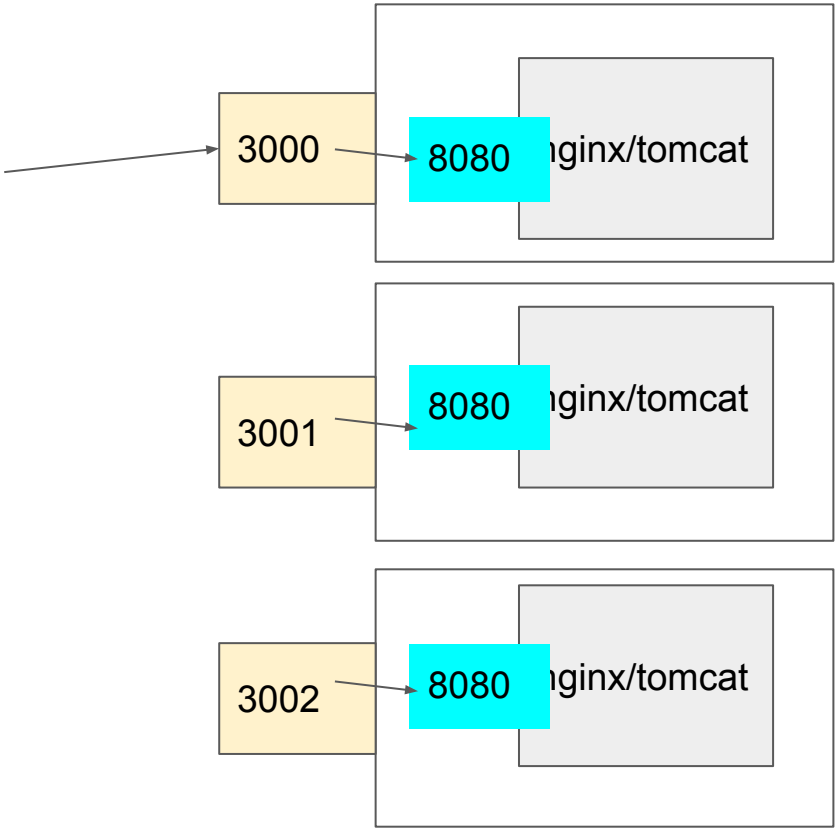


customer id 1 - 1000

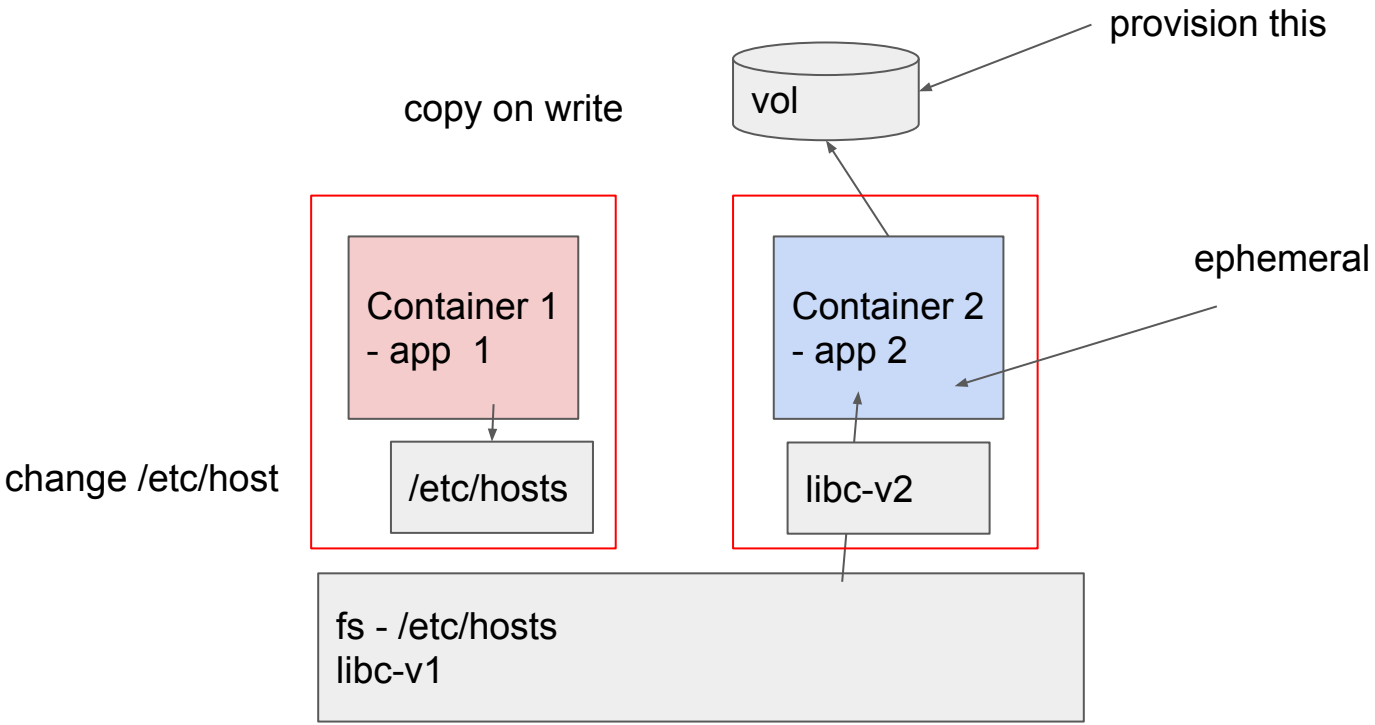


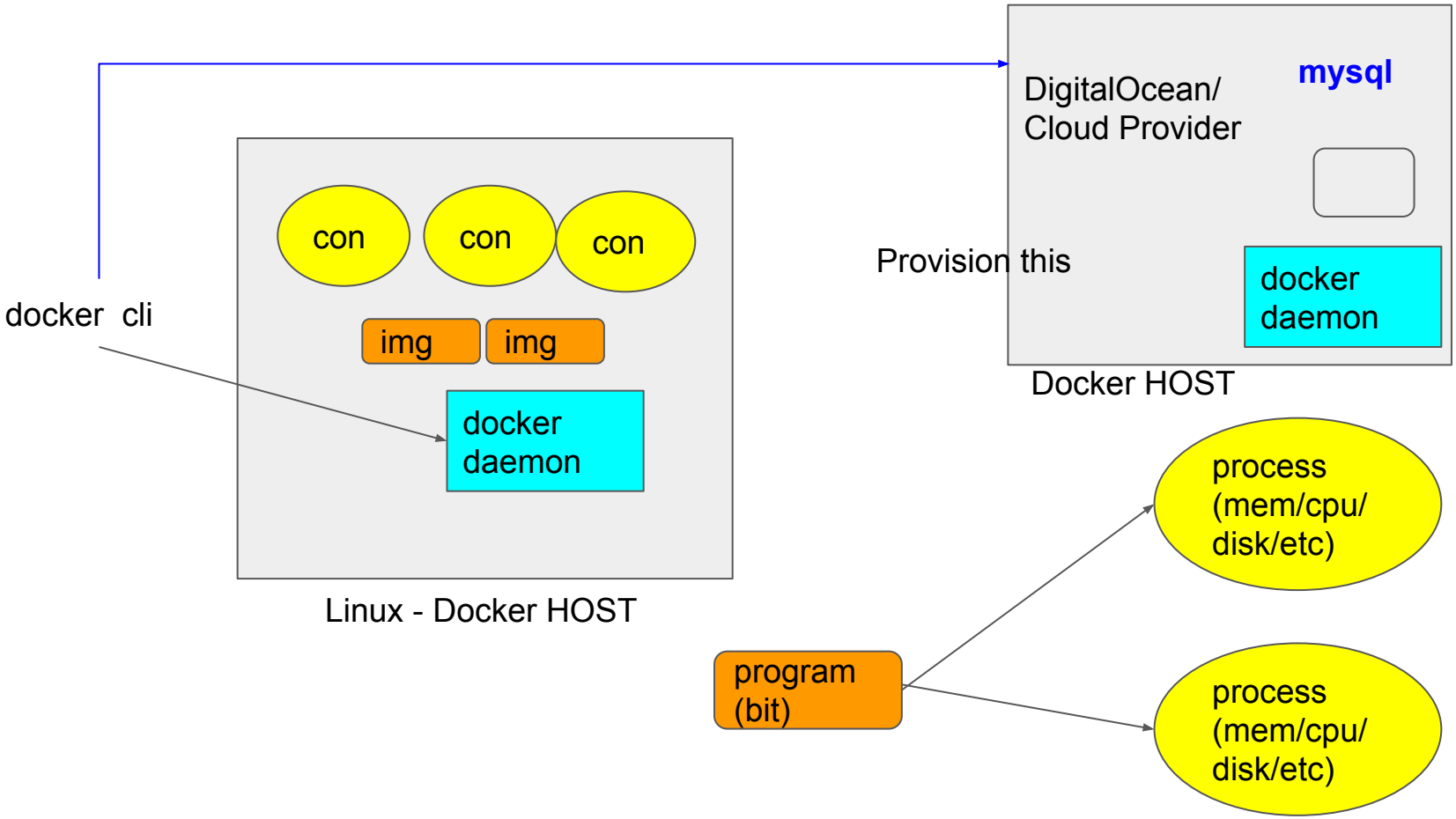
customer id

customer id



immutable infra


provision this
vol
copy on write
Container 1
- app 1
Container 2
- app 2
ephemeral
change /etc/host
/etc/hosts
libc-v2
fs - /etc/hosts
libc-v1


DigitalOcean/
Cloud Provider
mysql
Provision this
docker
daemon
Docker HOST
con
con
con
img
img
docker
daemon
Linux - Docker HOST
docker cli
process
(mem/cpu/
disk/etc)
program
(bit)
process
(mem/cpu/
disk/etc)

docker-machine - provision a remote docker host

docker-machine env <name> - to get the config

docker

Build - docker build -t <acct_name>/<app_name>:v1 .

Examine image - docker images

Run - docker run -d -p <ext port>:<cont port> --name <cont_name> <acct_name>/<app_name>:v1

Ps - docker ps -a

Log - docker logs <container-name>

Exec - docker exec -ti <cont-name> ls

Test mysql

docker exec -ti <mysql-cont> bash

mysql -uroot -p<password>

show databases;

use northwind;

show tables;

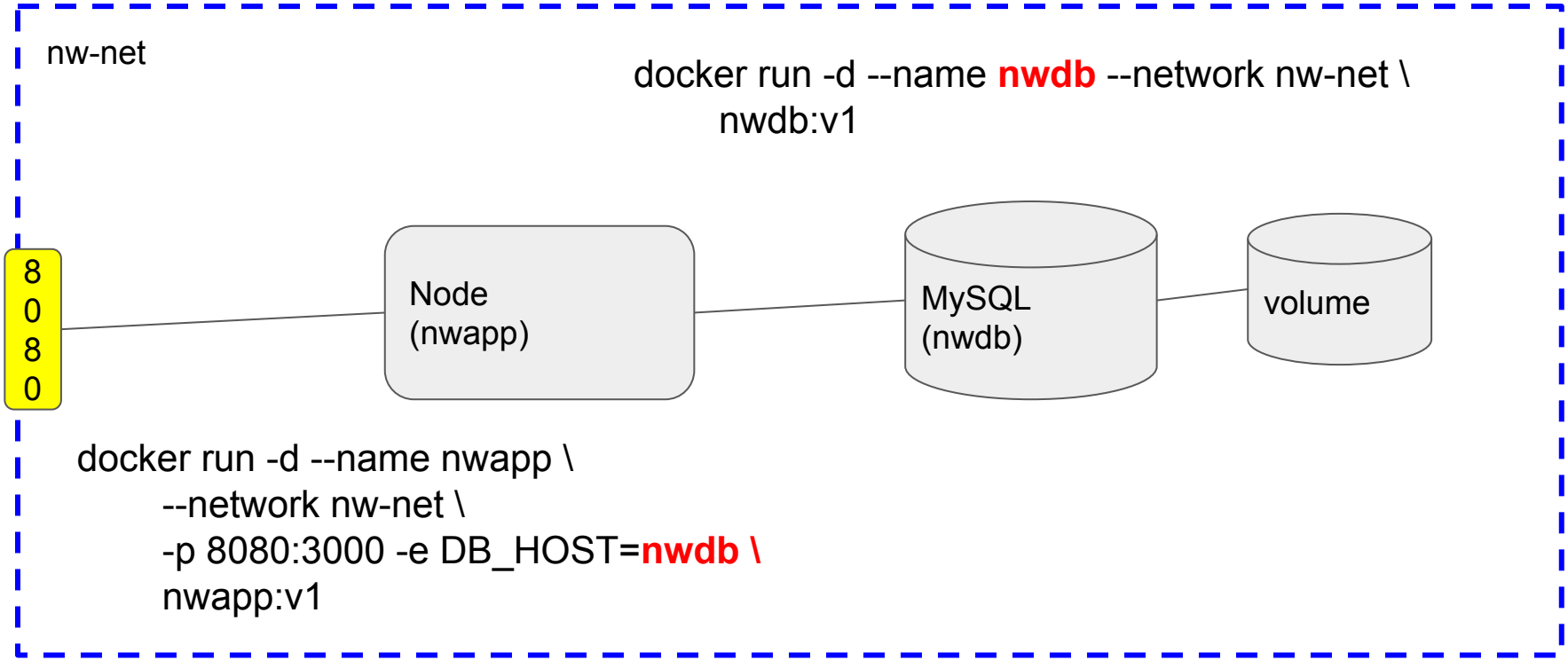
exit;

mysqladmin ping -uroot -p<password>

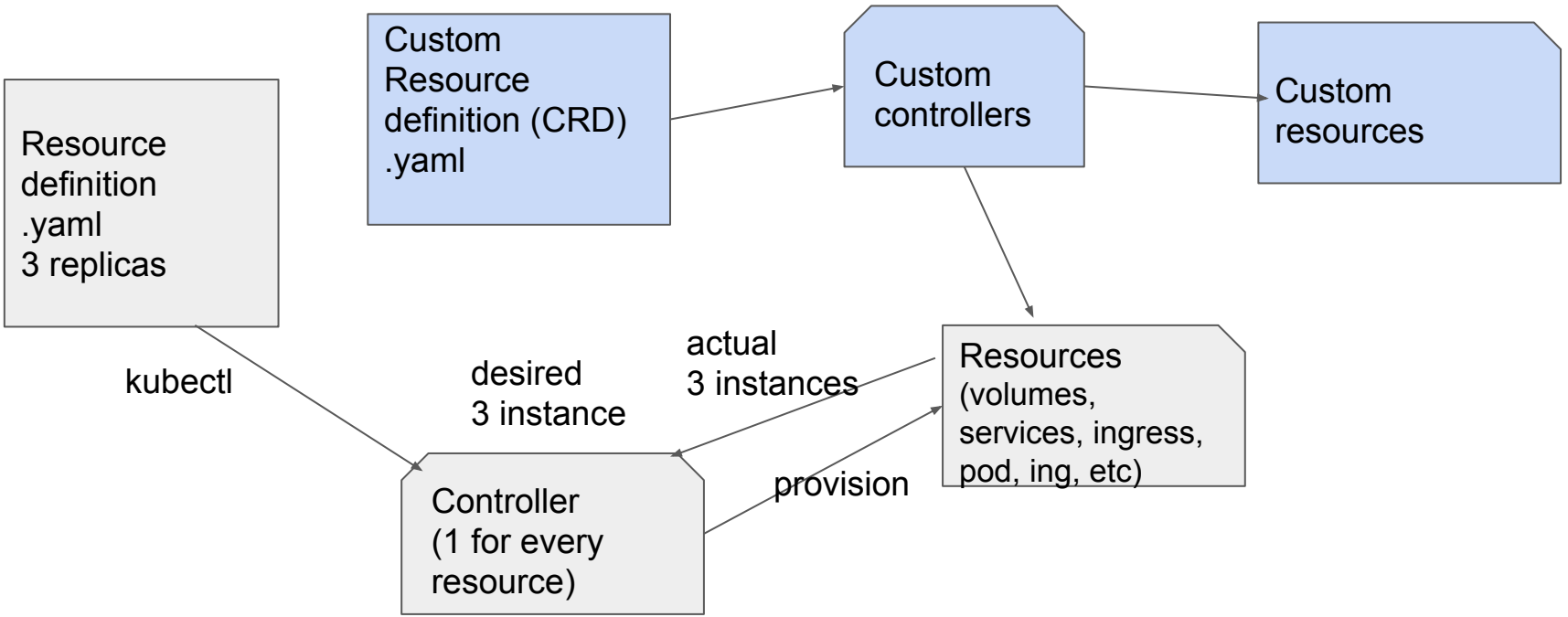
will return 0 - OK, or non 0 - failed

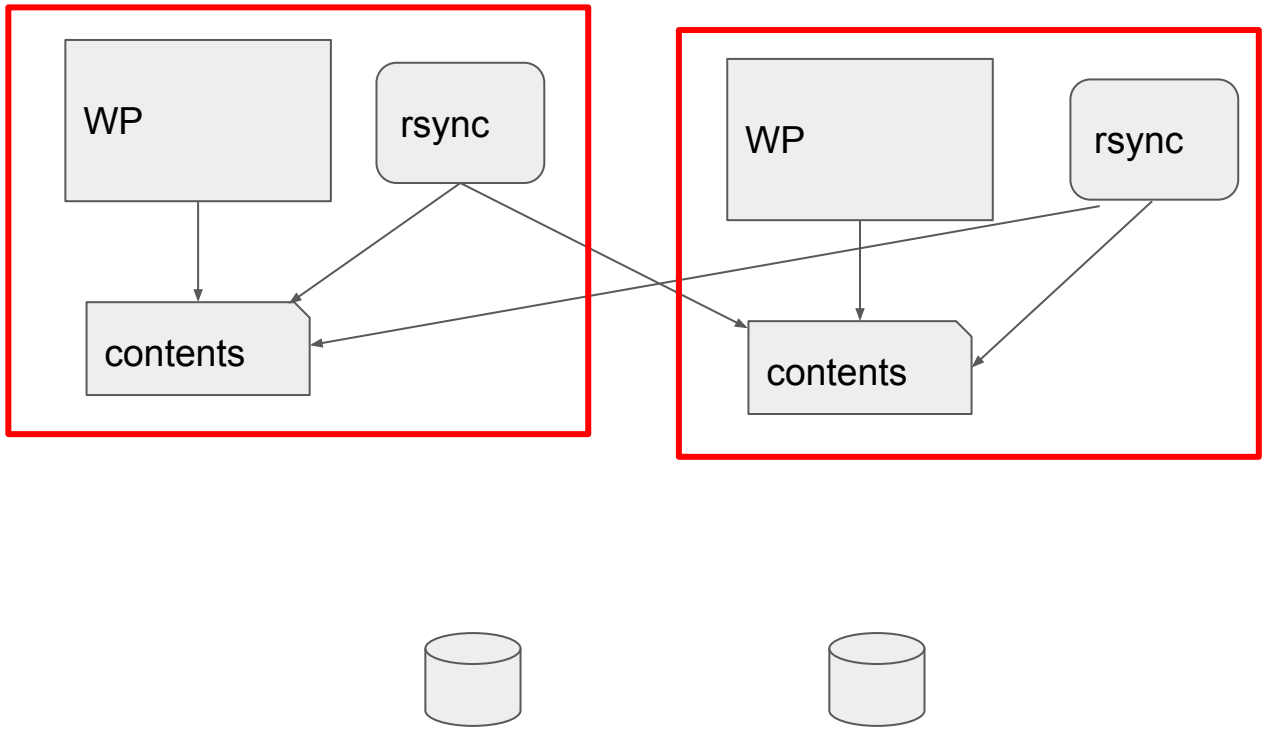
```
docker network create mynet

# run the container inside the network - DNS

docker run -d --network mynet --name a-name …

docker run -d --network mynet --name b-name …

docker run -d --network mynet --name c-name ...
```

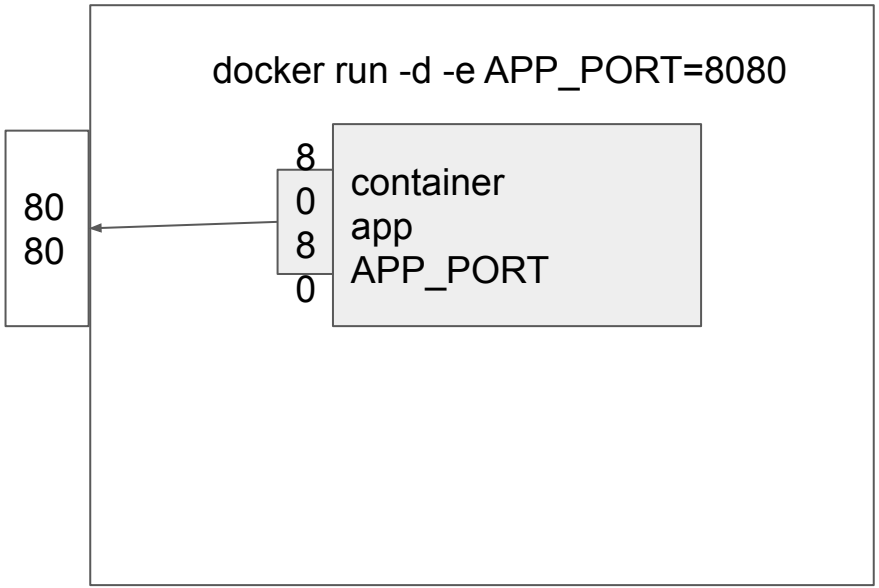
a-name becomes an entry in DNS in mynet

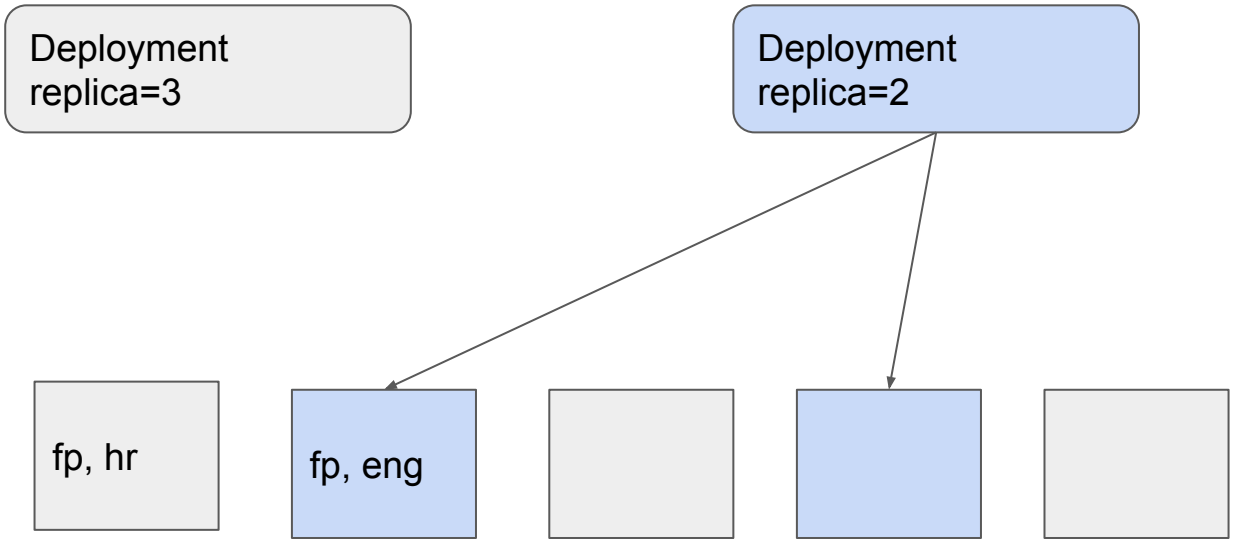

nw-net
docker run -d --name nwdb --network nw-net \
nwdb:v1
8
0
8
0
Node
(nwapp)
MySQL
(nwdb)
volume
docker run -d --name nwapp \
--network nw-net \
-p 8080:3000 -e DB_HOST=nwdb \
nwapp:v1

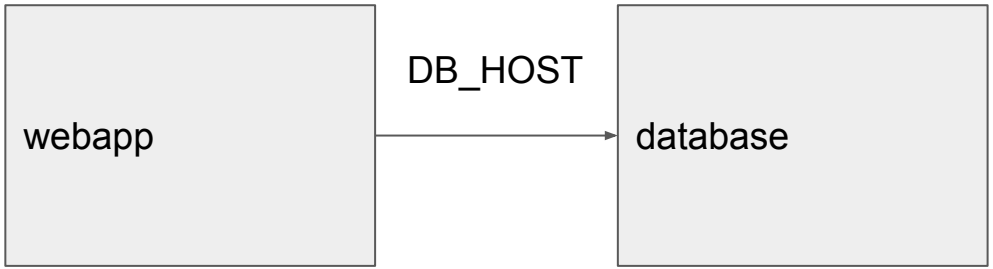
Day 2

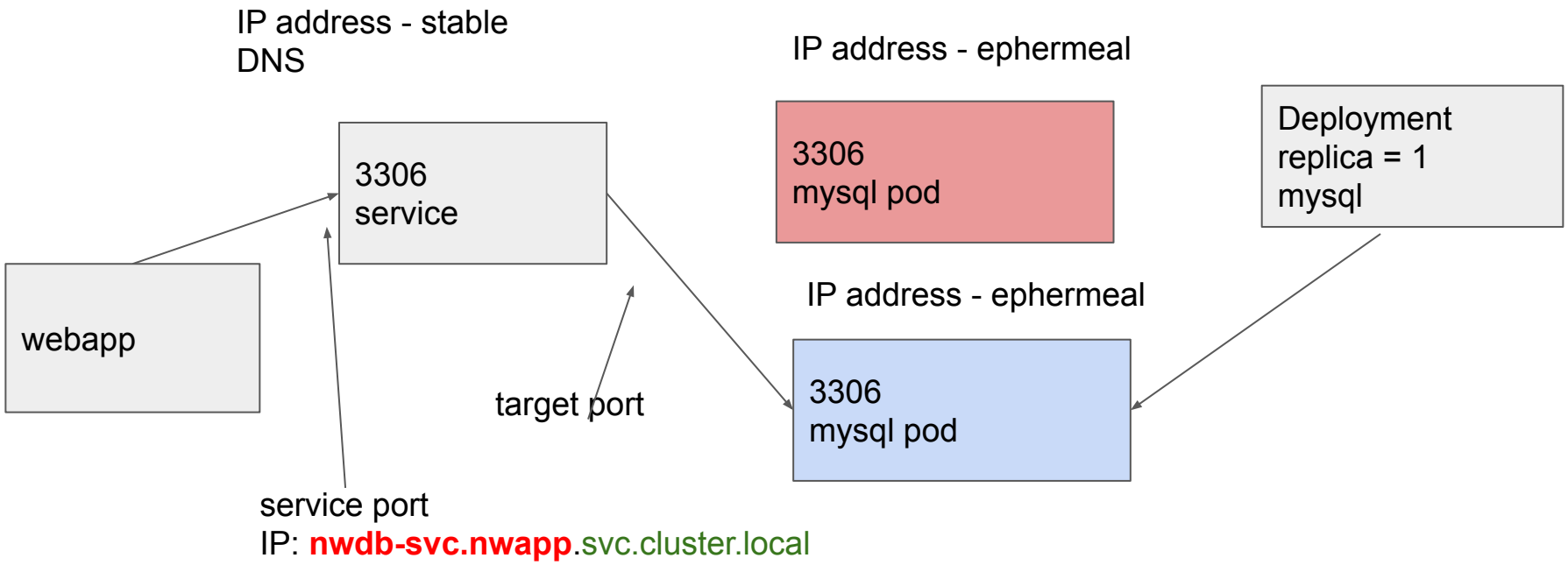

Custom
Resource
definition (CRD)
.yaml
Custom
controllers
Custom
resources
Resource
definition
.yaml
3 replicas
kubectl
desired
3 instance
actual
3 instances
Resources
(volumes,
services, ingress,
pod, ing, etc)
provision
Controller
(1 for every
resource)

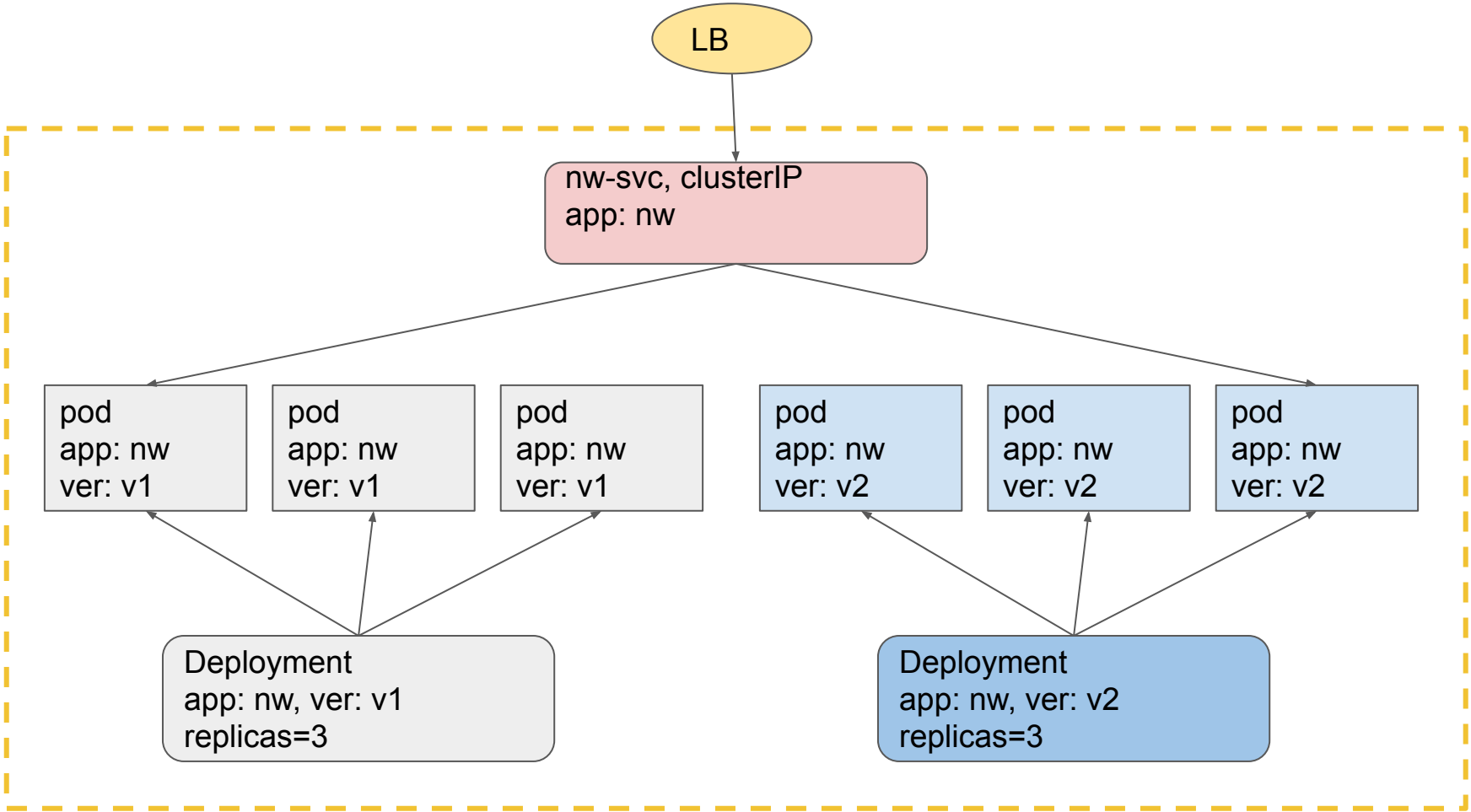

WP
rsync
contents
WP
rsync
contents


docker run -d -e APP_PORT=8080
80
80
8
0
8
0
container
app
APP_PORT

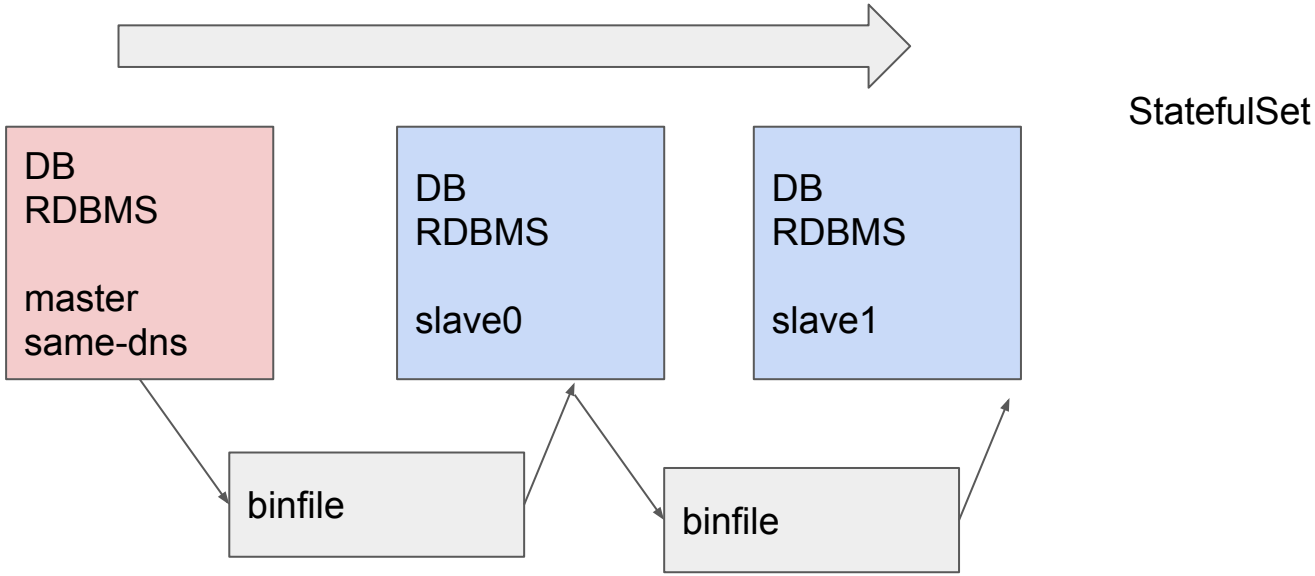

Deployment
replica=3
Deployment
replica=2
fp, hr
fp, eng

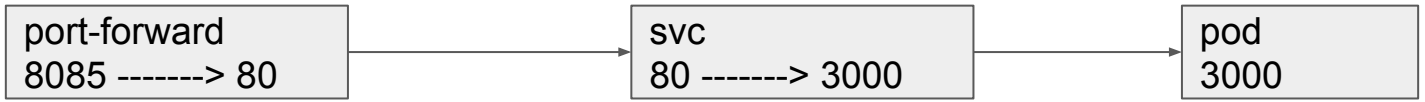

webapp
DB_HOST
database


IP address - stable
DNS
IP address - ephermeal
3306
mysql pod
Deployment
replica = 1
mysql
3306
service
webapp
IP address - ephermeal
target port
3306
mysql pod
service port
IP: nwdb-svc.nwapp.svc.cluster.local


LB
nw-svc, clusterIP
app: nw
pod
app: nw
ver: v1
pod
app: nw
ver: v1
pod
app: nw
ver: v1
pod
app: nw
ver: v2
pod
app: nw
ver: v2
pod
app: nw
ver: v2
Deployment
app: nw, ver: v1
replicas=3
Deployment
app: nw, ver: v2
replicas=3

MySQL Cluster




port-forward
8085 -------> 80
svc
80 -------> 3000
pod
3000

Helm

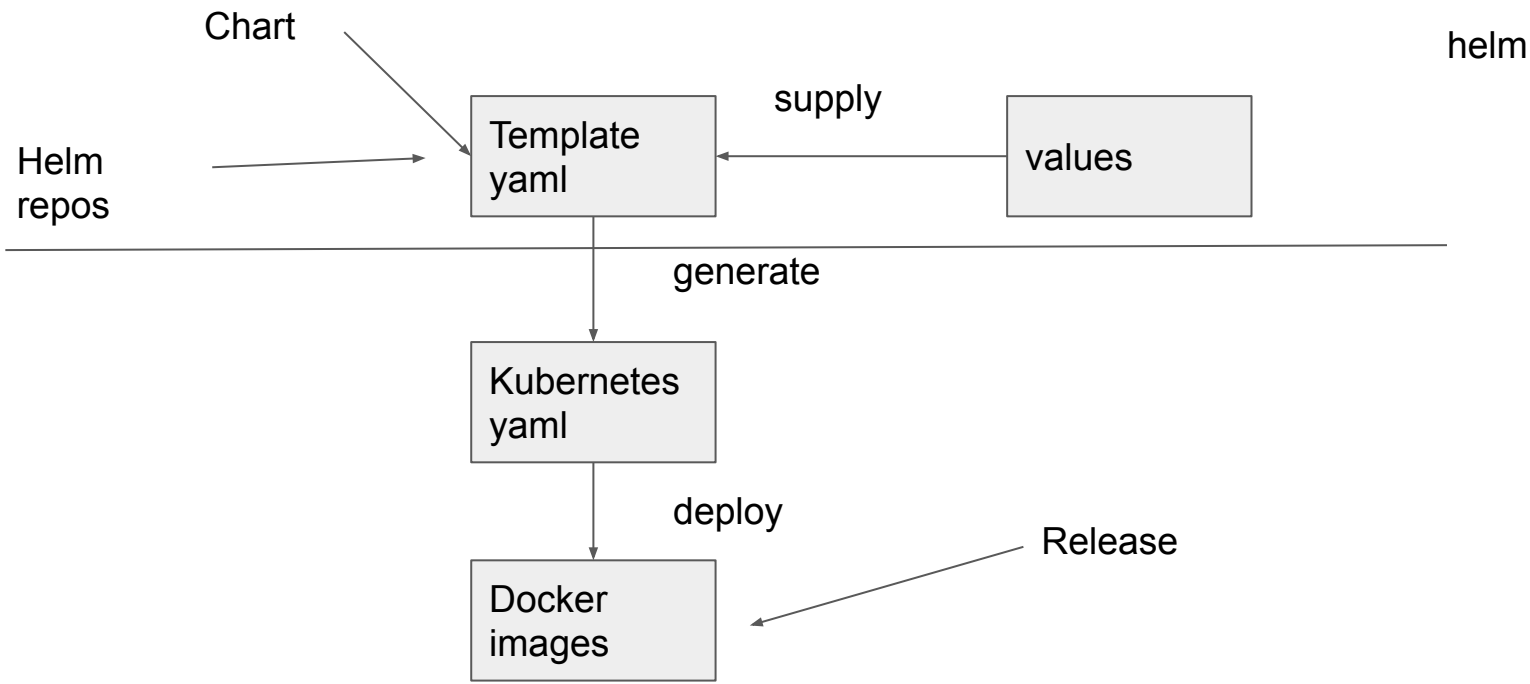
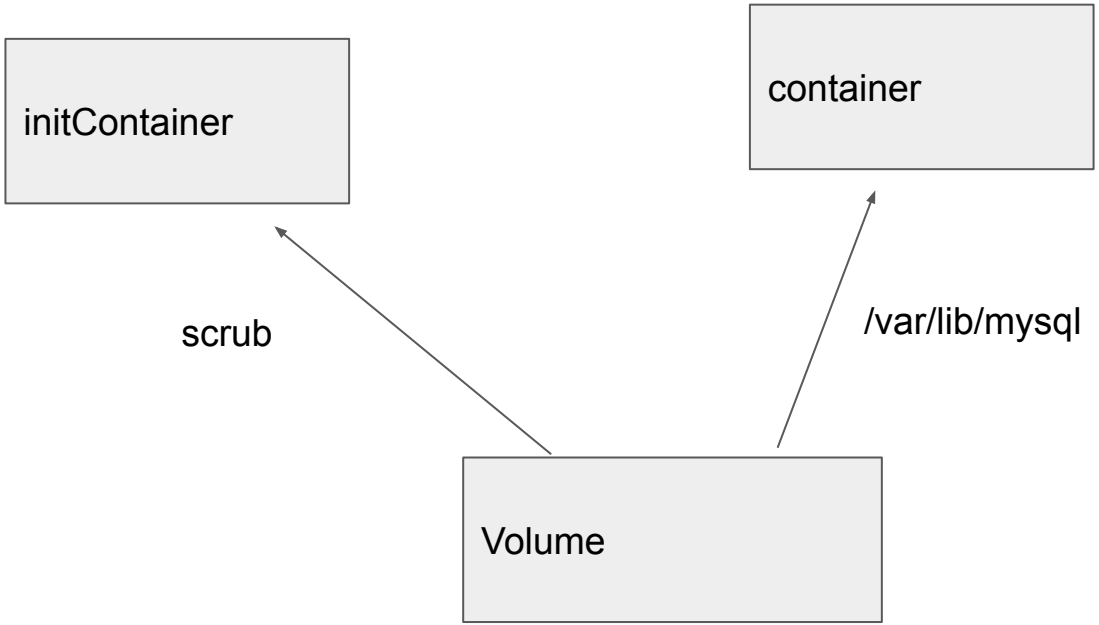
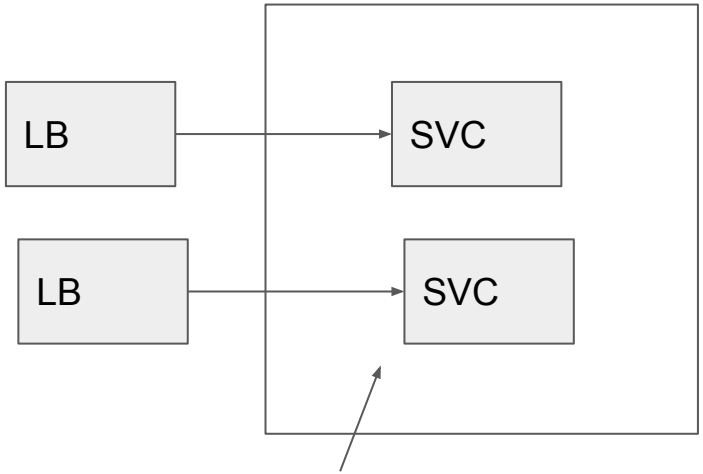
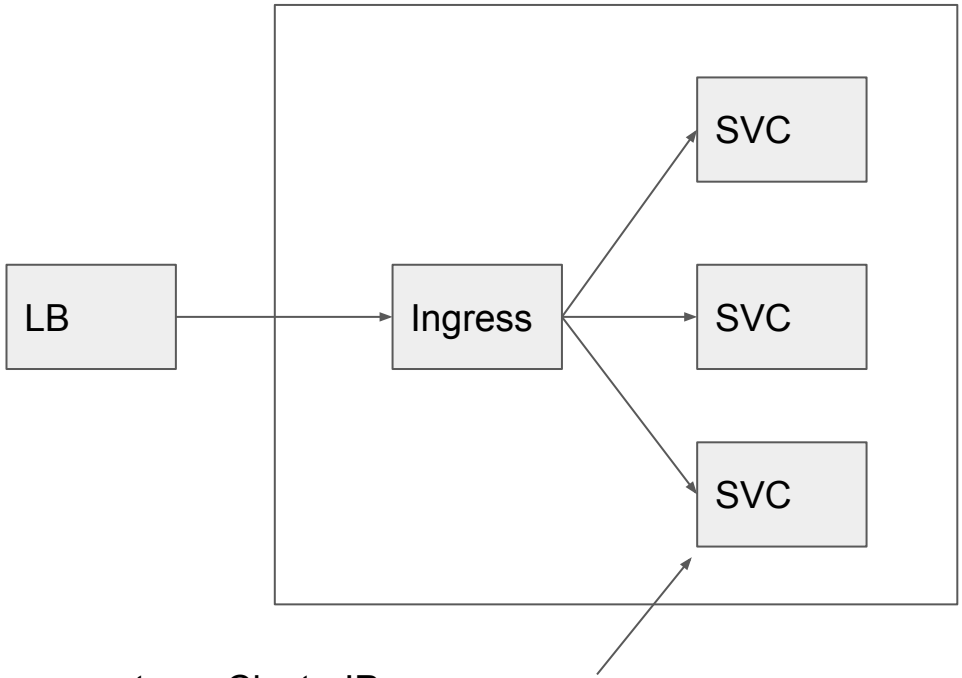


Chart
helm
supply
Template
yaml
values
Helm
repos
generate
Kubernetes
yaml
deploy
Release
Docker
images

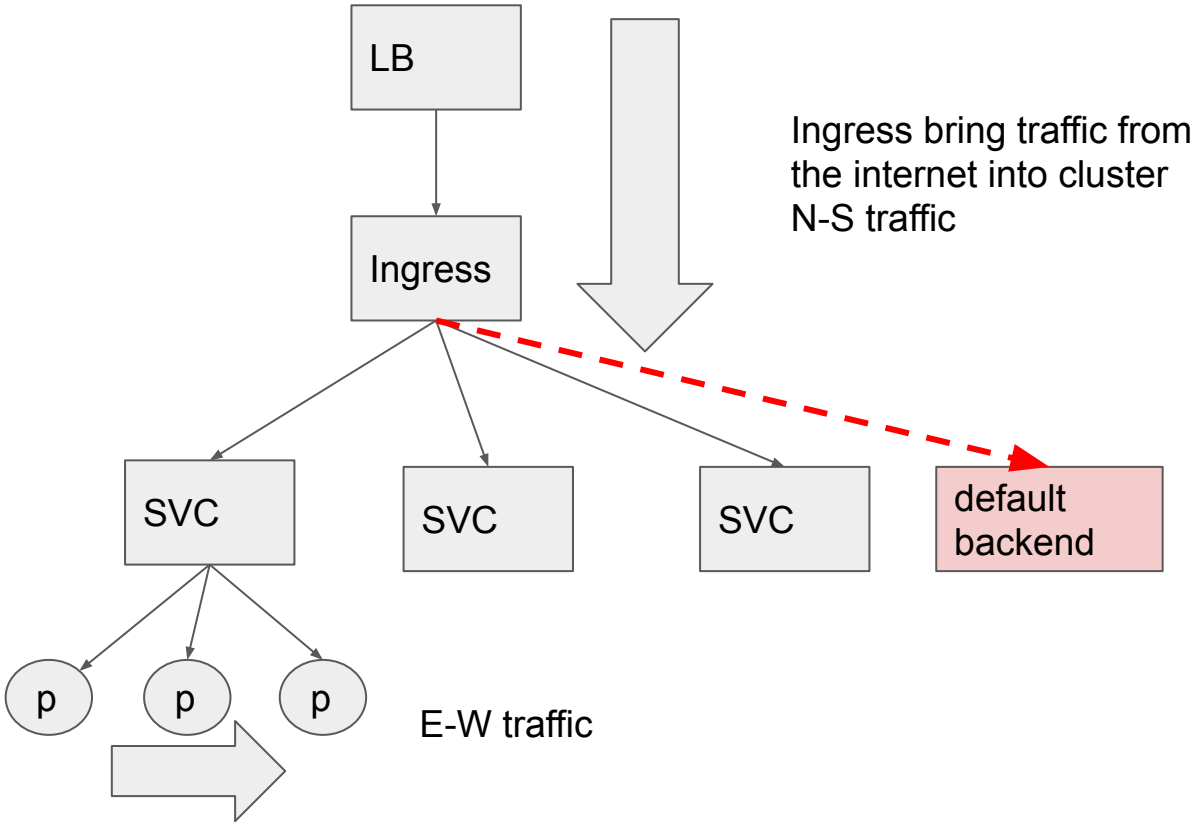

initContainer
container
scrub
/var/lib/mysql
Volume

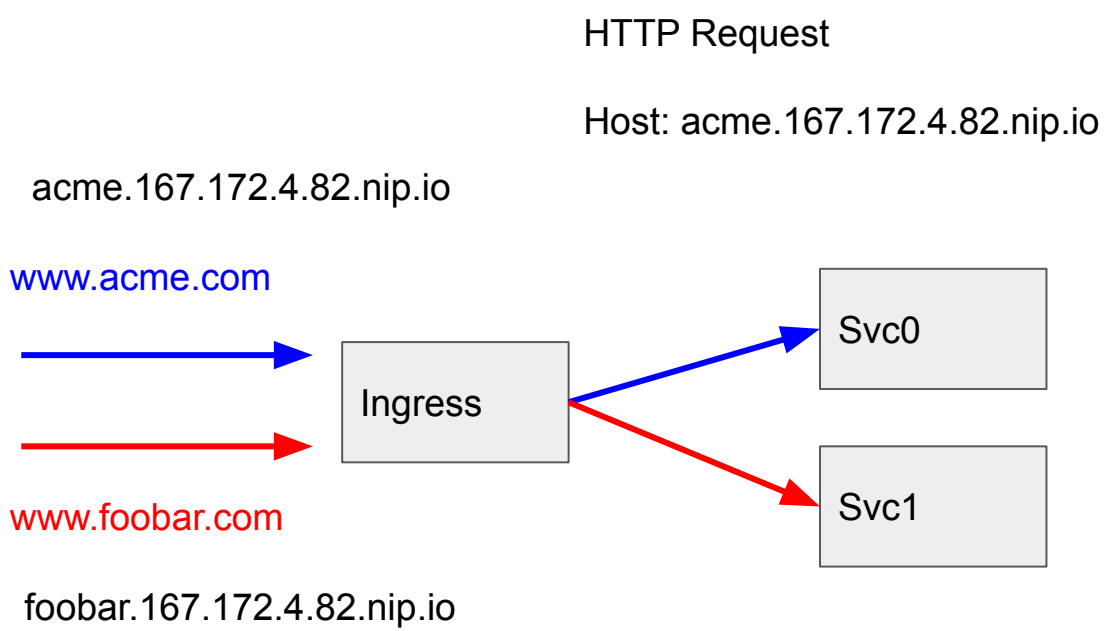


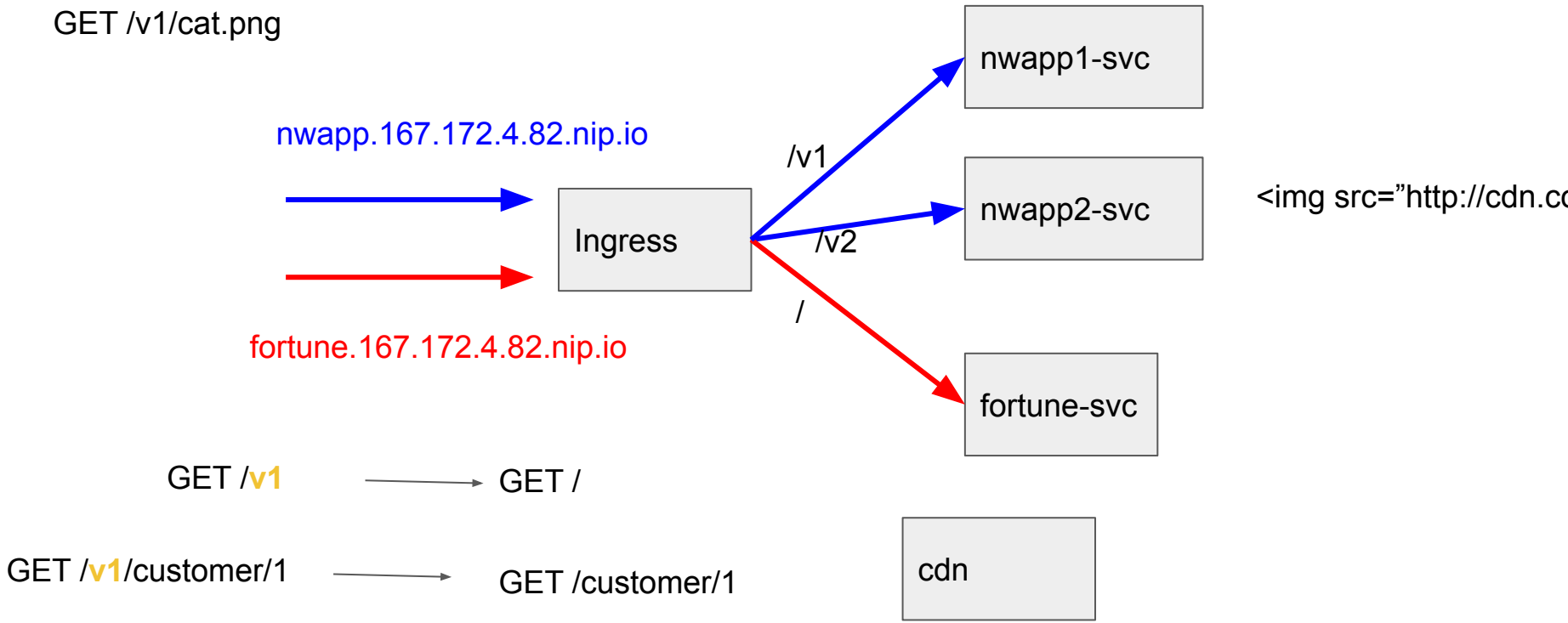
type: LoadBalancer



type: ClusterIP
svc_name.namespace.svc.cluster.local

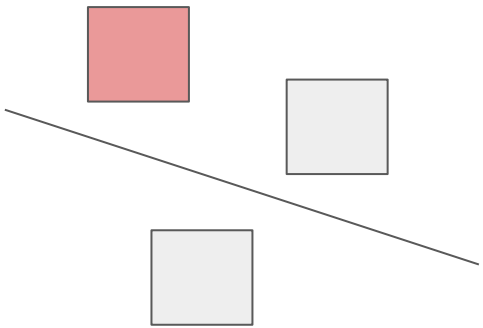

LB
Ingress
Ingress bring traffic from
the internet into cluster
N-S traffic
SVC
SVC
SVC
default
backend
p
p
p
E-W traffic


HTTP Request
Host: acme.167.172.4.82.nip.io
acme.167.172.4.82.nip.io
www.acme.com
Ingress
Svc0
Svc1
www.foobar.com
foobar.167.172.4.82.nip.io

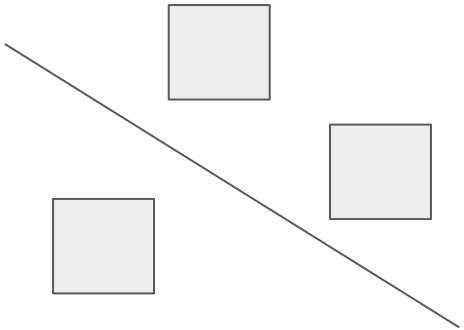

GET /v1/cat.png
nwapp.167.172.4.82.nip.io
fortune.167.172.4.82.nip.io
Ingress
/v1
/v2
/
nwapp1-svc
nwapp2-svc
fortune-svc
<img src="http://cdn.co
GET /v1
GET /
GET /v1/customer/1
GET /customer/1
cdn

Day 4

master-slave



peer



MySQL Cluster

Install MySQL operator

- CRD for cluster

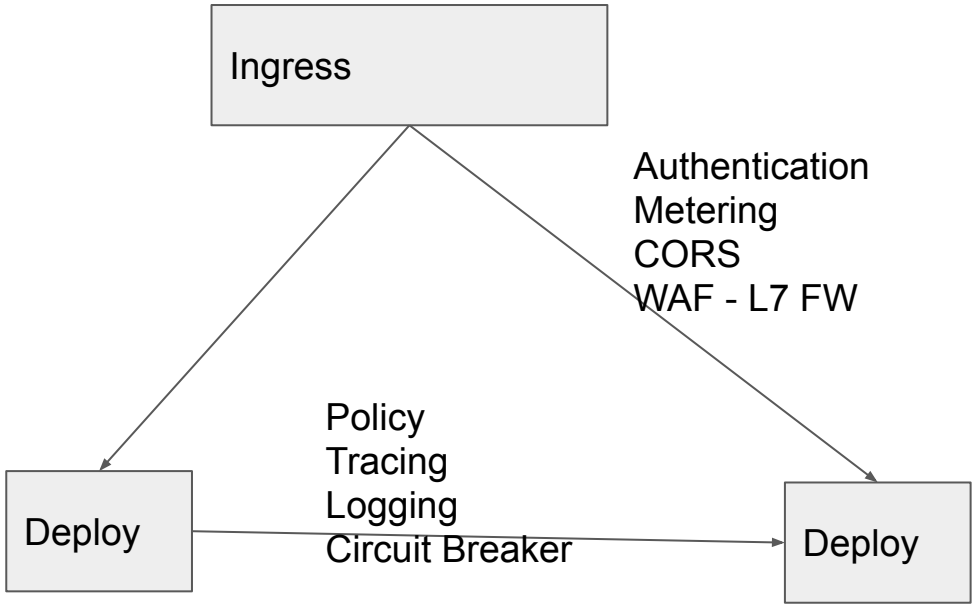
CRD to install cluster

- 3 services - 1 service master, 1 service replica, 1 service mysql cluster

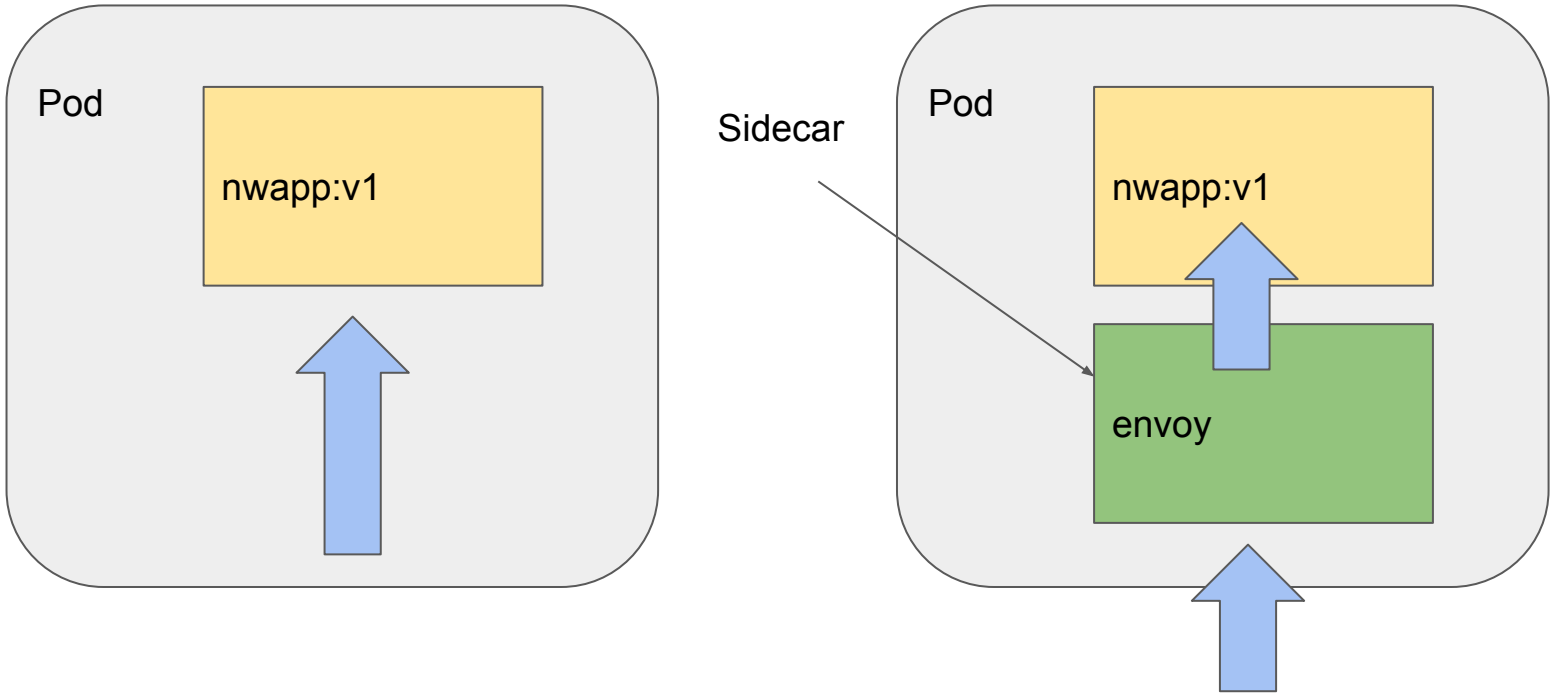
Create DB in the master

- Copy sql files into master, install
- Create cluster, is to restore backup

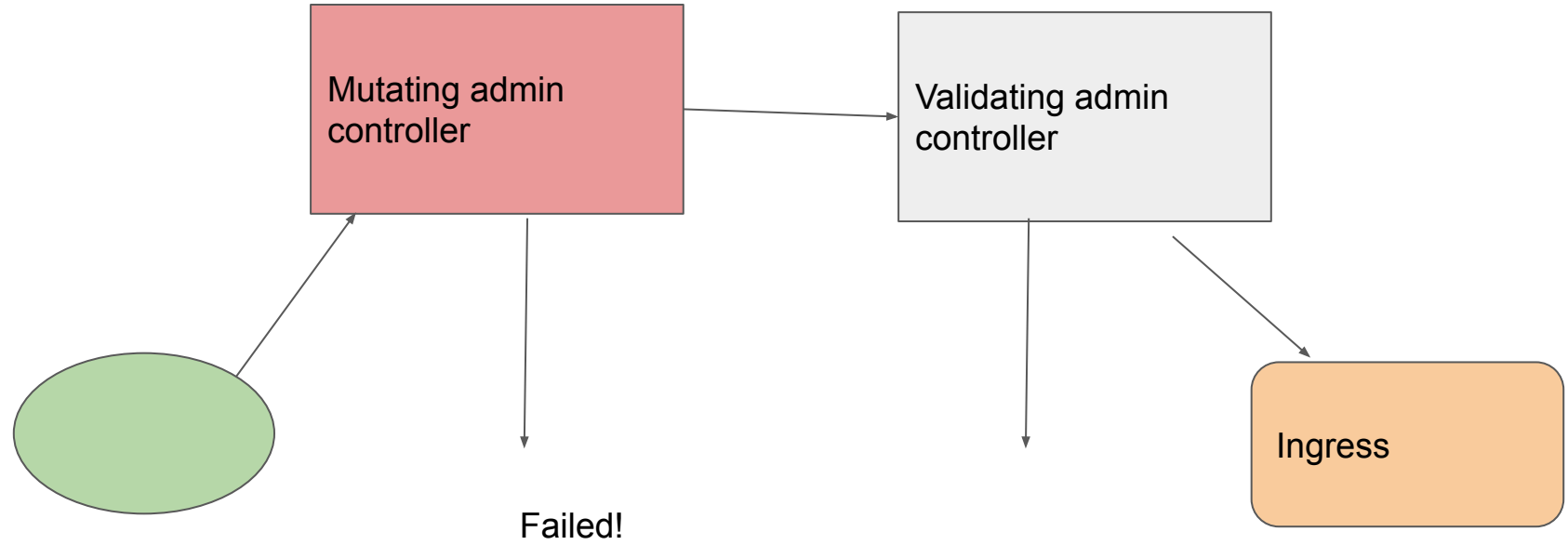
Configure your application to use the cluster

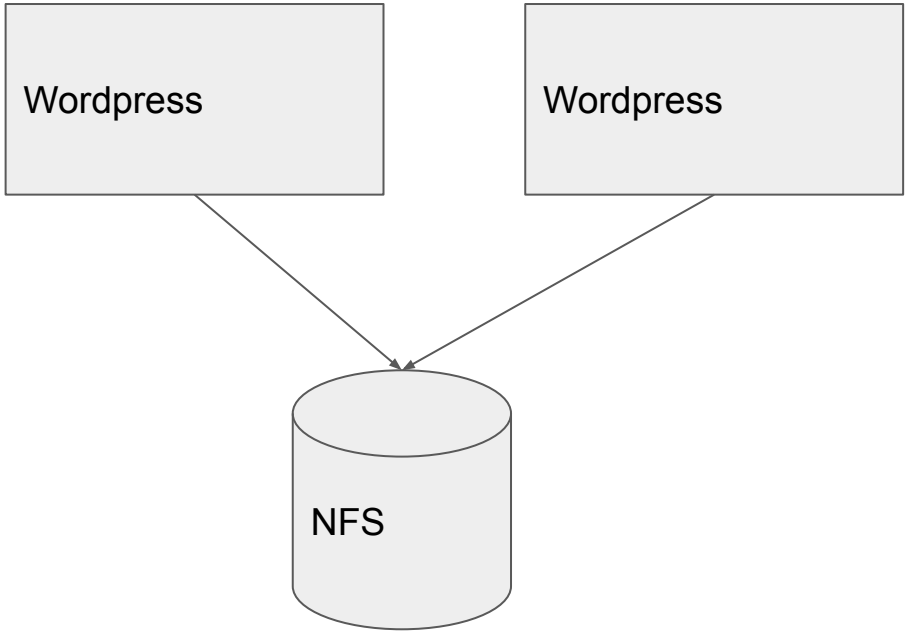

Ingress
Authentication
Metering
CORS
WAF - L7 FW
Policy
Tracing
Logging
Circuit Breaker
Deploy
Deploy

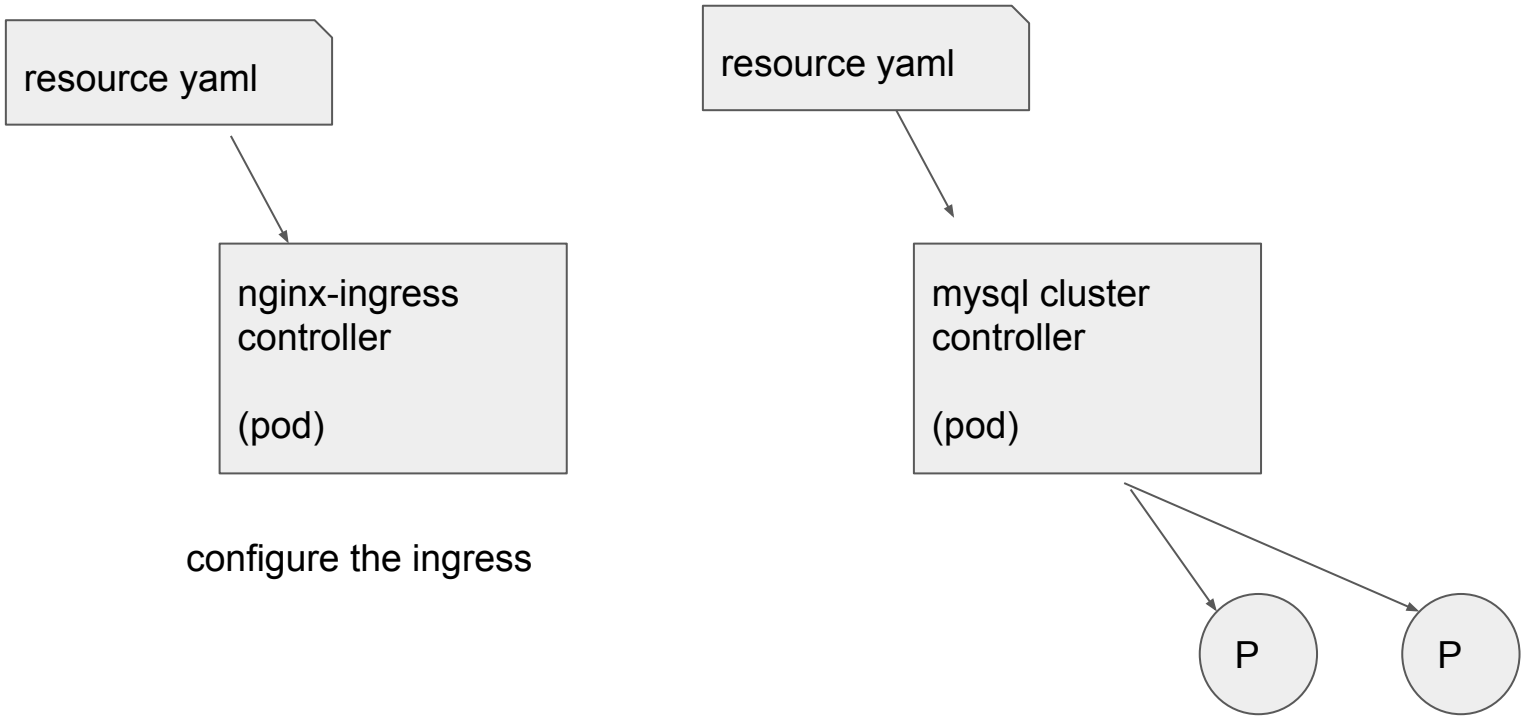
Sidecar

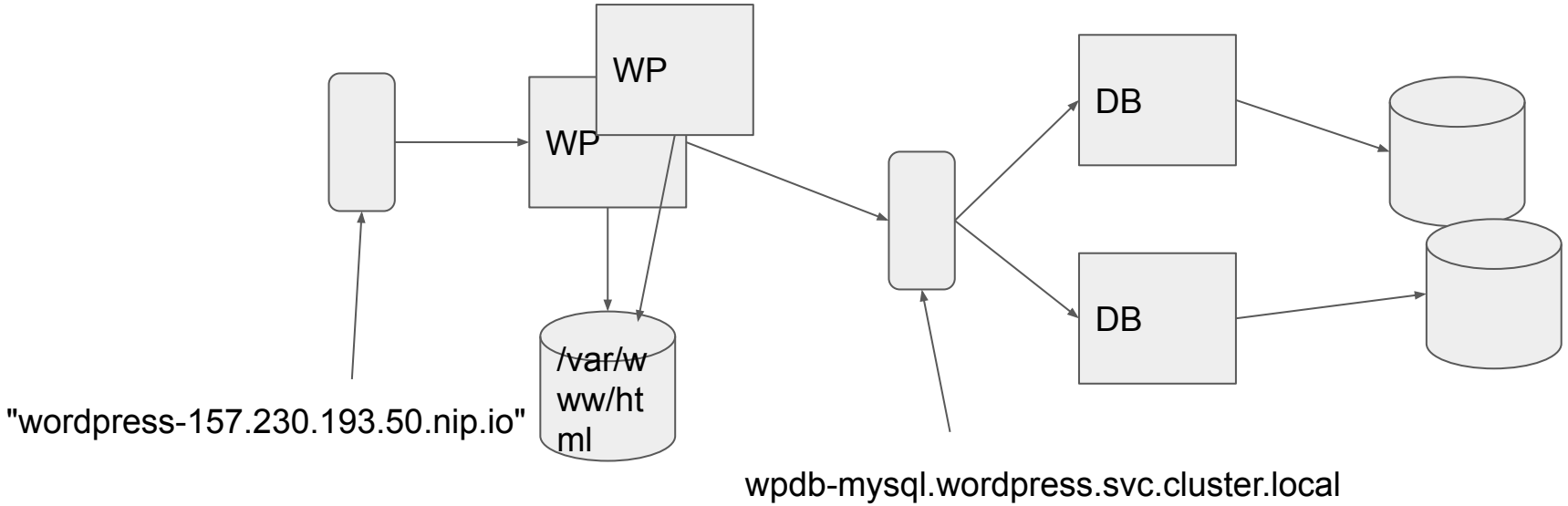


Admission Controller




Wordpress
Wordpress
NFS


resource yaml
nginx-ingress controller
(pod)
configure the ingress
resource yaml
mysql cluster controller
(pod)
P
P


WP
WP
DB
DB
/var/www/html
"wordpress-157.230.193.50.nip.io"
wpdb-mysql.wordpress.svc.cluster.local

Lunch
Resume at 1330