暴走漫画基于公有云的全面容器化架构实践

Michael Ding

从暴漫到扇贝

- 两家风格迥异的互联网创业公司

- Ruby VS Python

- Ucloud VS 阿里云

- 非技术出身的 Boss VS 技术出身的 Boss

- 10 个月容器化 VS 1 个月容器化

技术栈概况

- Services/App

  - Consul

  - MySQL(in RDS)

  - Redis, Twemproxy

  - Elasticsearch

  - Log collector

  - Python App(Django, Flask, Tornado)

  - MQ

  - Spark(Not yet in Shanbay)

- Deploy

  - Ansible

  - bash

- NOT included：

  - Mesos

  - K8s

Consul 简介

https://consul.io

特性

- Service Discovery
  - register/deregister service
  - HTTP/DNS interface

- Failure Detection
  - health check
  - update service register

- Multi Datacenter

- Key/Value Storage
  - store information
  - store data

```
curl -XPOST http://172.17.8.102:8500/v1/agent/service/register -d '{
    "Name": "elasticsearch",
    "Tags": ["hdd"],
    "Port": 9200,
    "Check": {"HTTP": "http://172.17.8.102:9200", "Interval": "30s"}
}'
```

```
vagrant@consuld-03:~$ dig elasticsearch.service.sbay. ANY

; <<>> DiG 9.9.5-3ubuntu0.2-Ubuntu <<>> elasticsearch.service.sbay. ANY
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 58568
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 2, AUTHORITY: 0, ADDITIONAL: 0

;; QUESTION SECTION:
;elasticsearch.service.sbay.		IN	ANY

;; ANSWER SECTION:
elasticsearch.service.sbay. 0	IN	A	172.17.8.103
elasticsearch.service.sbay. 0	IN	A	172.17.8.102

;; Query time: 3 msec
;; SERVER: 127.0.0.1#53(127.0.0.1)
;; WHEN: Wed Jan 13 07:28:16 UTC 2016
;; MSG SIZE  rcvd: 128
```

- register & deregister a service

- service health check & auto deregister unhealthy services

- query services & load balance based on DNS

Docker 简介

https://www.docker.com

- 一个程序跑起来需要什么？

- Docker VS VM(Virtual Machine)

  - os kernel

  - docker image: 进程所依赖的环境(fs)

  - docker container: 运行中的进程

Service Distribution Workflow

- Build: -> make image

- Ship: -> upload/download image

- Run: -> fetch config && create container && register service

2 types of services

based on
workflow

- Elasticsearch — normal service

- Django(uwsgi) — need gracefully reload

Elasticsearch

- 构建镜像

```
UNICAST_HOSTS=$(dig @${HostIP} -p 8600 \
      +noauthority +noquestion +nocomments +nocmd +nostats \
      elasticsearch.service.sbay \
      | awk '/^[^;]/ { printf("%s:9300\n", $5) }' \
      | paste -s -d',')
```
Get config

```
docker run -d --name elasticsearch \
  -e ES_HEAP_SIZE="${ESHeapSize}" \
  -v ${ESData}:/usr/share/elasticsearch/data \
  -v ${ESLog}:/usr/share/elasticsearch/logs \
  --net=host \
  --restart=always \
  --log-opt max-size=10m \
  --log-opt max-file=9 \
  registry.example.com/shanbay/elasticsearch:2.1 \
  --node.name=${NodeName} \
  --node.disk=${NodeDisk} \
  --cluster.name=cluster \
  --network.bind_host=0.0.0.0 \
  --network.publish_host=${HostIP} \
  --discovery.zen.ping.multicast.enabled=false \
  --discovery.zen.ping.unicast.hosts=${UNICAST_HOSTS}
```
Run

Image contains service

```
FROM elasticsearch:2.1
MAINTAINER Michael Ding <dy@tinysou.com>

COPY plugins /usr/share/elasticsearch/plugins
COPY config /usr/share/elasticsearch/config
COPY docker-entrypoint.sh /
```

```
curl -XPOST http://${HostIP}:8500/v1/agent/service/register -d "{
    \"Name\": \"elasticsearch\",
    \"Tags\": [\"${NodeDisk}\"],
    \"Port\": 9200,
    \"Check\": {\"HTTP\": \"http://${HostIP}:9200\", \"Interval\": \"30s\"}
}"
```
Register service &
health check

Django

when code updated

reload instead of restart

```
reload() {
  docker exec analysisbay python manage.py syncdb
  docker exec analysisbay python manage.py collectstatic --noinput
  docker kill -s HUP analysisbay
}
```

Image ONLY contains environments

```
FROM python:2

RUN mkdir -p /usr/src/app
WORKDIR /usr/src/app
VOLUME /usr/src/app

RUN apt-get update && \
    apt-get install -y libblas-dev liblapack-dev gfortran && \
    rm -rf /var/lib/apt/lists/*

COPY requirements.txt /usr/src/app/
RUN pip install --no-cache-dir numpy==1.9.2
RUN pip install --no-cache-dir -r requirements.txt
```

Web 系统的架构
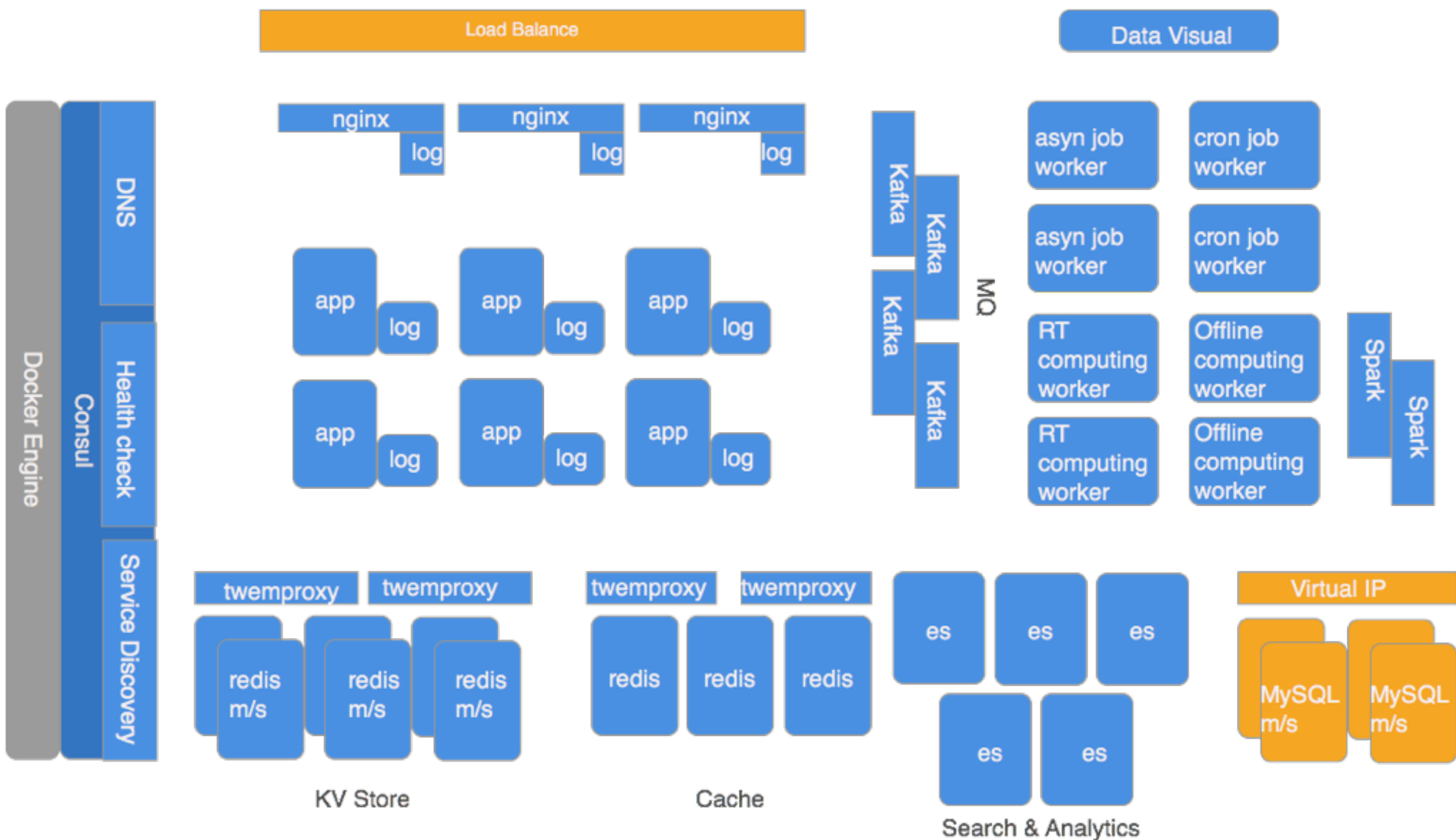
架构设计中的关键要素

- HA(High Available) —— 去除单点，服务发现，Load Balance

- Easy to Scale Out —— 服务发现，环境封装

- LL(Low Latency) —— 技术选型，系统结构

- Developer Friendly —— 环境统一，便于操作

- Team —— 规模，成员

"Docker + Consul is just good for us."

–Johnny Appleseed

Thank You!

We're hiring

devops@shanbay.com