

# 暴走漫画基于公有云的 全面容器化架构实践

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# 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

# 技术栈概況

- 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

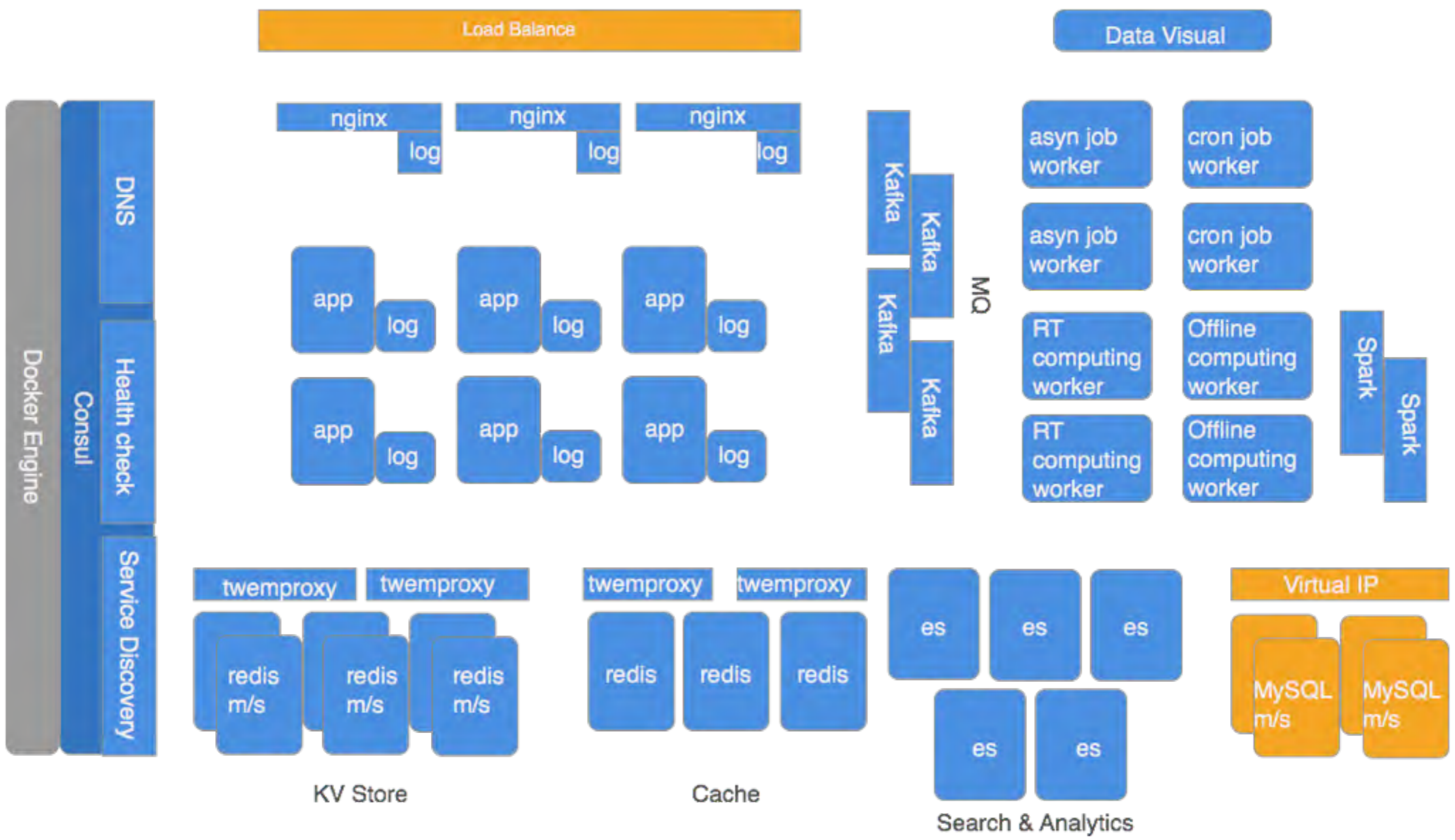
when code updated  
reload instead of restart

```
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!



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