

# 摩拜服务架构演进

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# Introduce

本科哈工大，硕士华中科大

实习于微软亚研究院

2011硕士毕业

阿里（研发基础架构）、

百度（负责搜索在线架构、国际化视频搜索）、

奇虎360（负责部门直播业务和基础架构）

2017, MOBIKE, 基础平台部门



# MOBIKE

- 用户：2亿+
- 单车：800万+
- 日订单：
  - 摩拜：0 → 3000万（1.5年）
  - 滴滴出行：0 → 2500万（5年）
  - 美团外卖：0 → 1600万（4年）



# MOBIKE



200 cities

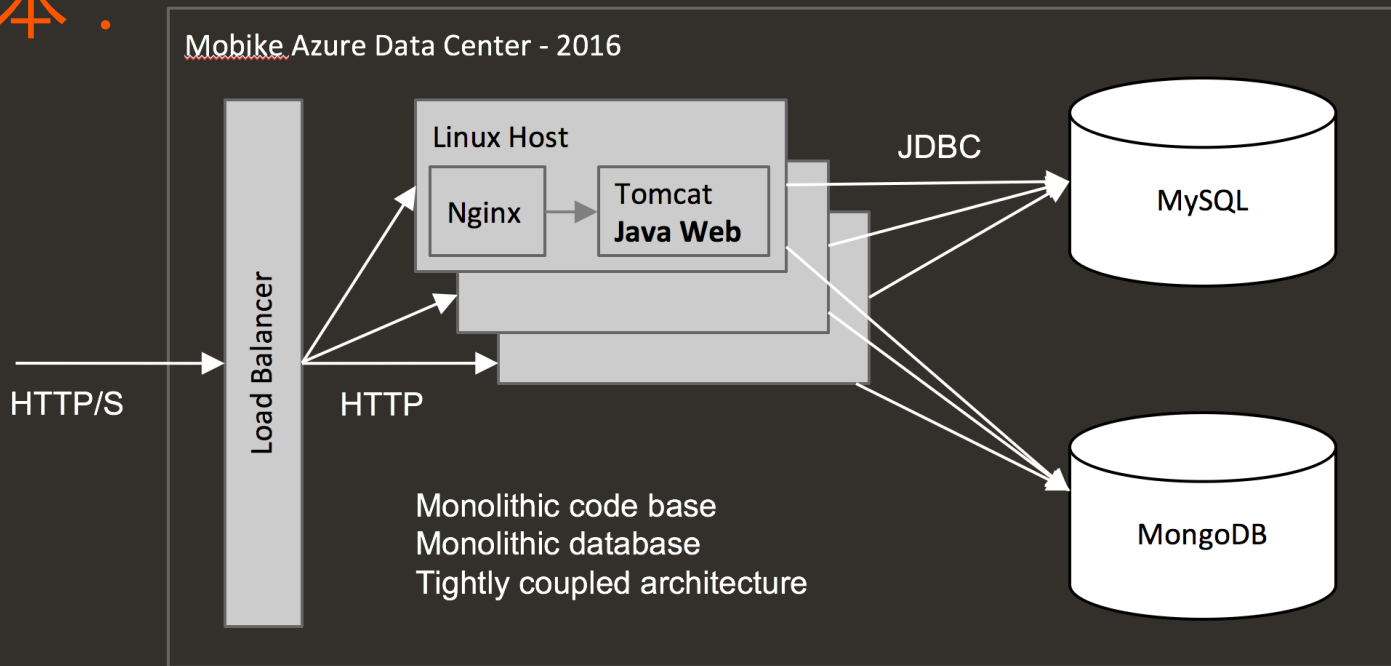
# 架构演进源自业务增长



# 架构1.0

## 最小可用版本：

- 单体应用
- 快速试错
- 简单可控



# 架构2.0

## 功能堆积&核心体验打磨：

- 迭代效率
- 稳定性
- 安全





## Edge

Zuul

LB

API

IoT

## Middle Tier & Platform

### Product

- Trip
- Payment
- Events

### Platform

- Routing
- Configuration
- Crypto

### Persistence

- Cache
- Database

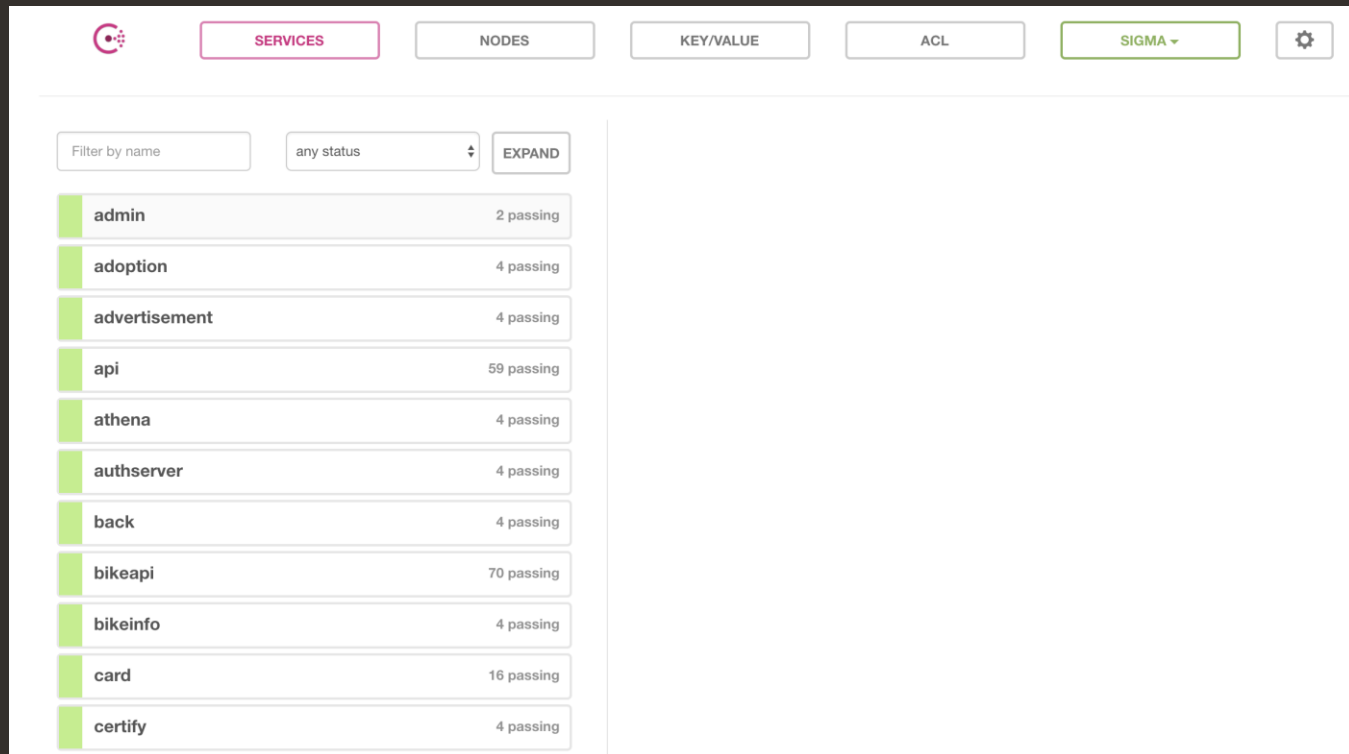
# 架构2.0-microservice

## 技术选型：

- 服务注册发现 ( consul )
- 配置中心 ( configserver )
- 负载均衡 ( ribbon )
- 服务化网关 ( zuul )
- 全链路tracing ( zipkin )
- 熔断、限流 ( hystrix )

# 架构2.0-microservice

## 服务注册&发现

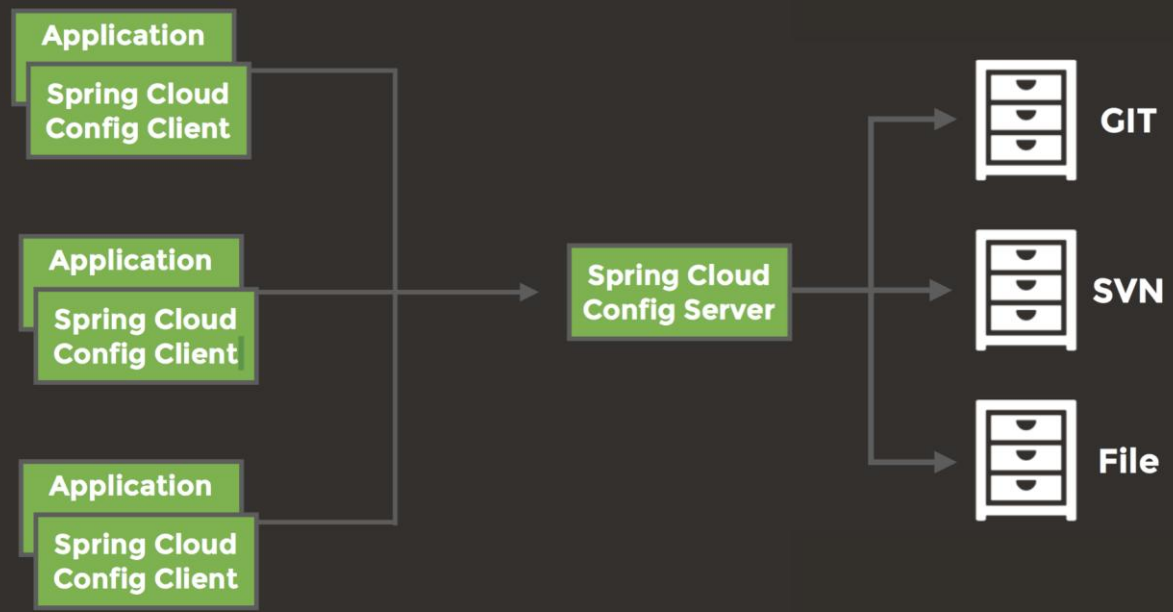


The screenshot displays a service discovery dashboard with a navigation bar at the top containing tabs for SERVICES, NODES, KEY/VALUE, ACL, SIGMA, and a settings icon. Below the navigation bar, there is a search area with a 'Filter by name' input field, a dropdown menu set to 'any status', and an 'EXPAND' button. The main content area shows a list of services, each with a green status indicator, the service name, and the number of instances passing health checks.

Service Name	Status
admin	2 passing
adoption	4 passing
advertisement	4 passing
api	59 passing
athena	4 passing
authserver	4 passing
back	4 passing
bikeapi	70 passing
bikeinfo	4 passing
card	16 passing
certify	4 passing

# 架构2.0-microservice

配置中心

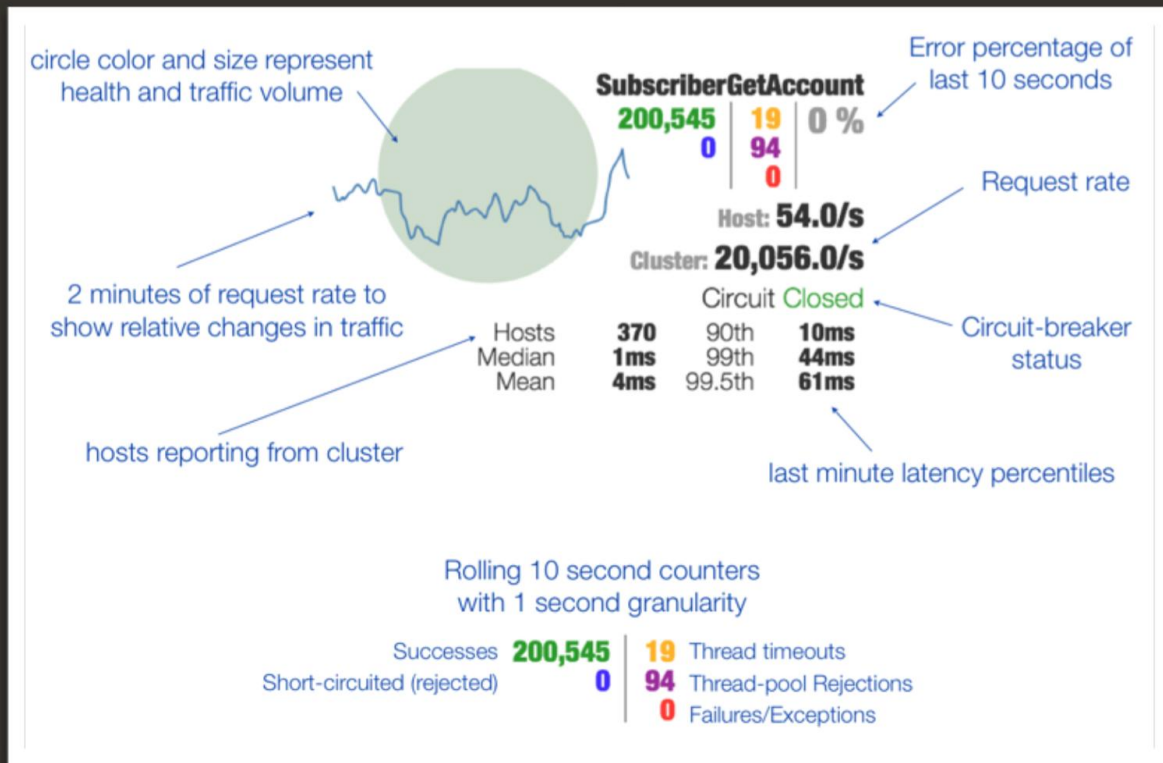


# 架构2.0-microservice

熔断

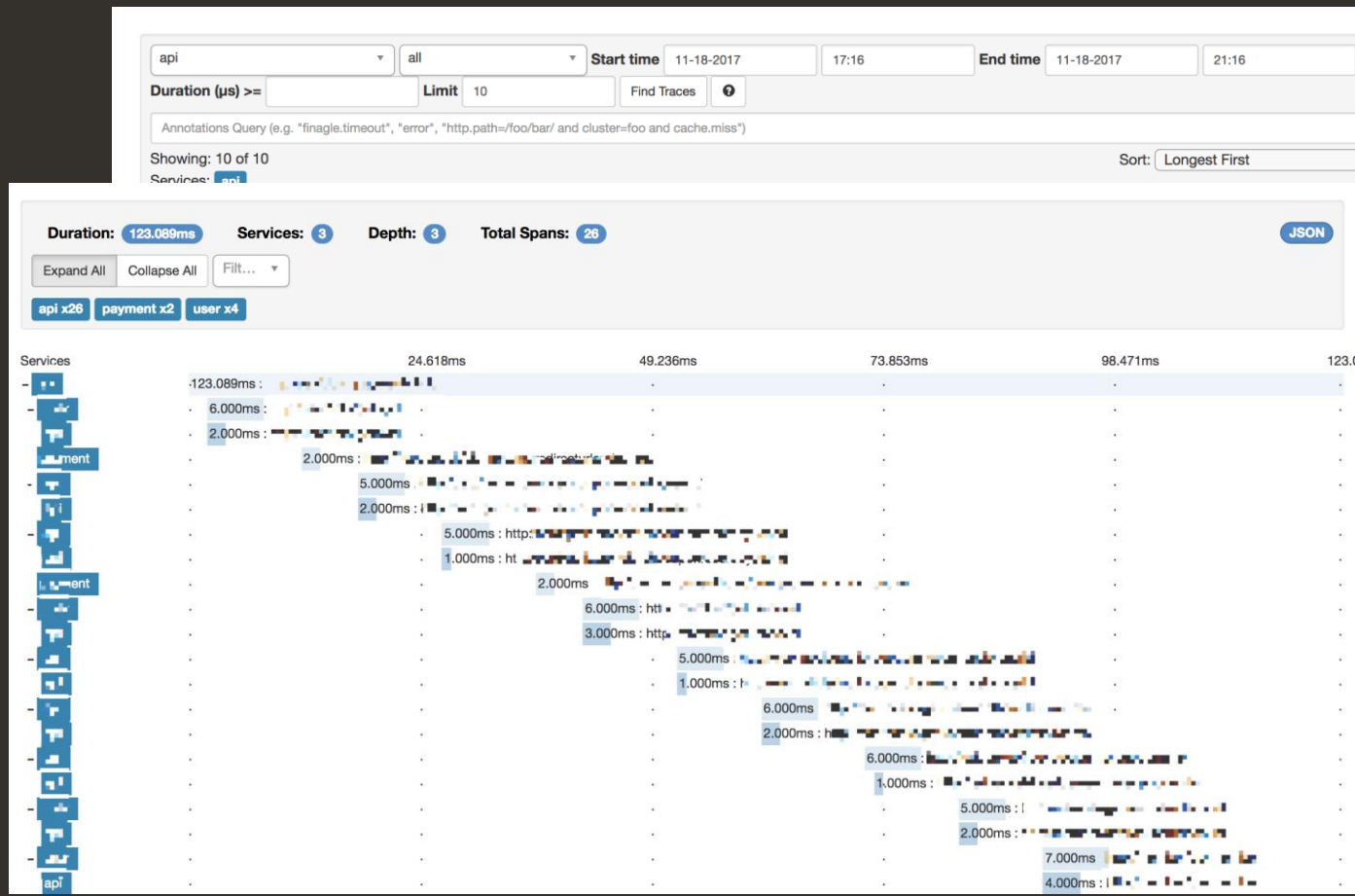
限流

Dashboard



# 架构2.0-microservice

## Tracing



# 架构3.0

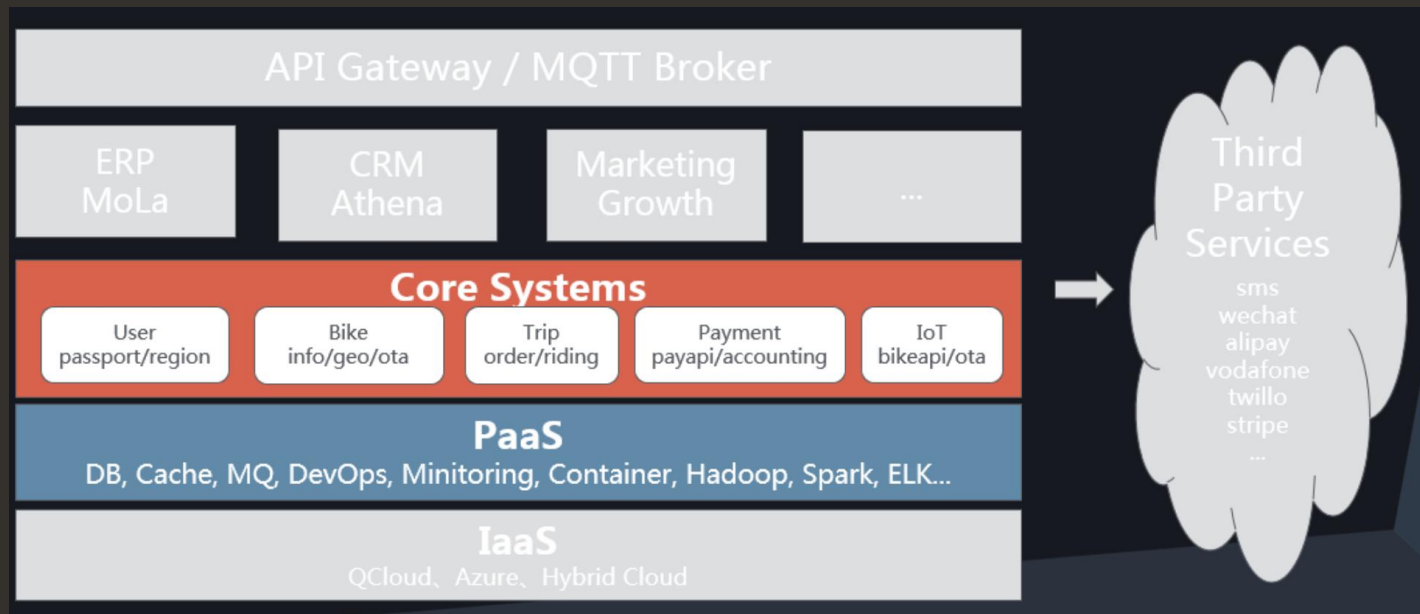
## 精细化运营&业务生态体系:

研发效率、水平扩展、高可用、高性能、数据稳定

- 核心服务拆分改造
- 黑石Docker
- 蓝绿部署架构
- 全链路压测
- Tracing演进
- 数据标准化组件
- grpc微服务体系、A/B实验、灰度发布、IOTHub

# 架构3.0

## 核心服务拆分改造

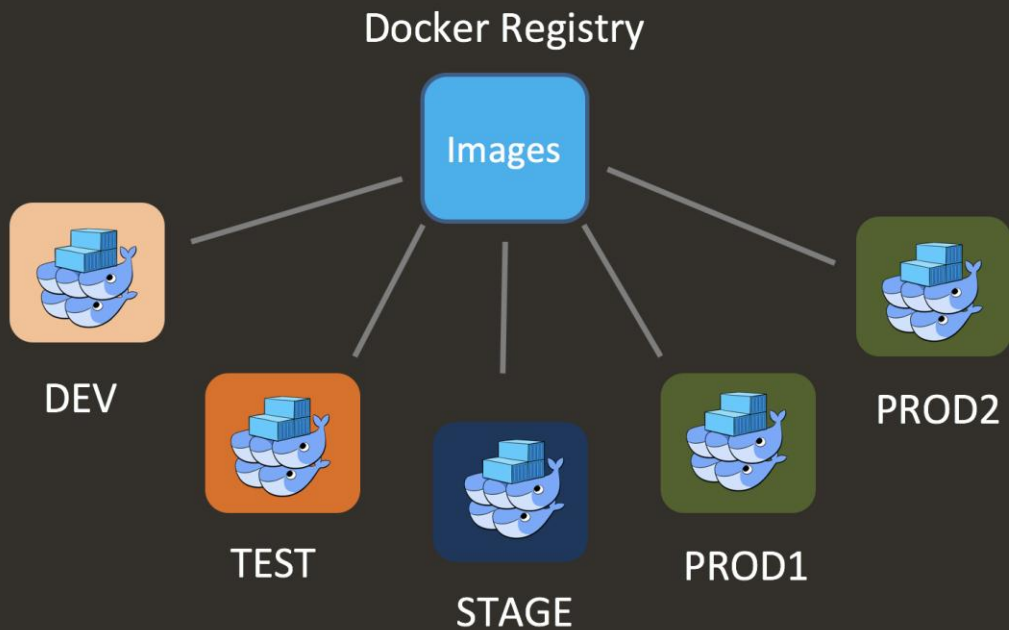




# 架构3.0

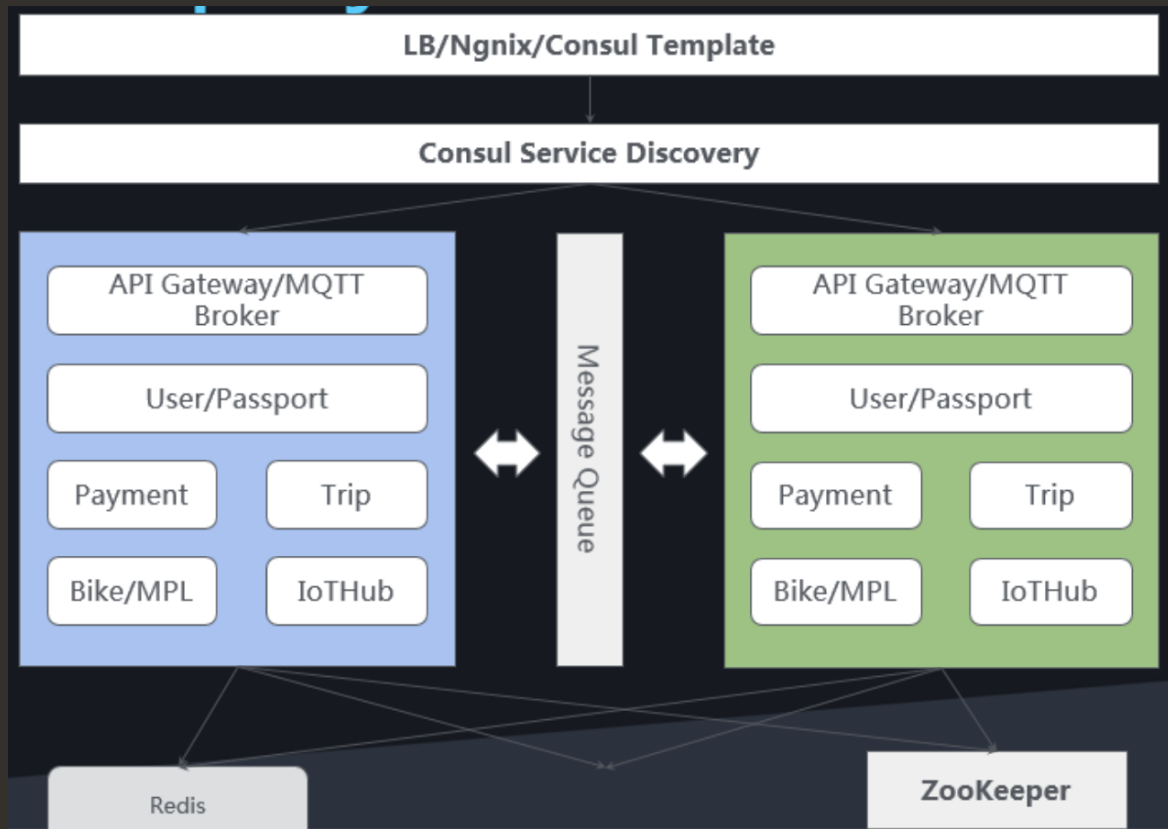
## Docker swarm

- QCloud黑石
- 扁平网络
- CICD改造



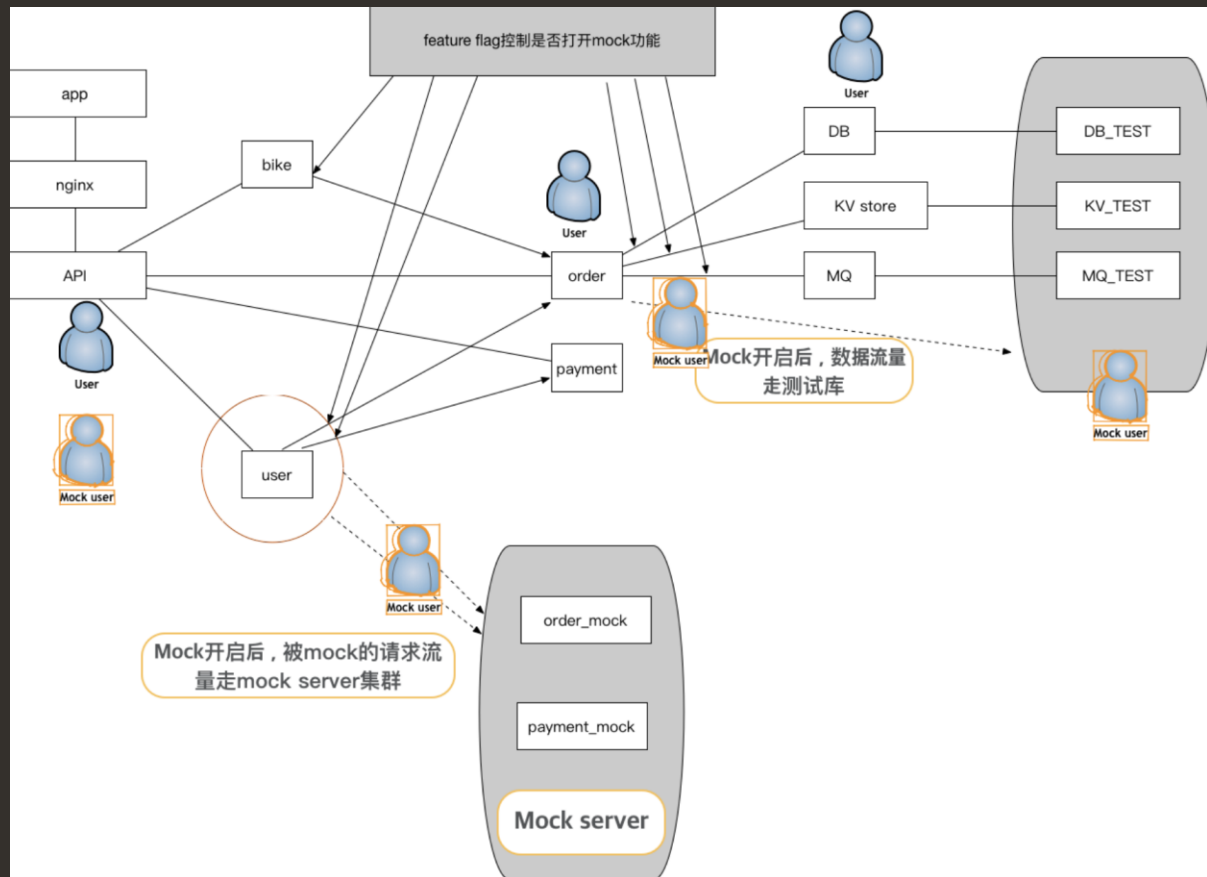
# 架构3.0

## 蓝绿部署架构



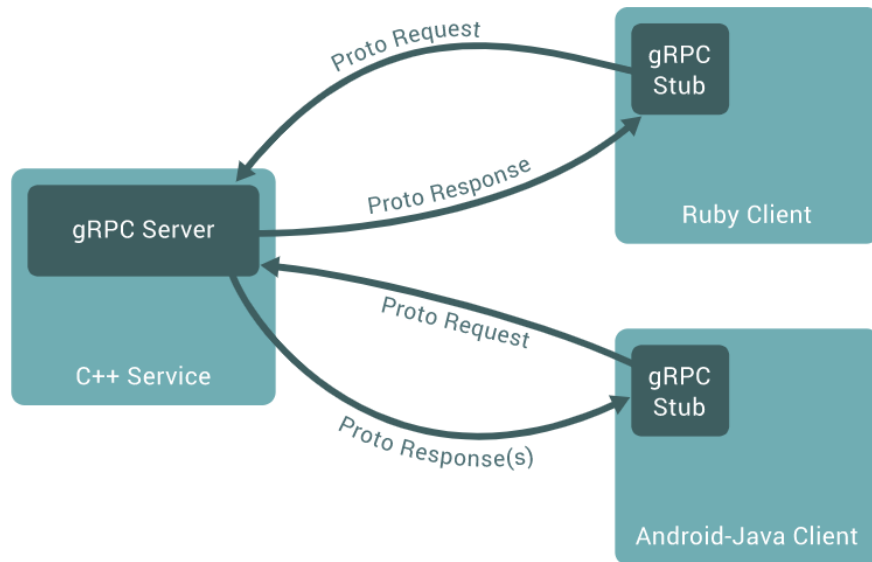
# 架构3.0

## 全链路压测



# 架构3.0

## 基于grpc的微服务体系



# 架构4.0 on the way!

## 目标：

- 多活架构
  - 高可用 & scale
- 国际化架构
  - UX & legal

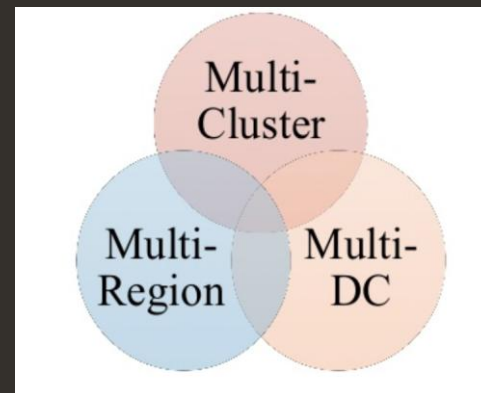
# 架构4.0 on the way!

multi-cluster: (logical)

- ✓ isolation
- ✓ organization structure
- ✓ convenience
- ✓ tuning

multi-region: (logical, distance)

- ✓ geo-locality
- ✓ disaster recovery
- ✓ scale



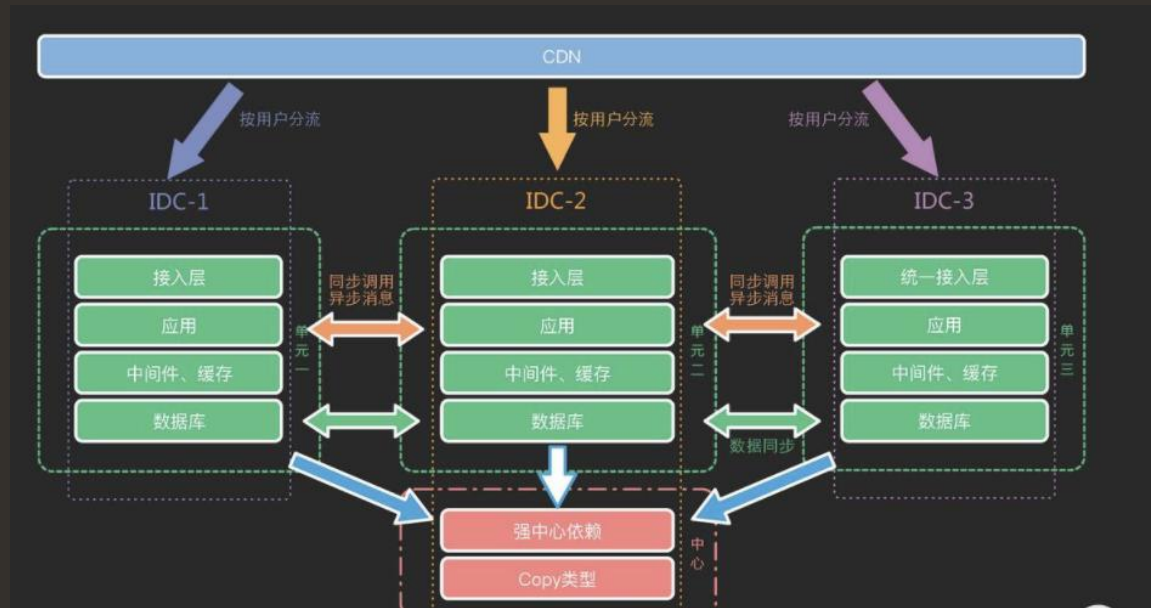
global multi-DC: (physical)

- ✓ legal reasons
- ✓ geo-locality
- ✓ disaster recovery
- ✓ scale

# 架构4.0 on the way!

## 多活架构

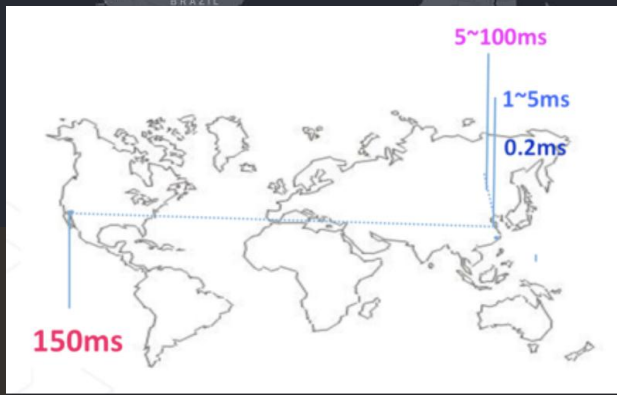
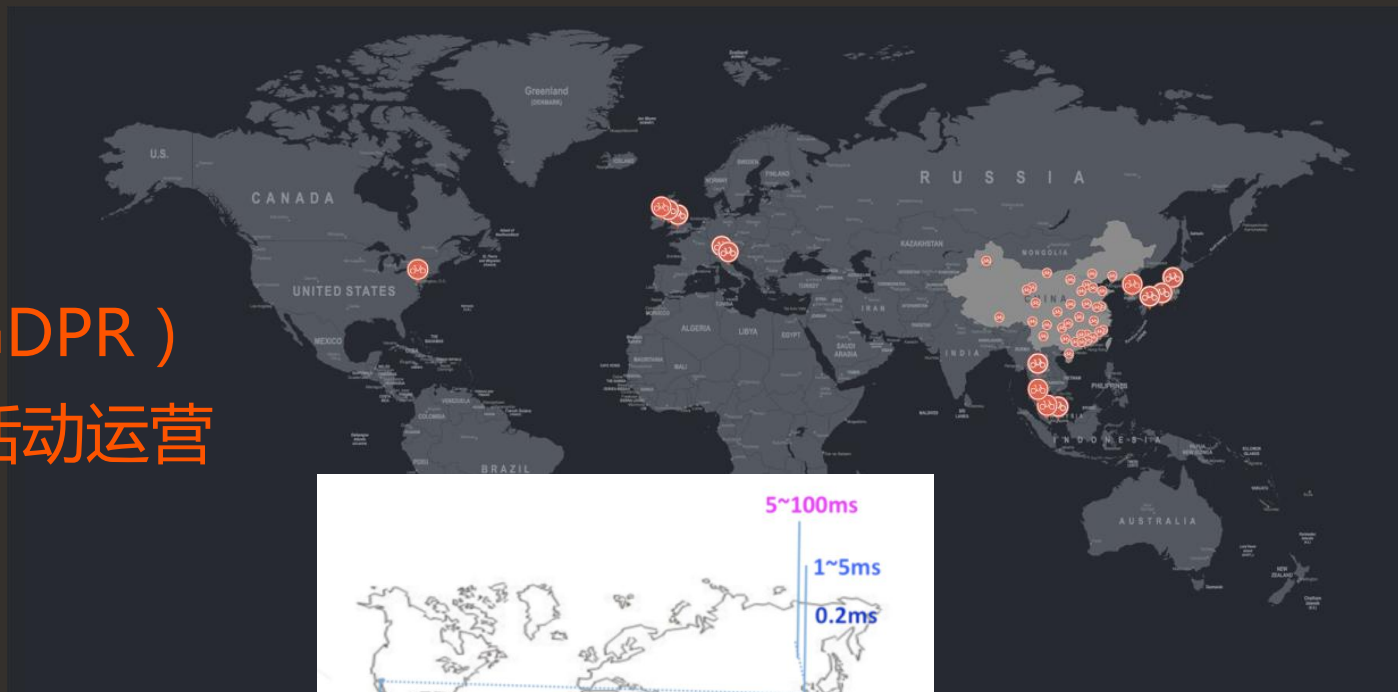
- 物理距离决定难度
- 单一维度拆分
- 单元化改造
- 数据特点决定



# 架构4.0 on the way!

## 国际化

- 延时友好
- 数据合规 ( GDPR )
- 各地不同的活动运营

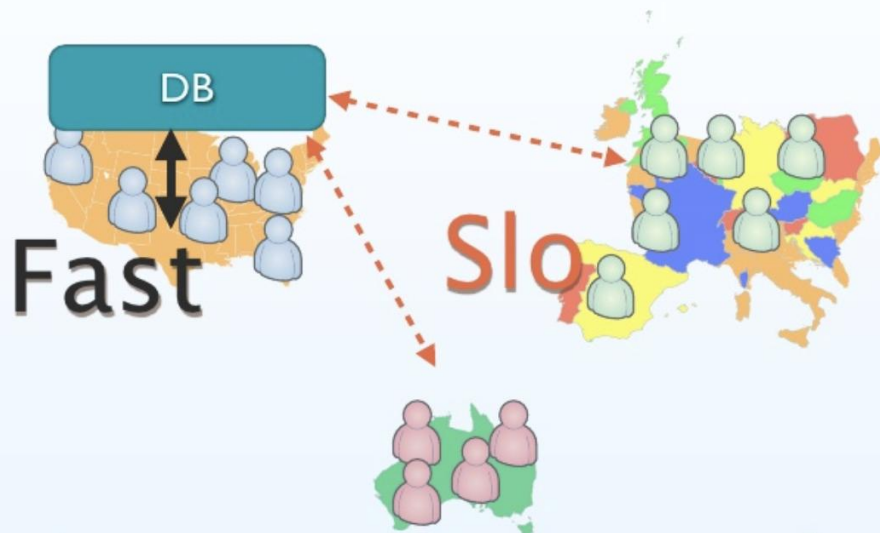




# 架构4.0 on the way!

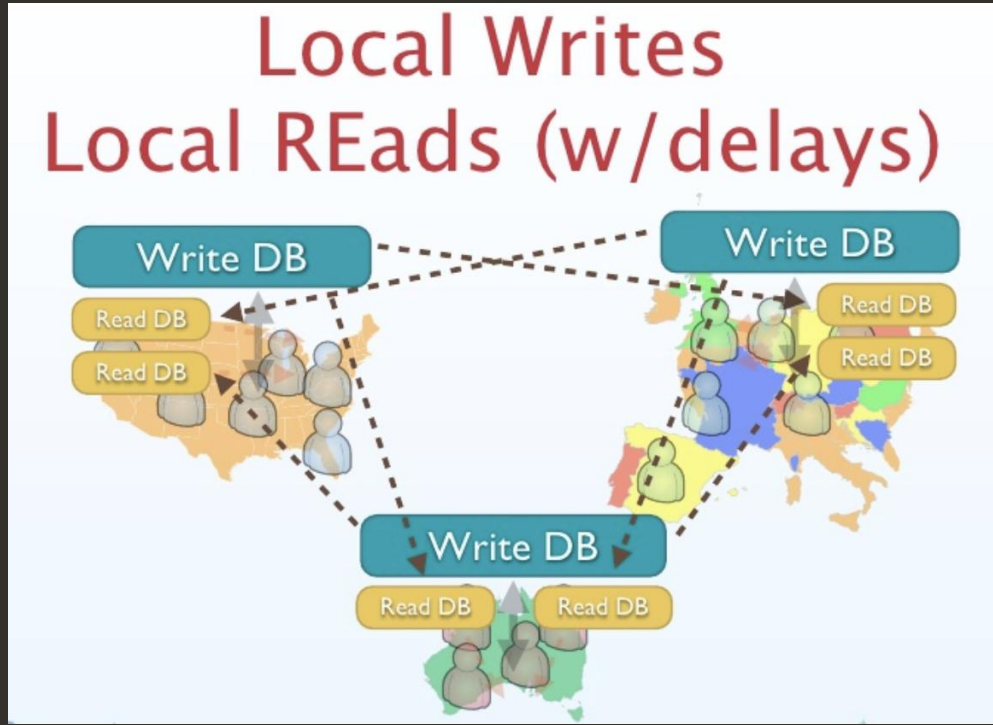
国际化

## Single Database location



# 架构4.0 on the way!

国际化



# 架构4.0 on the way!

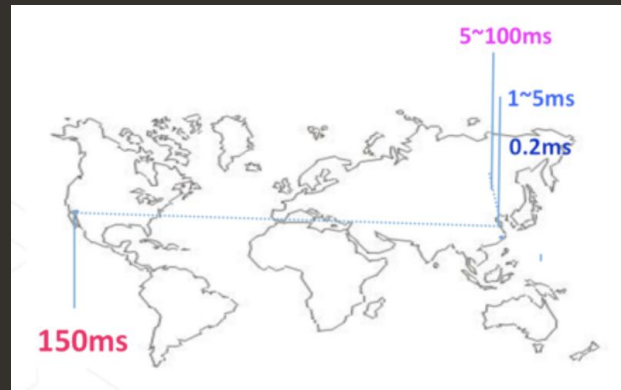
## 1. 本地用户UX & legal :

✓ 方案: multi-DC 可以解决

## 2. 漫游用户UX & legal :

✓ 本质是人和车数据两地的问题

✓ 要么RPC, 要么数据迁移或缓存

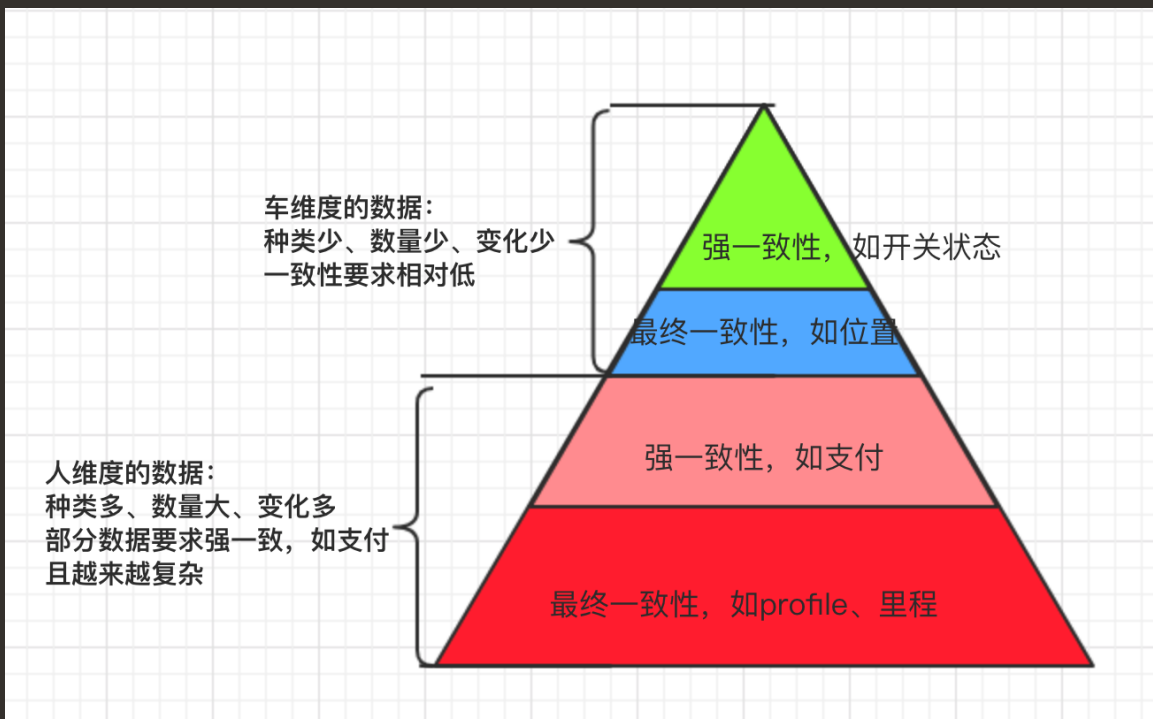


# 架构4.0 on the way!

业务层改造：单元化->国际化->聚合&加速

- ✓ 单元化：封闭调用，减少RPC尤其跨国RPC次数
- ✓ 国际化：单元内国际化，简化业务开发成本
- ✓ 聚合加速：多个单元的聚合，进一步避免跨国RPC次数
- ✓ 数据加速：针对数据一致性要求情况，进行加速

# 架构4.0 on the way!



# MOBIKE



18 months, 200+ cities

# What Makes Us Special

## 工程师文化

SDE = Something Do Everything

Eat Your Own Dog Food

## 信息透明

## 自由平等



M

Move Fast 唯快不破

O

Open 开放平等

B

Bold 百折不挠

I

Innovation 创新精神

K

Knowledge-based leadership  
基于专长的领导力

E

Execution  
高效执行

R

Responsibility  
社会责任

mobike

摩拜单车

Let's Mobike

