



QCon 全球软件开发大会
INTERNATIONAL SOFTWARE
DEVELOPMENT CONFERENCE

BEIJING 2017

微服务中的配置中心

郭平（坤宇）



促进软件开发领域知识与创新的传播



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全球架构师峰会 2017 [深圳站]

2017年7月7-8日 深圳·华侨城洲际酒店

咨询热线: 010-89880682



全球软件开发大会 [上海站]

2017年10月19-21日

咨询热线: 010-64738142

配置

配置是什么？

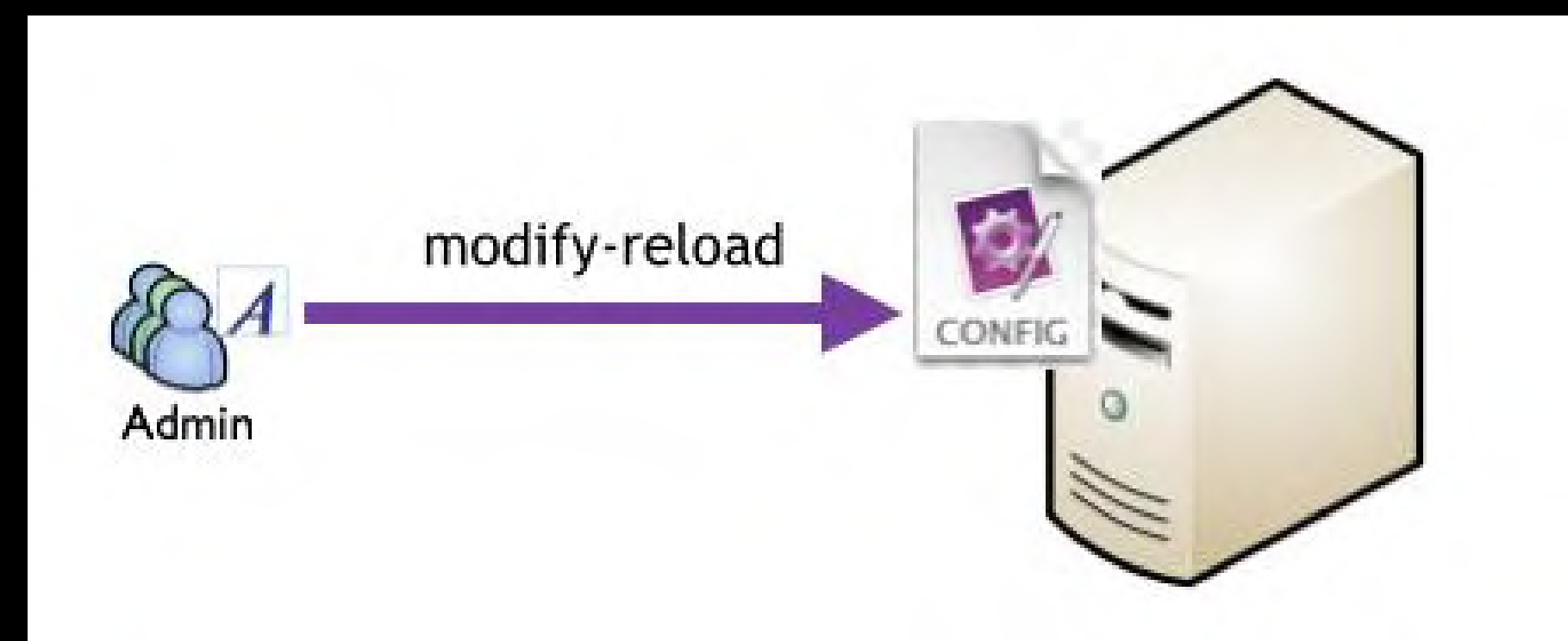
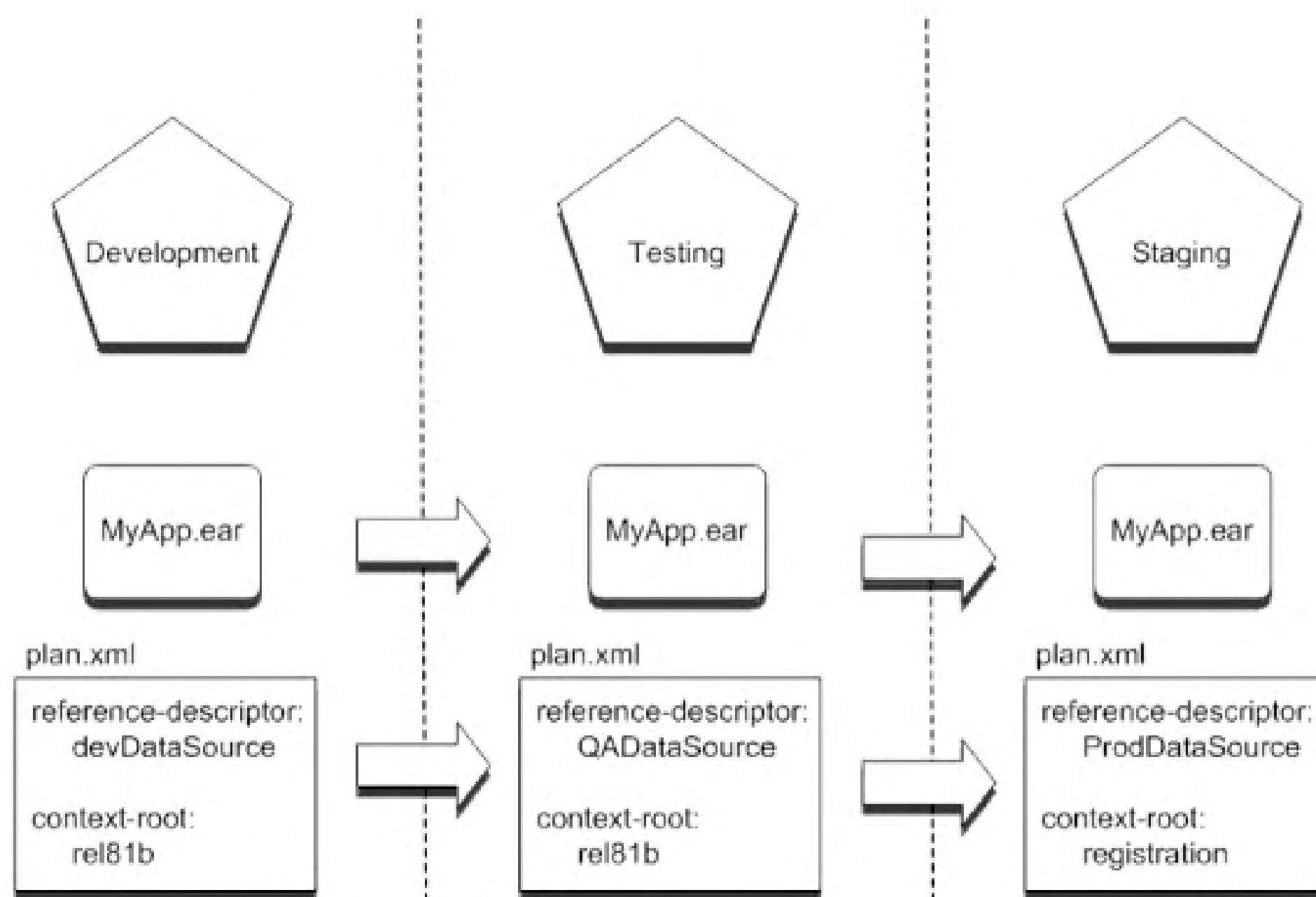
key=value？

程序运行时 动态 调整行为 的能力！

logLevel = error

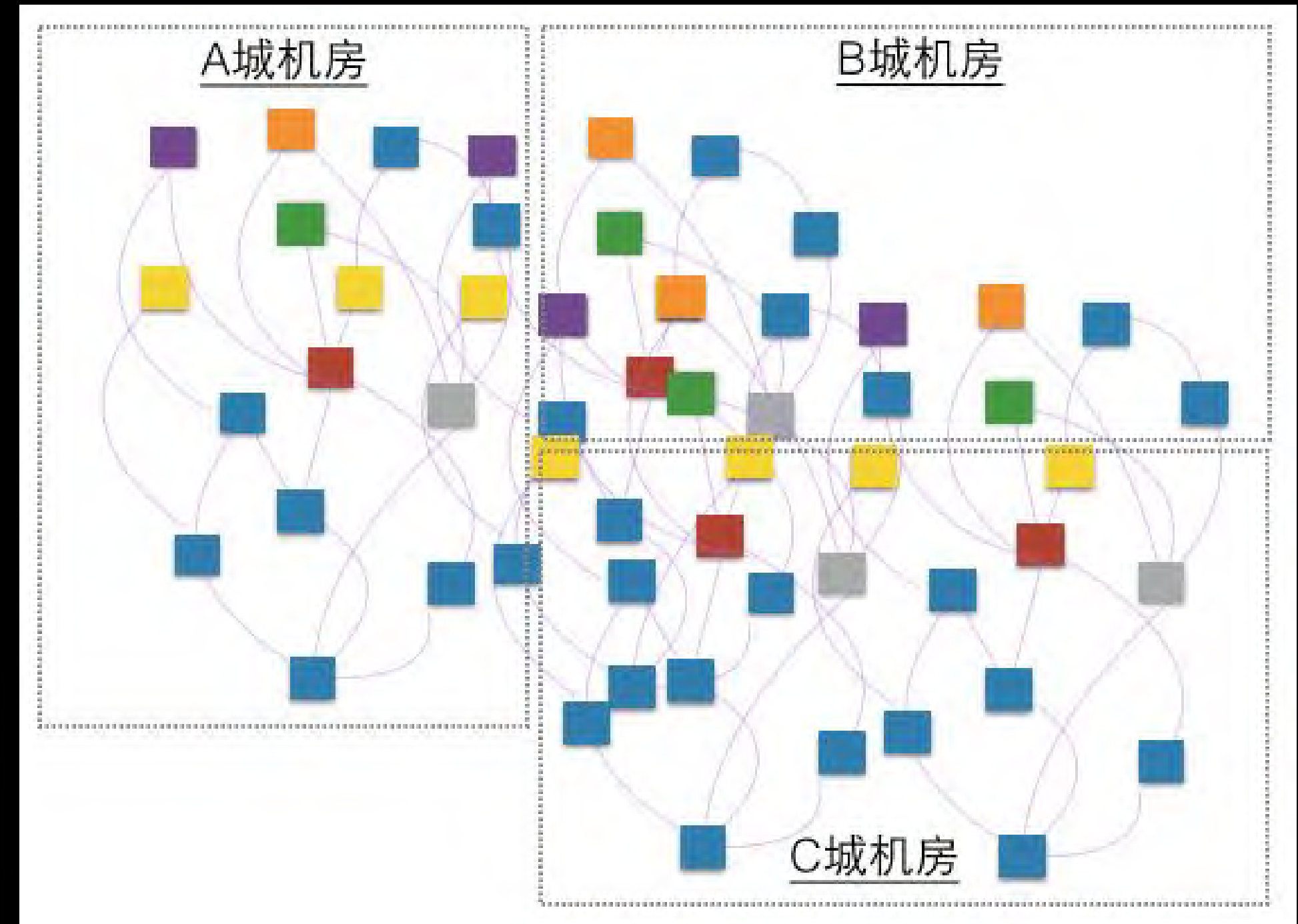
配置文件 - 软件的老友

Figure 4-2 Single Deployment Plan Workflow

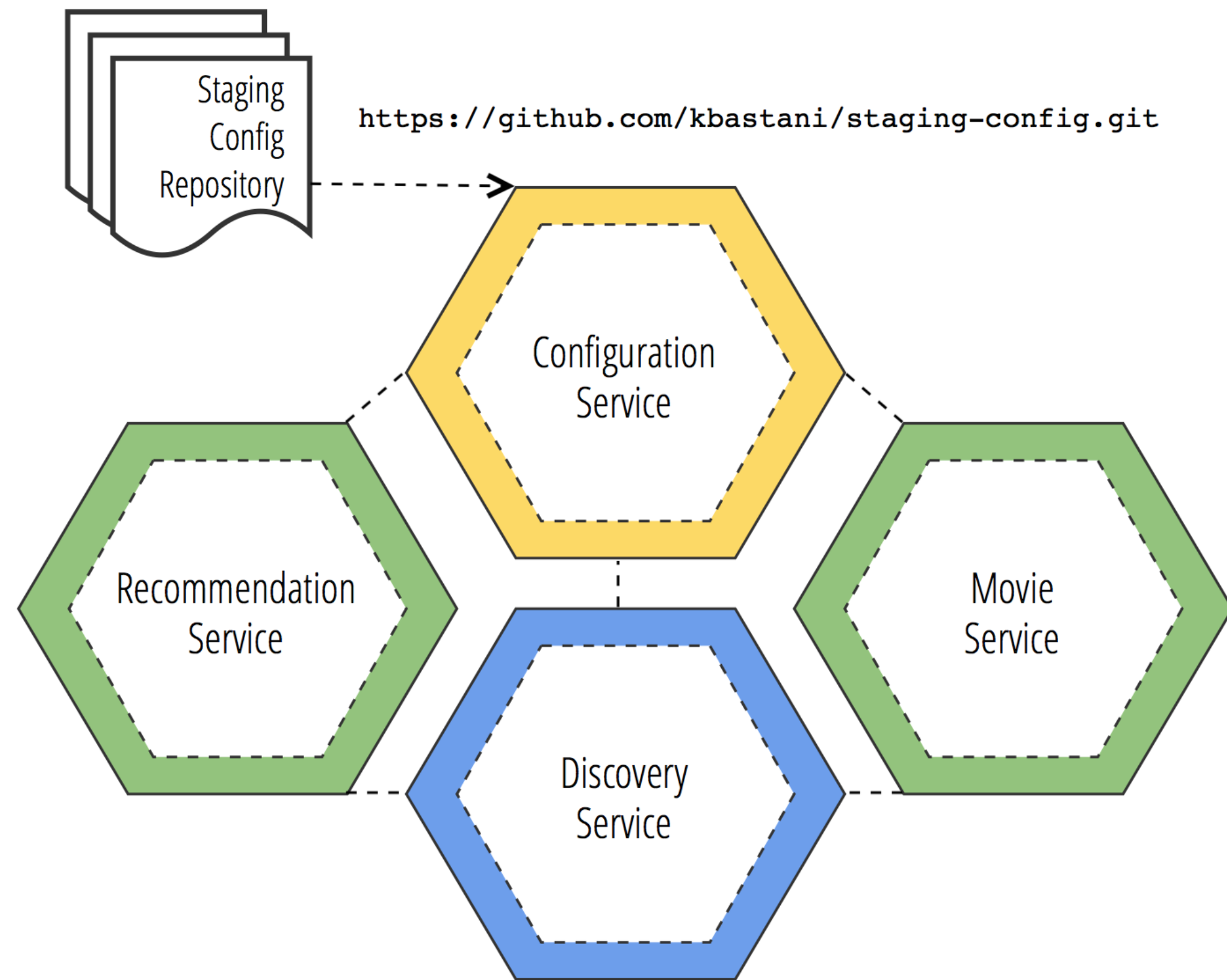


大型微服务系统带来的挑战

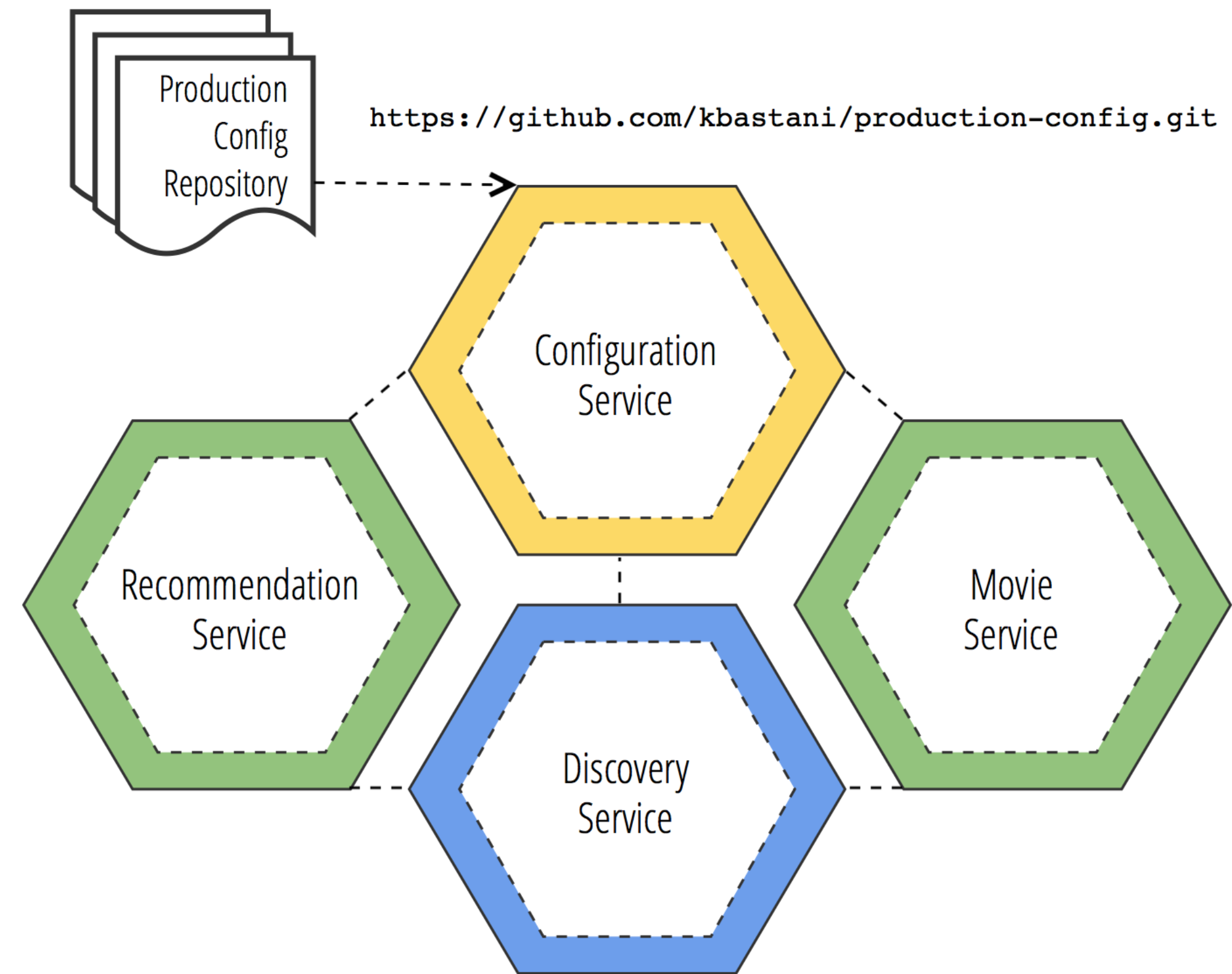
- 分布式
- 登上20000台机器改配置文件？
- 配置文件在哪里？
- 配置值生效了么？
- 当前应用到底有哪些配置？
- 如何同时控制多个子系统的一致性的行为调整
- 配置如何容灾
- ...



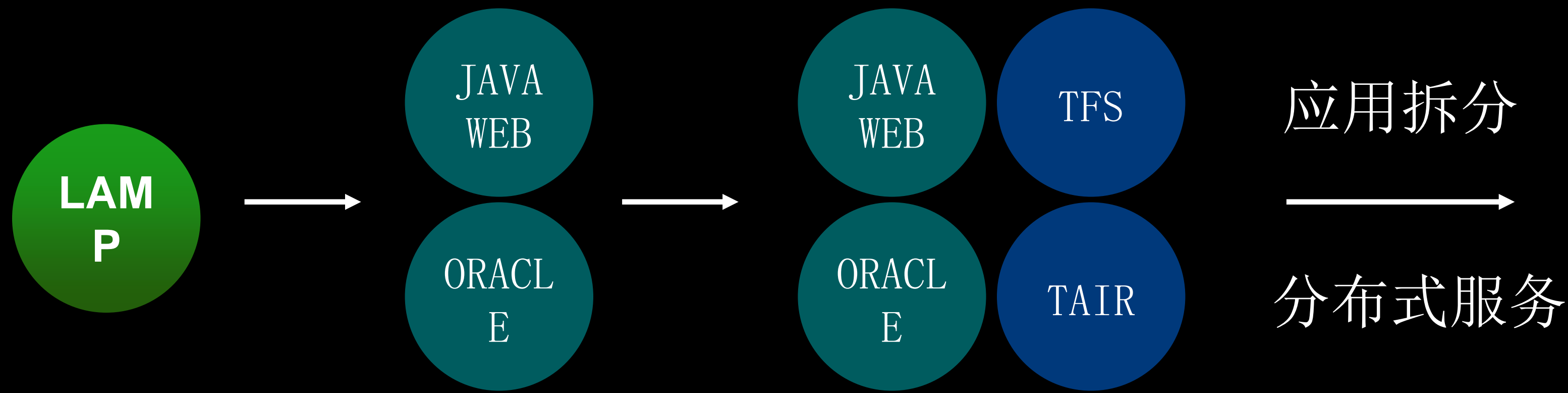
Staging Environment



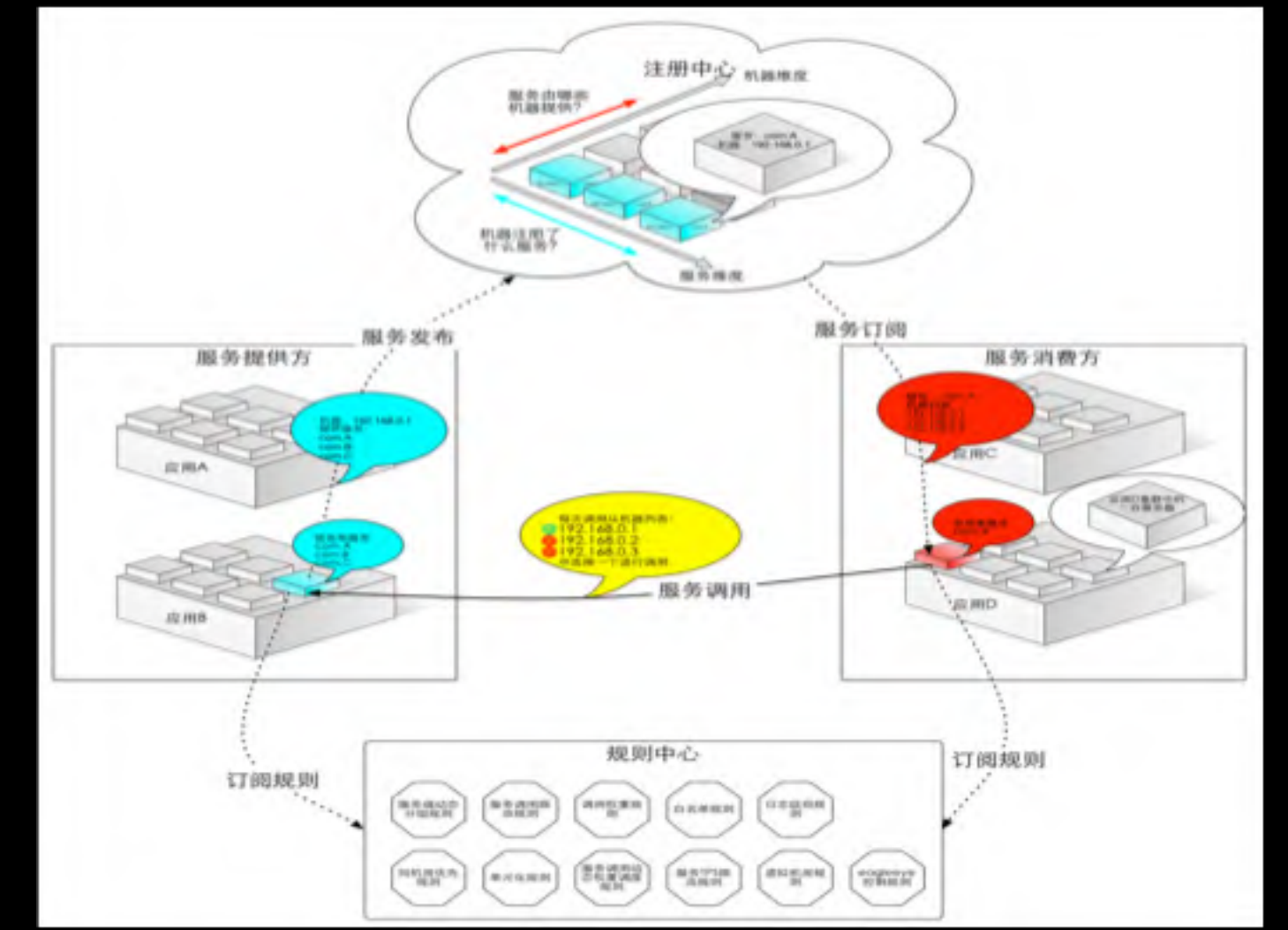
Production Environment



我们的故事



- 上百人维护一个核心工程
 - 源代码冲突问题严重
 - 项目团队协同代价高
- 人员更新速度快
 - 人员学习老代码难度大
 - 源代码膨胀



“Monolith” First

莫道君行早，更有早行人



Jeff Kramer received the B.Sc. (Eng.) degree in electrical engineering from the University of Natal, South Africa, in 1970. In 1972 he received the M.Sc. degree in computing, and in 1979 he received the Ph.D. degree for an approach to the design and verification of distributed systems, both from Imperial College of Science and Technology, London, England.

He is currently a Lecturer in the Department of Computing at Imperial College, teaching courses in program design, software engineering, and distributed systems. His current research interests include the specification and design of distributed systems, and tools for the production of verified software. A special interest of his is in the production of large systems which are expected to evolve as requirements change.

Dr. Kramer is a member of the Association for Computing Machinery, and he is a founder member of the EWICS (European Workshop

on Industrial Computer Systems) TC11 on Application Oriented Specifications.



Jeff Magee received the B.Sc. degree in electrical engineering from Queens University, Belfast, Ireland in 1973. In 1978 he received the M.Sc. degree in computing, and in 1984 he received the Ph.D. degree for work aimed at providing flexibility in distributed systems, both from Imperial College of Science and Technology, London, England.

He is currently a Lecturer at Imperial College, teaching courses on operating systems and the programming and design of embedded systems.

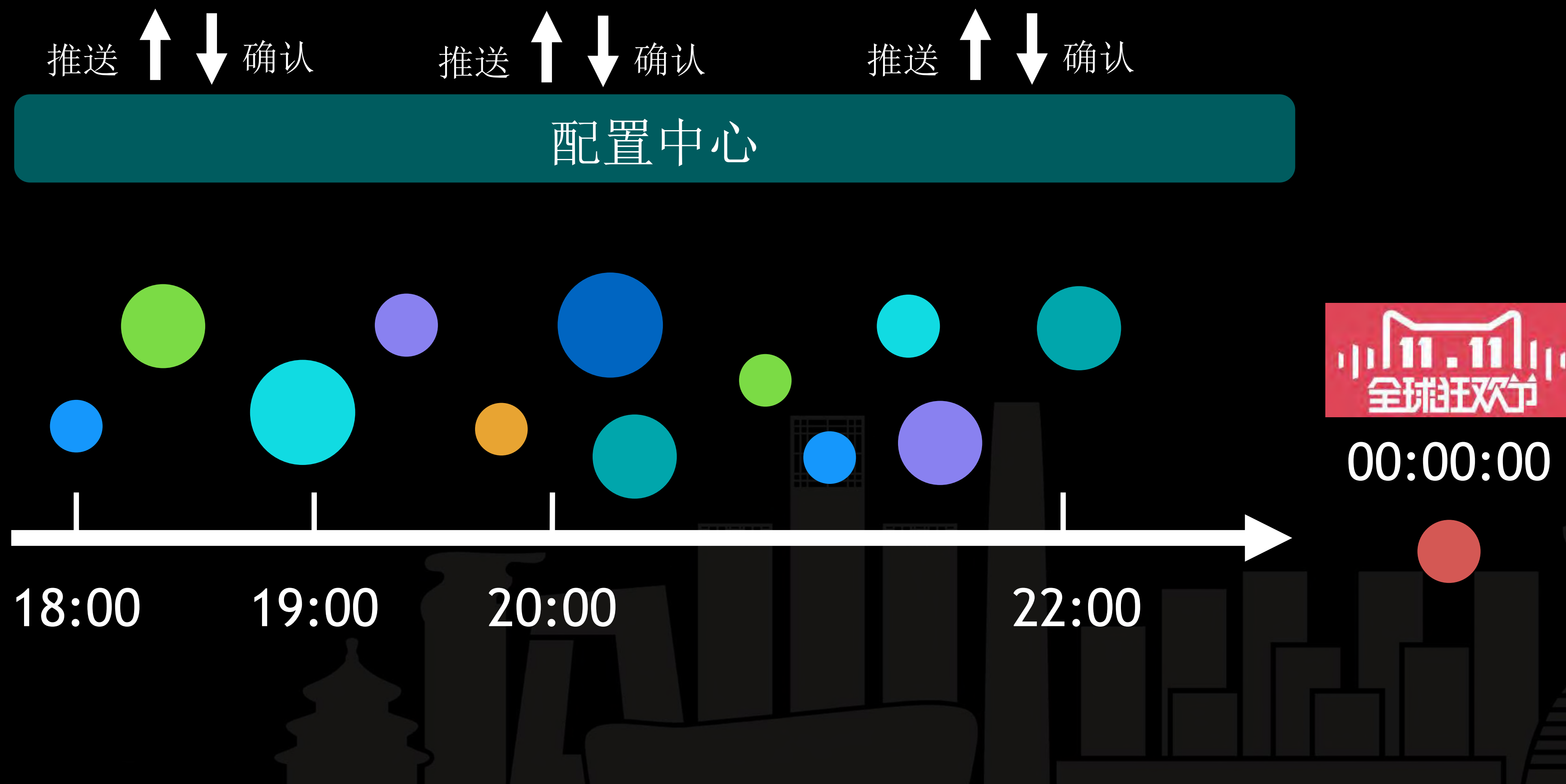
His current research interests include distributed operating systems and development of support environments for large distributed systems.

Dr. Magee is a member of the Institution of Electrical Engineers.

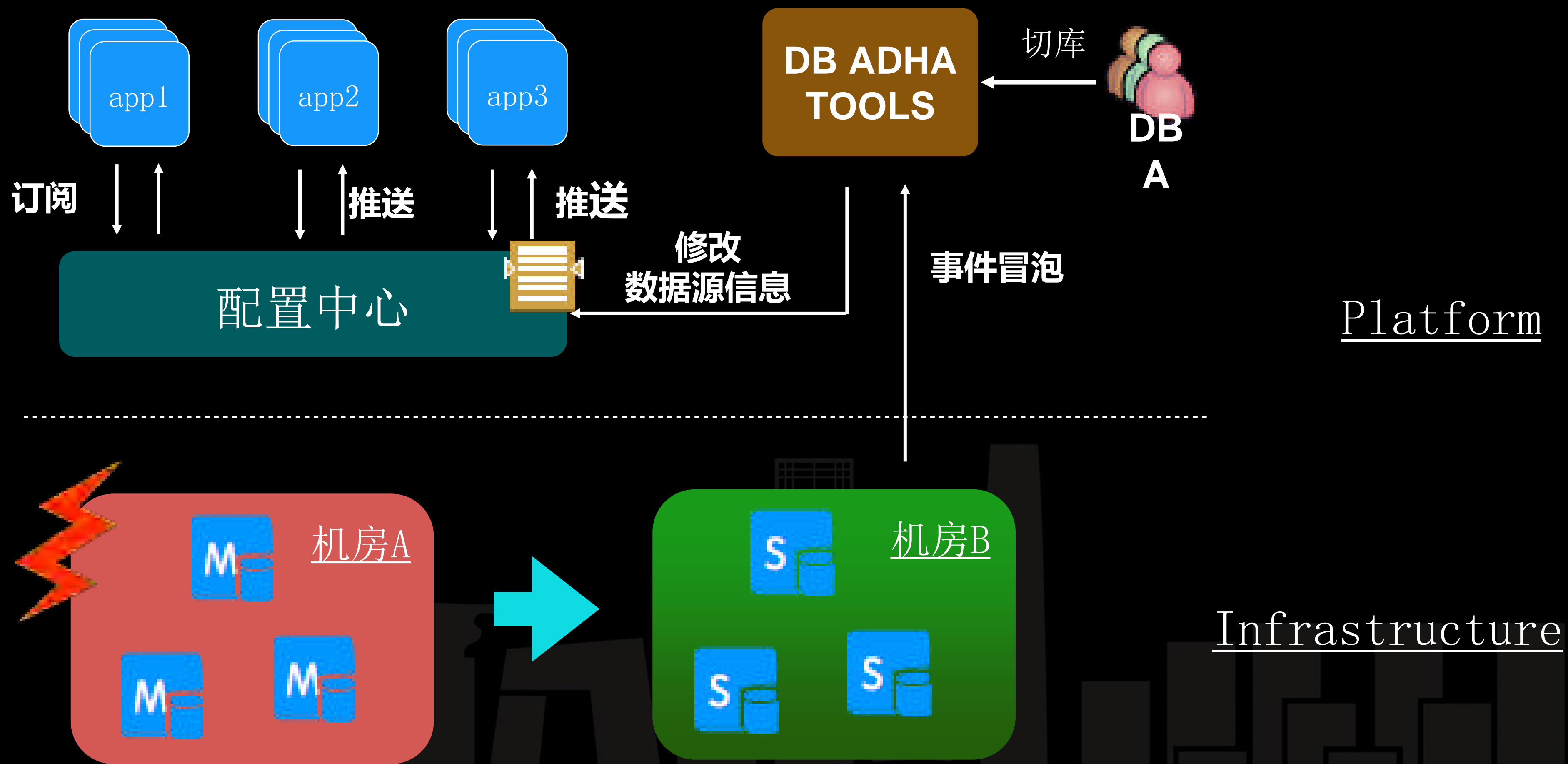
Dynamic Configuration for Distributed Systems

"....Dynamic system configuration is the ability to modify and extend a system while it is running. The facility is a requirement in large distributed systems where it may not be possible or economic to stop the entire system to allow modification to part of its hardware or software. It is also useful during production of the system to aid incremental integration of component parts, and during operation to aid system evolution. The paper introduces a model of the configuration process which permits dynamic incremental modification and extension. Using this model we determine the properties required by languages and their execution environments to support dynamic configuration..."

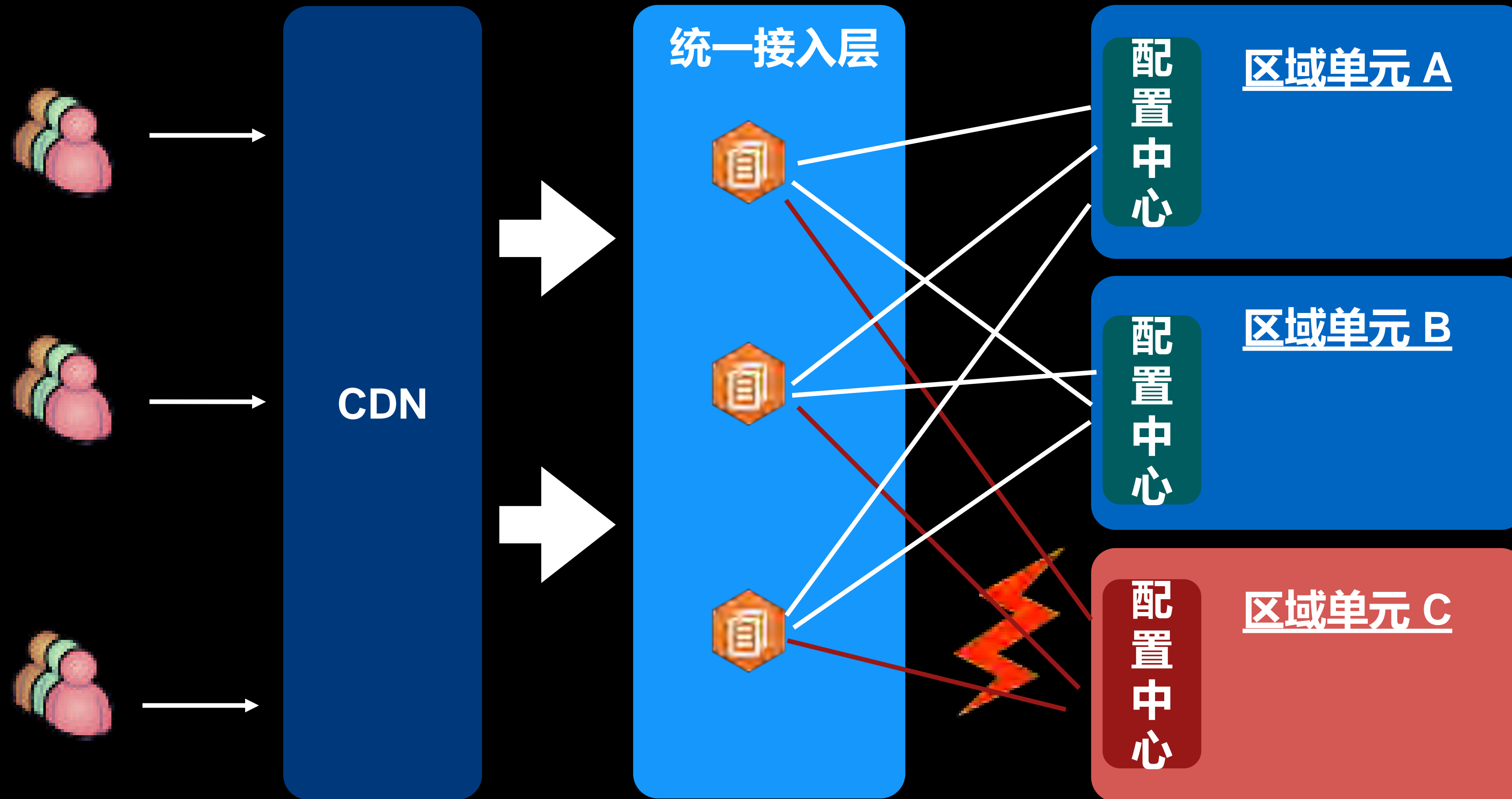
案例I - 大促预案



案例II - 大规模数据容灾



案例II - 异地多活



通过配置中心的服务，对流量路由规则达成分布式共识

- 弱依赖
- 客户端缓存
- 配置存储容灾



- 推送时延 / 推送成功率
- < 500ms 99.9 (Preferred)
- < 3s 99.9 (Okay)

99.9%

SLA

Guarantee

灰度



- 日志级别



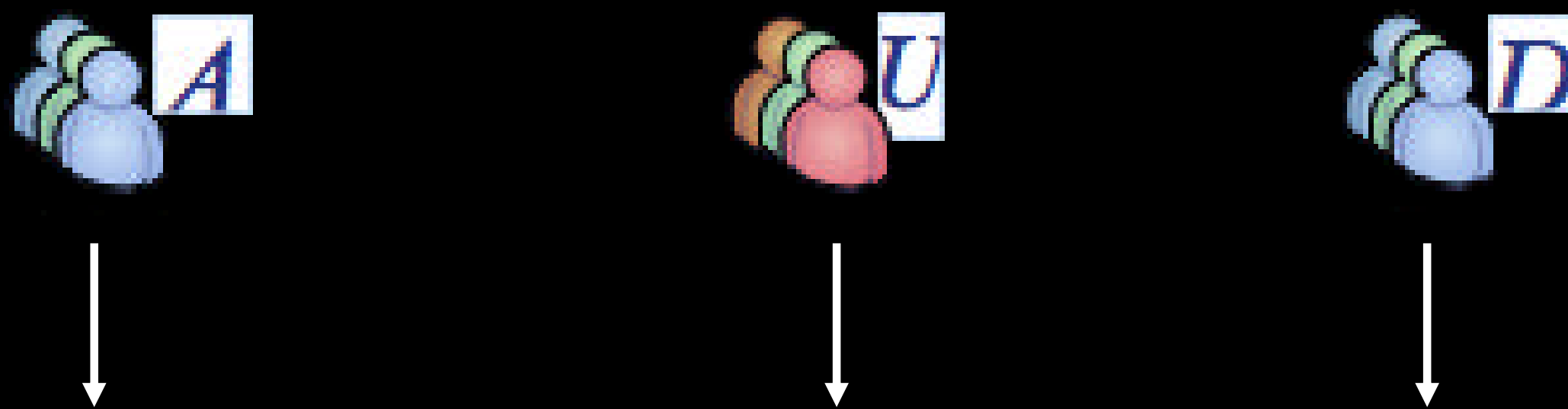
- 线程池大小
- 主备切换



- 全局路由规则
- 全局限流规则

• DevOps

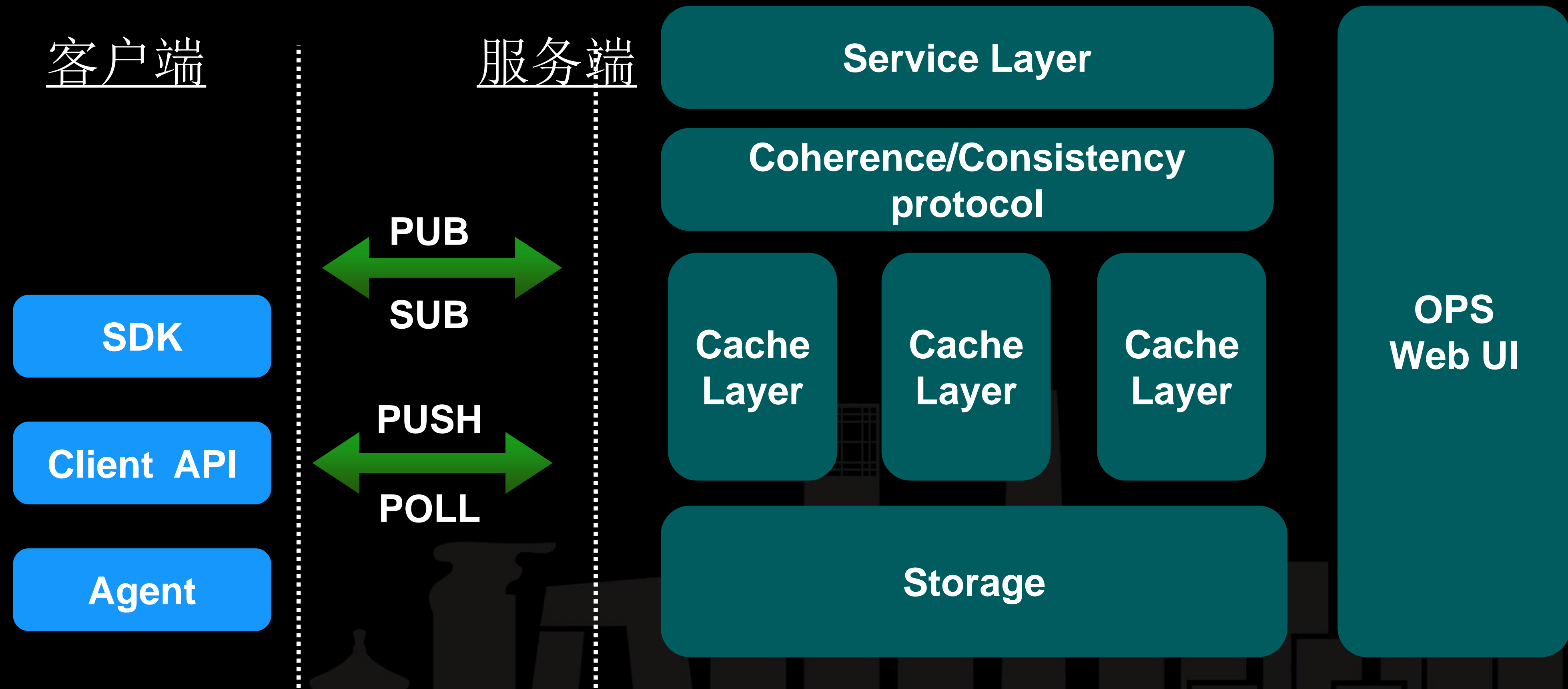
变更审计



配置中心管理平台



配置中心的架构和技术



业界现状介绍

OWNER

Java™ properties reinvented.



NETFLIX

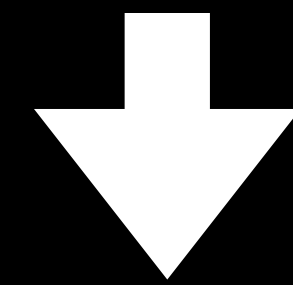
archaius

confd

Spring Cloud Config

Spring Cloud Config provides server and client-side support for externalized configuration in a distributed system. With the Config Server you have a central place to manage external properties for applications across all environments. The concepts on both client and server map identically to the Spring `Environment` and `PropertySource` abstractions, so they fit very well with Spring applications, but can be used with any application running in any language. As an application moves through the deployment pipeline from dev to test and into production you can manage the configuration between those environments and be certain that applications have everything they need to run when they migrate. The default implementation of the server storage backend uses git so it easily supports labelled versions of configuration environments, as well as being accessible to a wide range of tooling for managing the content. It is easy to add alternative implementations and plug them in with Spring configuration.

- Local Config File



- Externalized
- Centralized
- Not just a “file”

etcd

s3

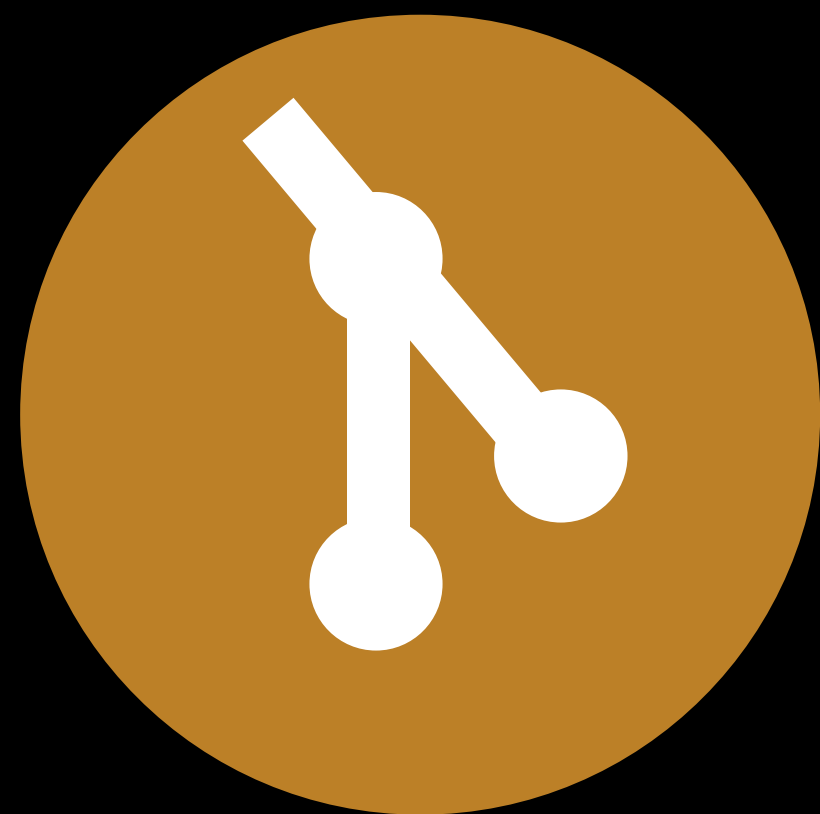
zookeeper

git

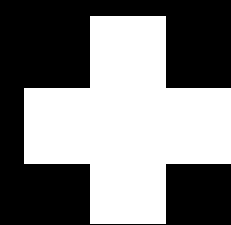
redis

consul

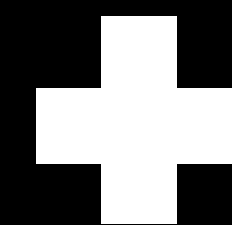
New Tech, New Future.



git hub




docker hub



cfg hub

Config Driven Anything




AWS re:Invent
DEV305

Configuration Management in the Cloud

Amir Golan
Mark Rambow
December 1, 2016

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Compute Resources	Operating System and Host Configuration	Application Configuration
<ul style="list-style-type: none">Amazon Elastic Compute Cloud (EC2)On-premises compute resources (Servers)...	<ul style="list-style-type: none">FilesDirectoriesNetworkingSymlinksMountsRegistry KeyUsersGroupsPackagesFilesystems...	<ul style="list-style-type: none">Application dependenciesApplication configurationService registrationCredentials...

小结

- 大型分布式微服务系统给配置管理带来的挑战
- 淘宝配置中心应用场景示例
- 配置中心的关键特性 (Key Features)
- 配置管理的未来 (Configuration Drive Everything)

Our Point

每一个大型分布式微服务系统都应该有一个配置中心

Do One Thing , Do It Well!





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Thanks!



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