

# 跟我做一个Java微服务项目

Week #8 微服务的生产环境实践 / 刘俊强





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# 大纲

- 微服务配置管理
- 弹性容错的微服务



# 微服务配置管理



# 常见配置方式

- 环境变量
- 配置文件
- 配置系统



#### 环境变量

## 启动脚本 <u>sample-start.sh</u>:

```
#!/bin/sh
export SAMPLE_VARIABLE1="value 1"
export SAMPLE_VARIABLE2="value 2"

# 选项1 可执行jar
java -jar sample-service.jar

# 选项2 Servlet容器—Tomcat服务器
sh ${CATALINA_HOME}/bin/startup.sh
```



#### 环境变量

#### Java读取环境变量:

#### 强烈不建议使用!!!



#### 配置文件-Spring Boot应用配置

- bootstrap.(yml|properties)
  - 在application.yml之前加载
  - 可理解为系统级配置,不变配置放置在此,如 spring.application.name
  - 使用Spring Cloud Config时,
     spring.application.name 和
     spring.cloud.config.server.git.uri 在此配置
- application.(yml|properties)
  - 可理解为应用级别、可动态替换
  - 发行包内、外部文件、Spring Cloud Config均可



#### 配置文件-Spring Boot: bootstrap.yml

```
spring:
  application:
    name: cart-service
management:
  port: 9904
  context-path: /manage
  security:
    enabled: false
server:
  port: 9905
logging:
 level:
    root: INFO
    io.junq: DEBUG
```

#### 配置文件-Spring Boot: application.yml

```
spring:
  application:
    instance_id: 001
  datasource:
    url: jdbc:mysql://cart-db/emall?autoReconnect=true&use
   username: emall
    password: emallPwd
    driver-class-name: com.mysql.jdbc.Driver
    schema: file:/emall/data/schema-mysql.sql
    initialize: true
    continue-on-error: false
```



#### 配置文件-Spring Boot应用小技巧

#### 命令行指定配置属性:

```
java -jar sample-service.jar \
--spring.application.name=sample-service
```

#### 命令行指定配置文件:

```
java -jar sample-service.jar \
--spring.config.location=classpath:/override.properties
```



# 配置系统

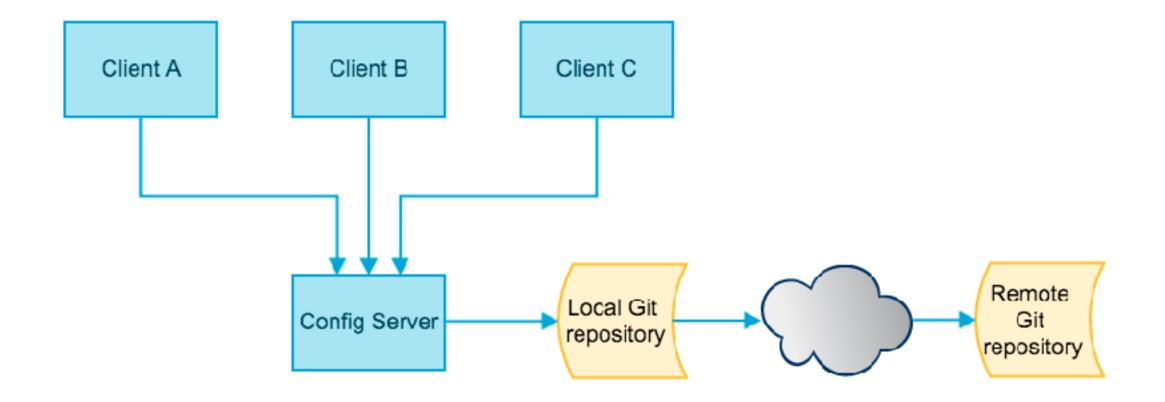


#### 常用配置系统

- Zookeeper
- etcd
- Consul
- Netflix archaius
- Spring Cloud Config



## **Spring Cloud Config**





#### **Config Server**

#### 资源访问格式:

- /{application}/{profile}[/{label}]
- /{application}-{profile}.yml
- /{label}/{application}-{profile}.yml
- /{application}-{profile}.properties
- /{label}/{application}-{profile}.properties



#### Config Server

#### 资源访问参数:

- application: 应用名称,一般对应应用的 spring.application.name属性,如order-service
- profile: 环境,一般对应应用的
   spring.profiles.active,如sandboxing
- label: 版本或标签,一般对应git仓库的commit id、 分支名称或tag,如默认为master



**Demo: Spring Cloud Config Server** 



#### Config Server Security: HTTP Basic Auth

#### pom.xml:

```
<dependency>
    <groupId>org.springframework.boot</groupId>
    <artifactId>spring-boot-starter-security</artifactId>
</dependency>
```

#### application.yml

```
security:
user:
name: root
password: c0nfIgS3cr3t
```

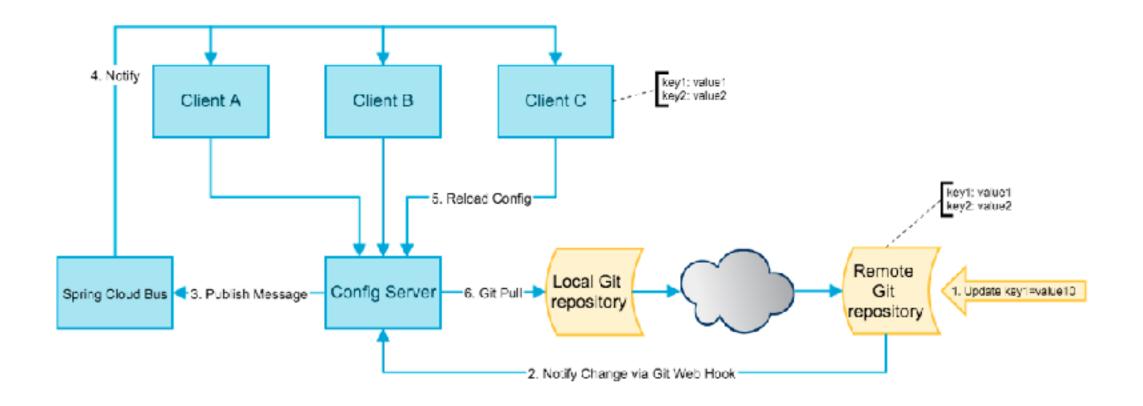


## Config Server 加密

- 对称加密
- 非对称加密



## **Spring Cloud Config with Change Notification**





# 弹性容错的微服务



## 如何保证系统具备弹性?

- 快速超时
- 可降级
- 熔断器、断路器
- 壁仓
- 故障隔离



#### 断路器模式

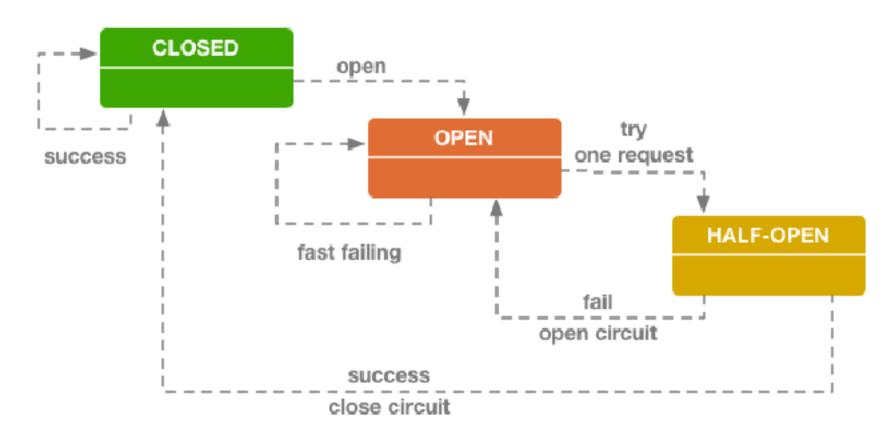
• 闭路/关闭状态: 服务运行正常

• 开路/开启状态: 服务运行故障

• 半开路/半开状态: 检测服务状态



# 断路器模式示意图



Circuit Breaker State Diagram

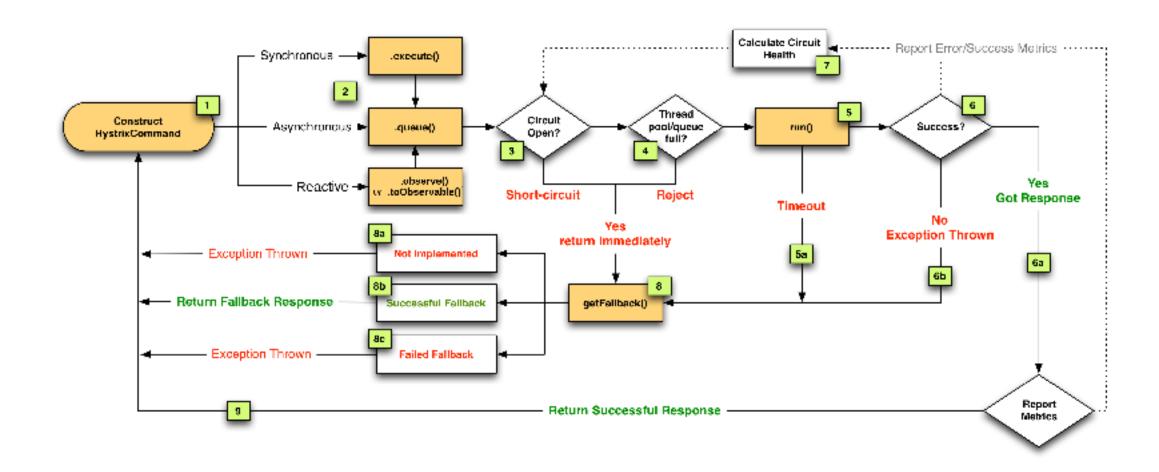


#### Hystrix

- 基于Java实现, Netflix贡献的开源项目
- 控制被依赖服务的延时和失败
- 防止在复杂系统中的级联失败
- 快速失败且快速恢复
- 可实现优雅降级
- 具有仪表盘,监控友好



# Hystrix工作流程图





#### Hystrix Dashboard

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Hystrix Stream: Octoparts

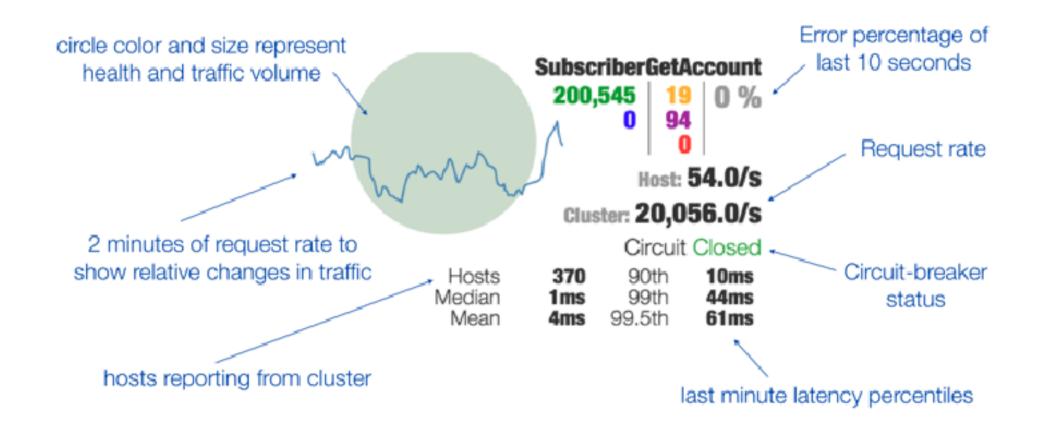
DEFEND YOUR APP Circuit Sort: Broot then Volume | Alphabetical | Volume | Broot | Median | 90 | 99 | 99.3 Success | Short-Circuited | Timeout | Rejected | Failure | Error % getClinicBbsPart getChikenAlert getMrKunTopBanner getChikenHeadlines. petM3comUserInformation 19 | 0.0 % 8 | 0 | 0.0 % 8 | 0.0 % 0.0 % 0.0 % 0 0 0 0 0 0 0 0 0 0 0 0 Hast: 0.2/8 Host: 1.0/a Host 0.4/a Host: **0.4/8** Host: 0.4/8 Cluster: 0.8/8 Cluster 0.8/8 Cluster: 0.3/8 Cluster: 1.9/8 Cluster 0.7/8 Circuit Closed Circuit Closed Circuit Closed Circuit Closed Circui, Closec Hoara 97maHesta. 148ma House. 90th **В**то Hoars. 90 h Vedan 201ms 99th 1097ms Median. 51ms 149ms Median 99th 238ms Median 93th 21ms Median Mean 98.5th 1087ma Mean 59me 88.511 149me Mean 43ms W4.5 h 233 ms Mean 98,510 21 ms 40ms 84.51 getAgentCareerTopics getCareerTopics fastSurvey getPCareerTopics show...alPageHighlightPanel 3 0.0 % 4 0.0 % 0.0 % 0 0 0.0 % 0.0 % 0 0 0 Host: 0.2/s Host 0.2/s Host: **0.0/s** Host: 0.0/s Host: 0.0/6 Cluster: 0.0/a Cluster: 0.3/a Cluster: 0.4/a Cluster: 0.0/a Cluster: 0.0/8 Circuit Closed Circuit Glosed Circuit Closed Circuit Closed Circuit Closed 132ms 22ma 30th 35ms 90th 90th 90th 117ms 90h9ms Hosts Heata Hosto Hosto Horita 117ms 112ms Vedian Mesn 17me 19ma 985th 985th 52ms 52ms Median Meen Median Mesin Median Mean 99th 117ma 99.5th 117ma Median Mean showMedgaM3ComTabPanel showPcommunityTab getMrKunCustomPagePart enquete 01 0 0 0.0 % 0 | % 0.0 0 0.0 % 0.0 % D. а 0 0 а D Host: 0.0/s Host: 0.0/s Host 0.0/\$ Host: 0.0/s Oluster: 0.0/s Cluster: 0.0/s Oluster: 0.0/s Oluster: 0.0/s Circuit Closed Cloud Glosed Circuit Closed Circuit Obsert 17ms 90th 99th 90th 840 0ms Hosts 0ms Hosts 0ms Hosto Hosts Vedlan Ome Median Median **Ome** 17 ma Mac an Mean Oms 89.91 Moan Mean 98.0th Thread Pools Sort: Alphabetical Volume mrkun-rha chiken mrkun clinic agent Host: 0.6/\$ Host: 0.4/s Host: 0.2/\$ 0 Host: 1.1/s . 0 Host: 0.4/s 0 Oluster: 2.2/5 Cluster, 1.1/\$ Queter: 0.7/s Oluster: 0.8/s Cluster, 0.3/s Adiva Max Artise. Activa Max Aplies Active Max Active Max Active Active Max Aprile 0 At Lya 2 Queuce Poci Size Quoued Ped Sire Executions Calcus Size Cubupd Pool Size 10 Executions Queue Size Queued Ped 52s Qubuod Pool Size 10 Deputions Culture Size Qualie 328 10 Executions Quality 8 kg career medga pcareer fastsurvey enquete Host: 0.2/8 Host: 0.0/9 Host: 0.0/8 Host: 0.0/8 Host: 0.0/8 0 0 0 Cluster: 0.0/s Cluster: 0.0/s Cluster: 0.0/s Cluster: 0.0/s Cluster: 0.4/s Activo Max Active Active Max Artive Addiso Mick Active Active Max Active Activo Max Active Cueued Port Size Executions Coase Size Discutors Output Size ŝ Queuec Recutions Executions 10 Bool Size

Cuerca Size



HYSTRIX

#### Hystrix Dashboard Detail



Rolling 10 second counters with 1 second granularity

Successes 200,545
Short-circuited (rejected)

19 Thread timeouts
94 Thread-pool Rejections
Failures/Exceptions



Demo: Hystrix





# THANKS!



— 扫码了解更多 —

