Spring Cloud/Netflix OSS

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January, 2016

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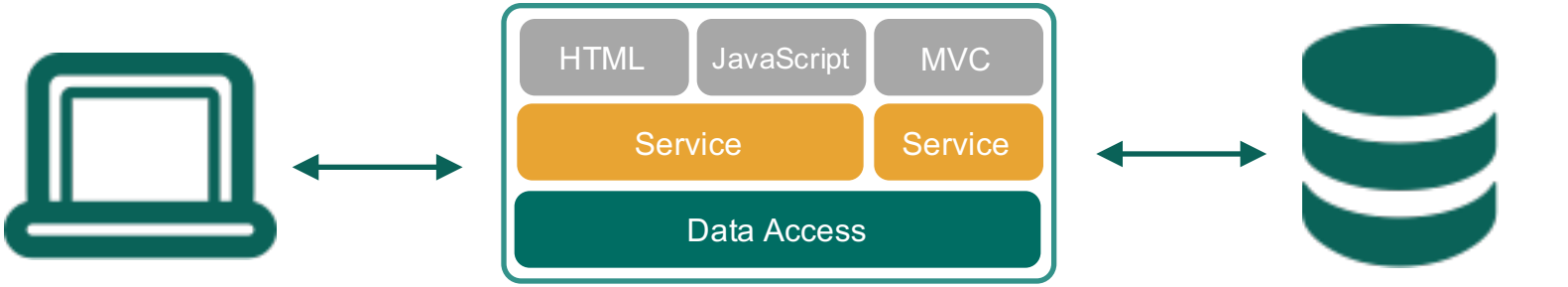
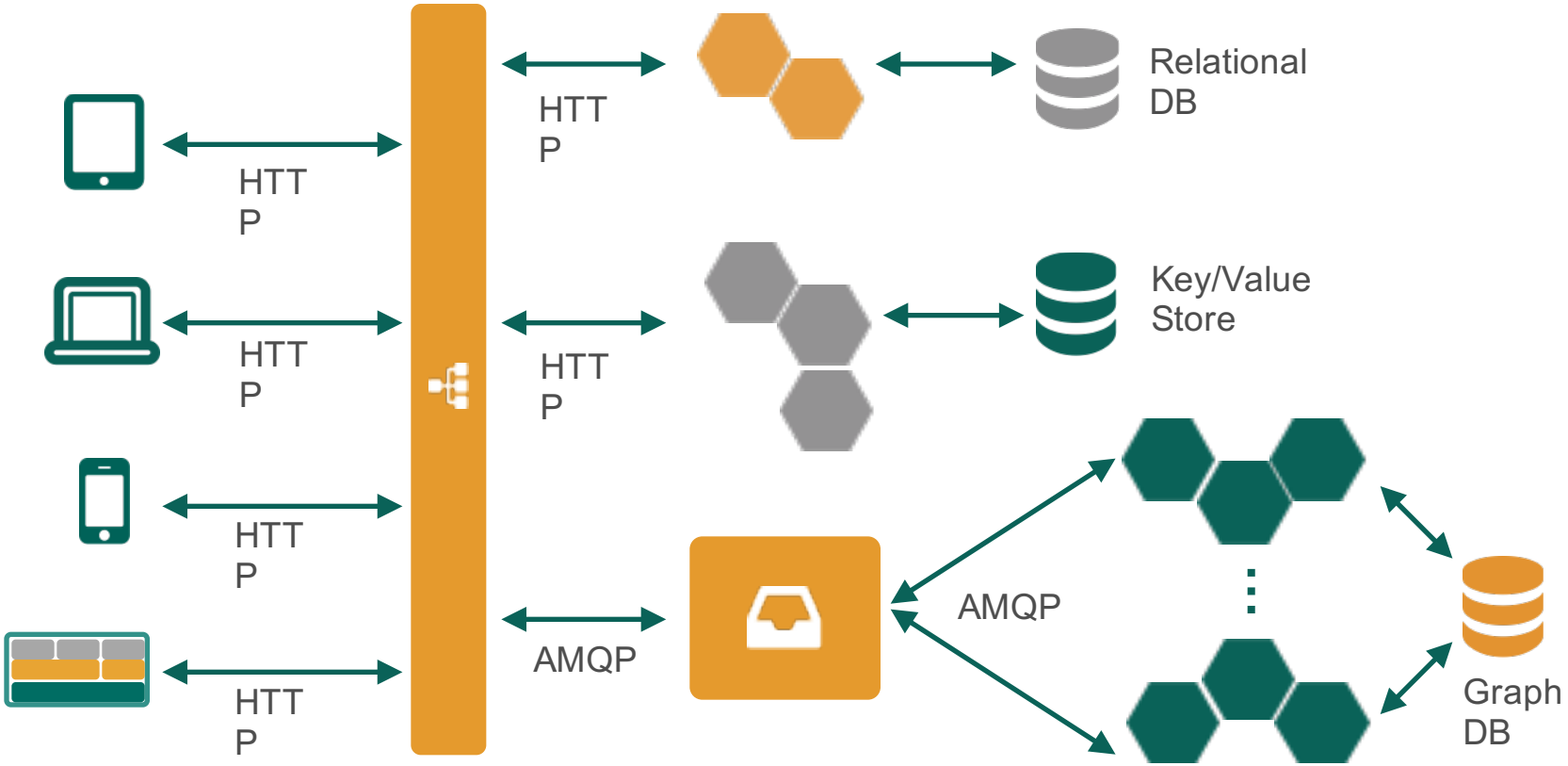
Monolithic Architecture



Microservice Architecture



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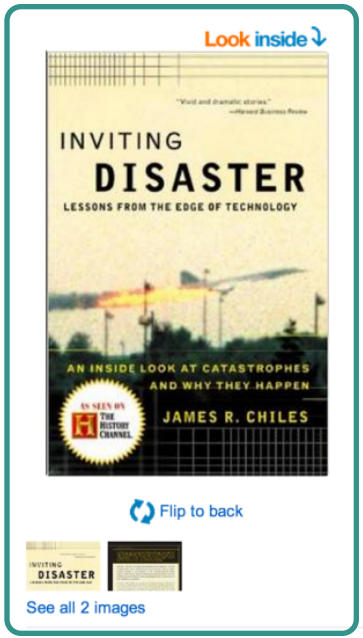

Inviting Disaster: Lessons From the Edge of Technology Paperback

by James R. Chiles (Author)

★★★★½ 58 customer reviews

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Combining captivating storytelling with eye-opening findings, *Inviting Disaster* delves inside some of history's worst catastrophes in order to show how increasingly "smart" systems leave us wide open to human tragedy.

Weaving a dramatic narrative that explains how breakdowns in these systems result in such disasters as the chain reaction crash of the Air France Concorde to the meltdown at the Chernobyl Nuclear Power Station, Chiles vividly demonstrates how the battle between man and machine may be escalating beyond manageable limits -- and why we all have a stake in its outcome.

Included in this edition is a special introduction providing a behind-the-scenes look at the World Trade Center catastrophe. Combining firsthand accounts of employees' escapes with an in-depth look at the

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How many microservices?

ELEVE
N

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Rise of Netflix Platform

http://techblog.netflix.com/2013/01/announcing-ribbon-tying-netflix-mid.html

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Spring Cloud Services

Spring Cloud Services

Config Server

Service Registry

Circuit Breaker Dashboard

Spring Cloud

- Distributed/versioned configuration
- Service registration and discovery
- Routing
- Service-to-service calls
- Load balancing
- Circuit Breakers
- Global locks
- Service Discovery
- Leadership election and cluster state
- Distributed messaging

http://cloud.spring.io/spring-cloud-netflix/spring-cloud-netflix.html

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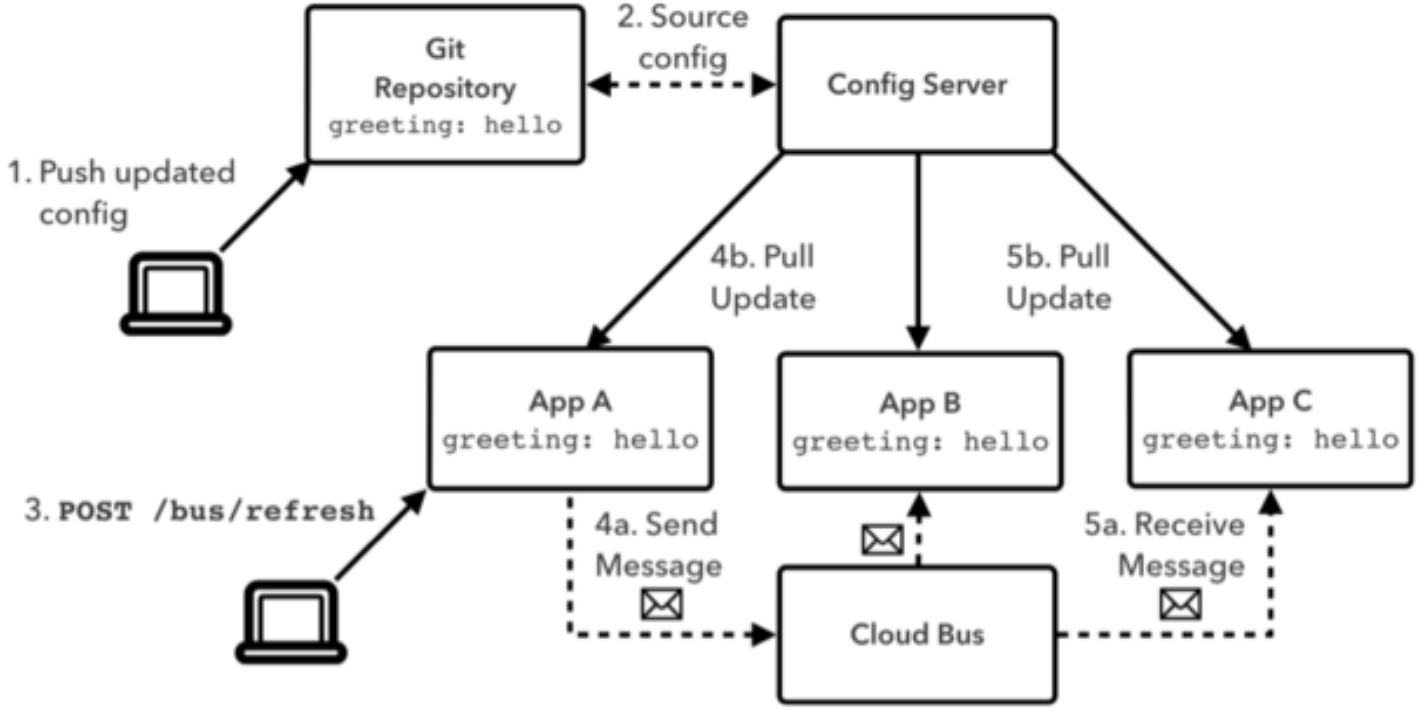
Config Server



http://www.infoworld.com/article/2925047/application-development/build-self-healing-distributed-systems-with-spring-cloud.html

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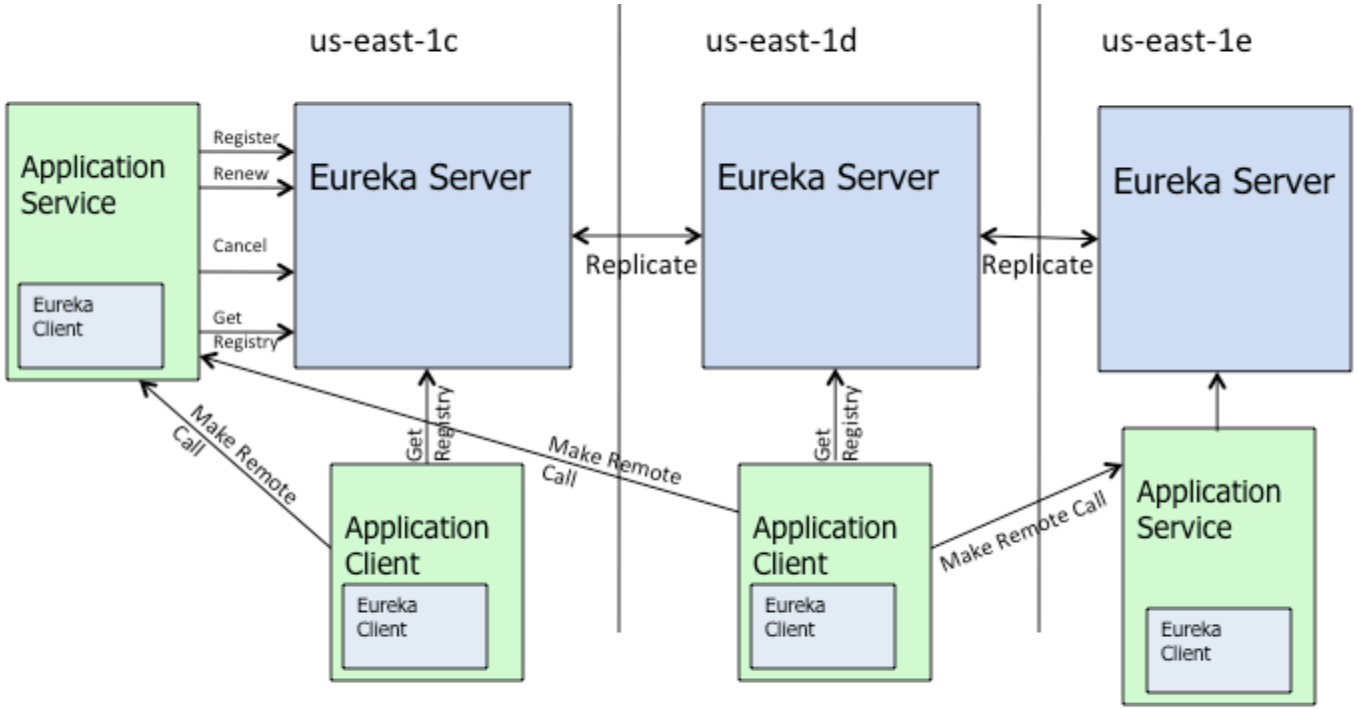
Netflix OSS – Eureka



Cloud Load Balancing And Failover Tool: Eureka!
Service Discovery

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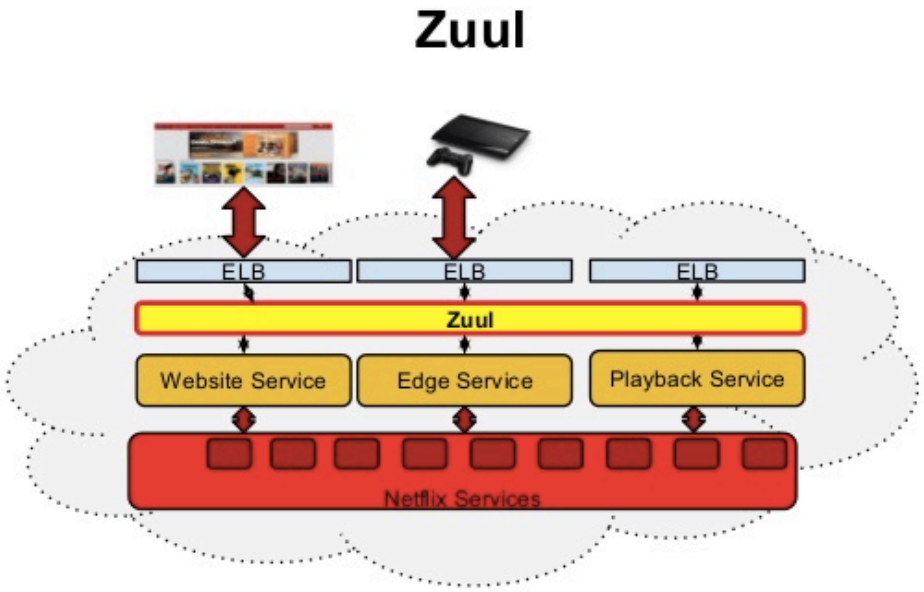
Netflix OSS – Zuul (API Gateway)



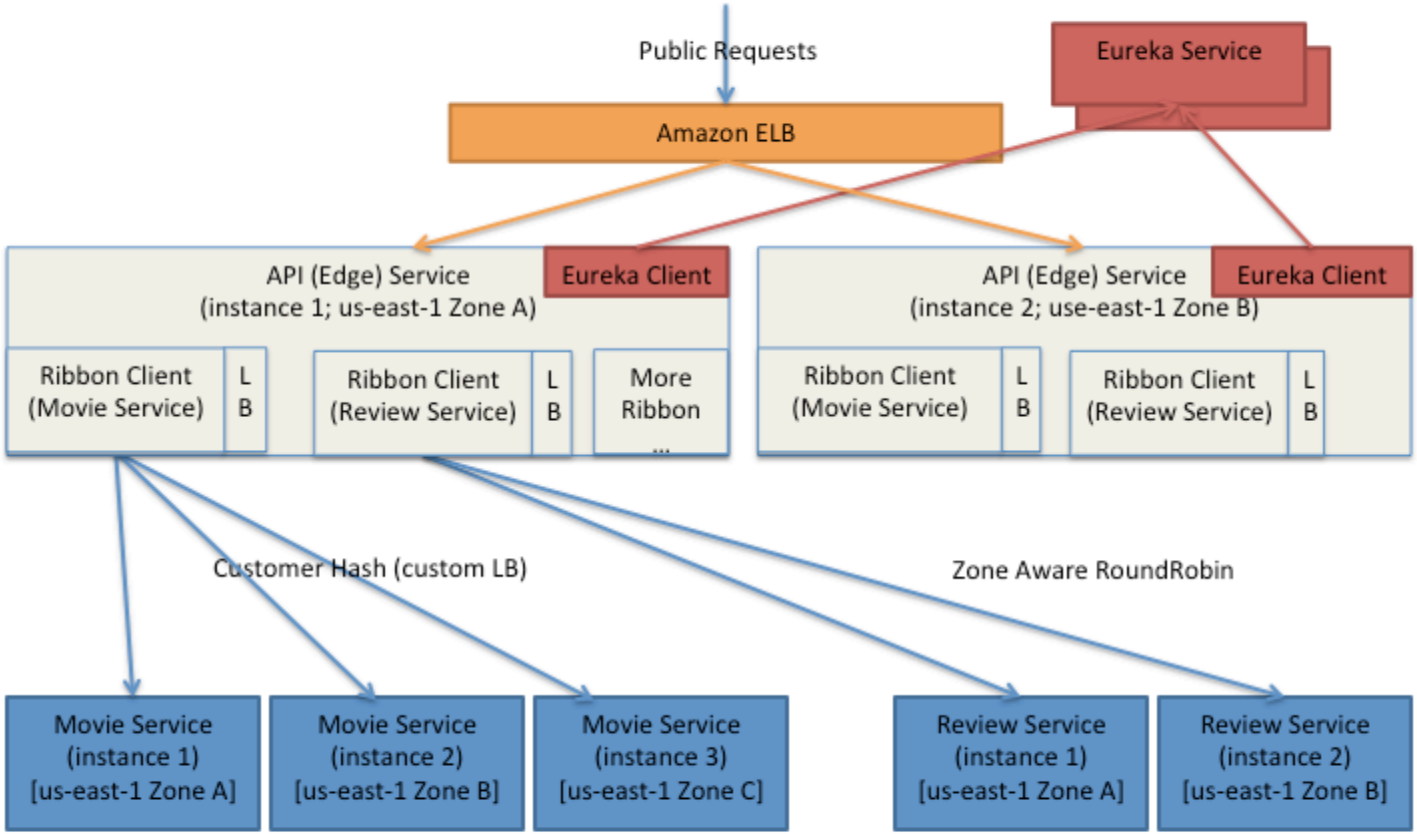
- Open source framework for dynamically reading, writing, and executing filters that act on incoming HTTP requests
- Dynamically compiled filters written in Groovy – Any JVM language supported
- Filters share state through a request scoped context

http://www.slideshare.net/MikeyCohen1/edge-architecture-ieee-international-conference-on-cloud-engineering-32240146

Netflix OSS – Ribbon

Ribbon is a **client side IPC library** that is battle-tested in cloud. It provides the following features

- Load balancing
- Fault tolerance
- Multiple protocol (HTTP, TCP, UDP) support in an asynchronous and reactive model
- Caching and batching


Public Requests
Eureka Service
Amazon ELB
API (Edge) Service
(instance 1; us-east-1 Zone A)
Eureka Client
Ribbon Client
(Movie Service)
L
B
Ribbon Client
(Review Service)
L
B
More
Ribbon
...
API (Edge) Service
(instance 2; use-east-1 Zone B)
Eureka Client
Ribbon Client
(Movie Service)
L
B
Ribbon Client
(Review Service)
L
B
Customer Hash (custom LB)
Zone Aware RoundRobin
Movie Service
(instance 1)
[us-east-1 Zone A]
Movie Service
(instance 2)
[us-east-1 Zone B]
Movie Service
(instance 3)
[us-east-1 Zone C]
Review Service
(instance 1)
[us-east-1 Zone A]
Review Service
(instance 2)
[us-east-1 Zone B]

Netflix OSS - Hystrix

HYSTRIX

DEFEND YOUR APP

Hystrix: Latency and Fault Tolerance for Distributed Systems

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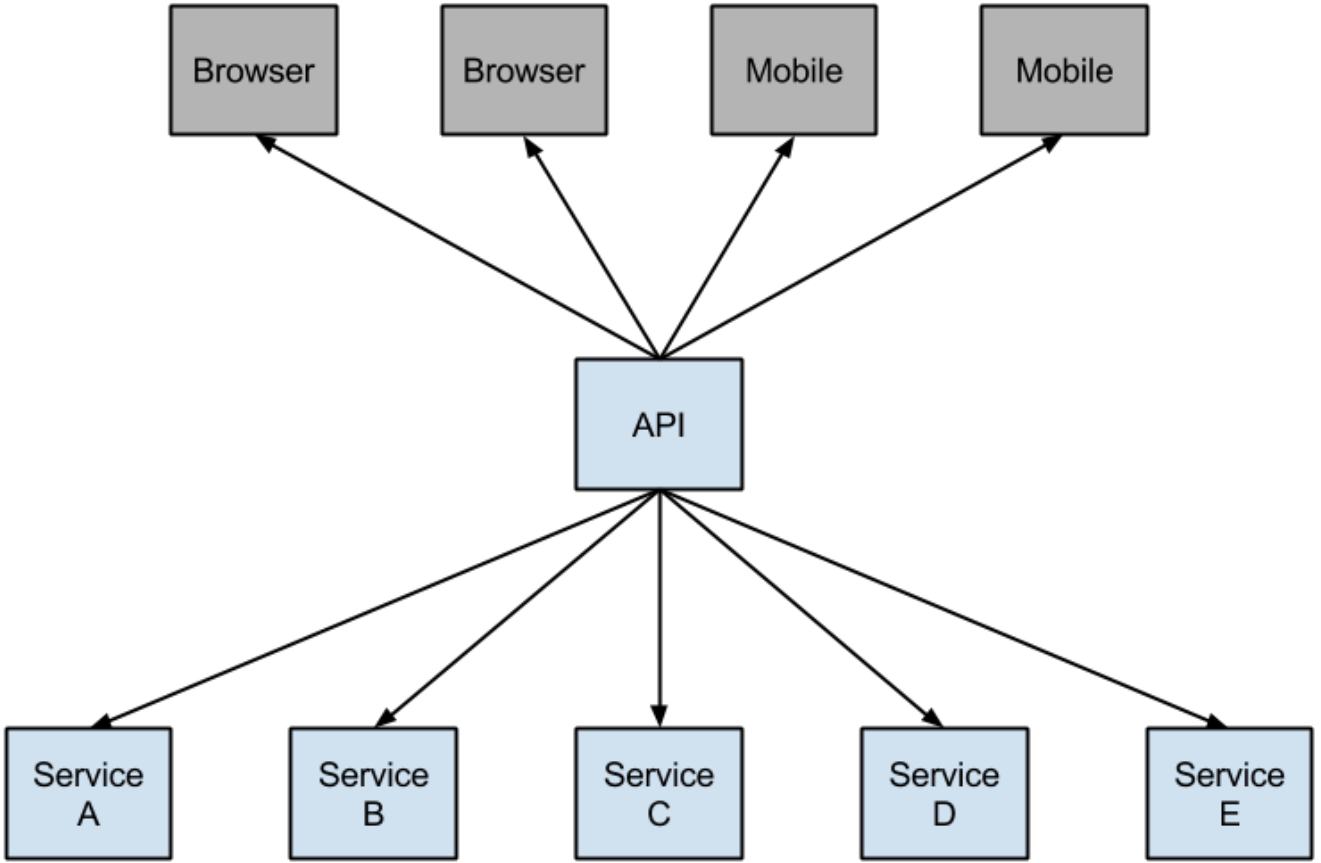

http://cloud.spring.io/spring-cloud-netflix/spring-cloud-netflix.html

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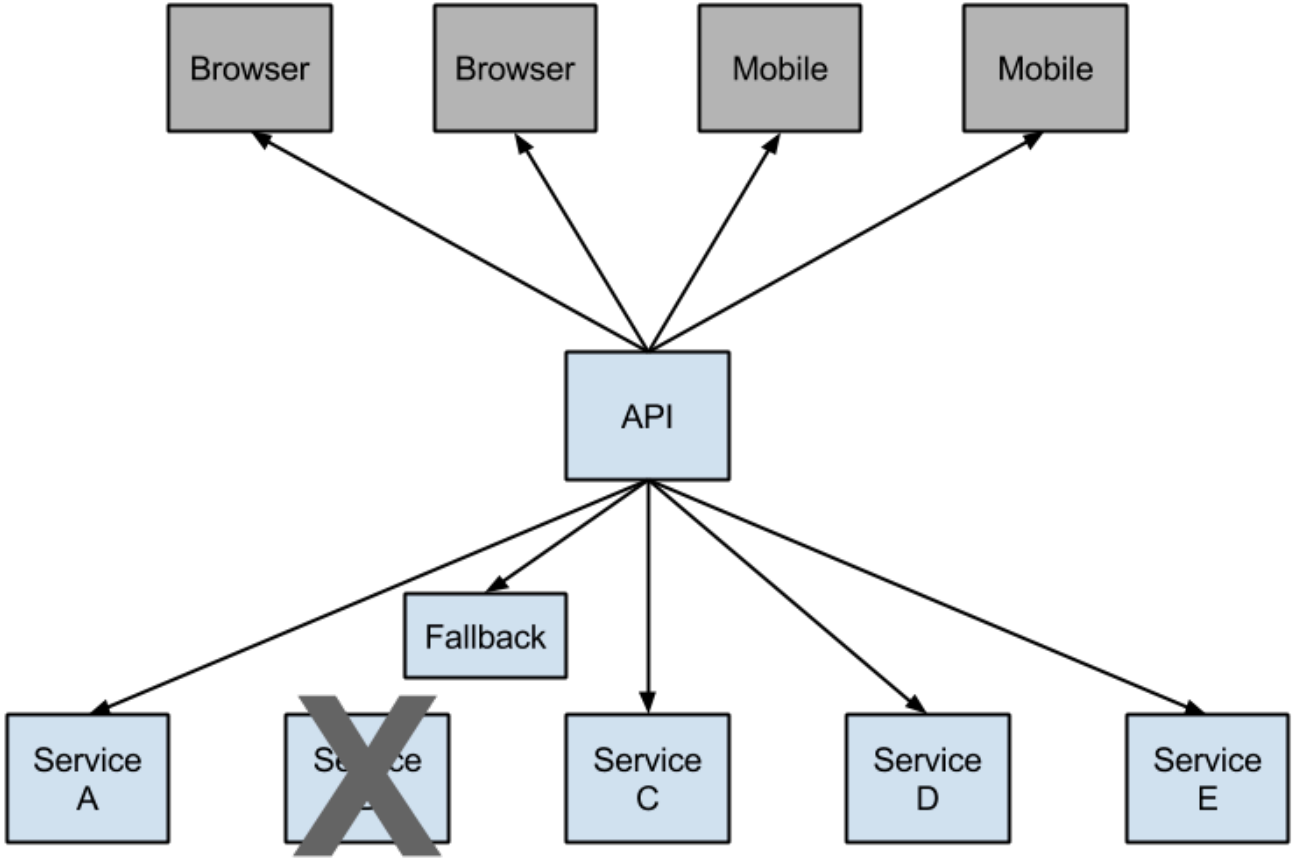

http://cloud.spring.io/spring-cloud-netflix/spring-cloud-netflix.html

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Hystrix Stream: http://localhost:8989/turbine.stream

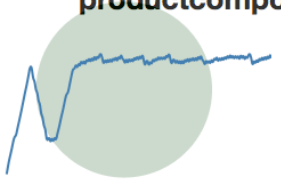
HYSTRIX
DEFEND YOUR APP

Circuit

Sort: Error then Volume | Alphabetical | Volume | Error | Mean | Median | 90 | 99 | 99.5

Success | Short-Circuited | Timeout | Rejected | Failure | Error %

productcomposite.getReviews



307 | 0 | 0.0 %
0 | 0 | 0

Host: 30.7/s
Cluster: 30.7/s

Circuit Closed

Hosts	1	90th	195ms
Median	155ms	99th	202ms
Mean	154ms	99.5th	204ms

prod...e.getRecommendations

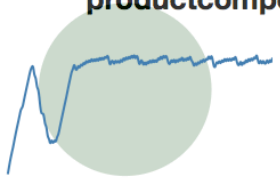
288 | 0 | 0.0 %
0 | 1 | 0

Host: 30.9/s
Cluster: 30.9/s

Circuit Closed

Hosts	1	90th	193ms
Median	155ms	99th	203ms
Mean	153ms	99.5th	204ms

productcomposite.getProduct



290 | 0 | 0.0 %
0 | 0 | 0

Host: 30.8/s
Cluster: 30.8/s

Circuit Closed

Hosts	1	90th	2ms
Median	1ms	99th	3ms
Mean	1ms	99.5th	4ms

Thread Pools

Sort: Alphabetical | Volume |

ProductCompositeIntegration

Host: 86.6/s
Cluster: 86.6/s

Active	10	Max Active	10
Queued	0	Executions	866
Pool Size	10	Queue Size	5

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Netflix OSS links

- Hystrix : https://github.com/Netflix/Hystrix
- Zuul : https://github.com/Netflix/zuul
- Ribbon : https://github.com/Netflix/ribbon
- Eureka : https://github.com/Netflix/eureka
- Netflix OSS : https://netflix.github.io/

Pivotal Cloud Foundry with Spring Services

- Config Server

  Demo : https://www.youtube.com/watch?v=bJvReWt2jLc

- Service Registry

  Demo : https://www.youtube.com/watch?v=Vd243GqrkMI

- Circuit Breaker Dashboard

  Demo : https://www.youtube.com/watch?v=tnVNiRn-TLw