MICROSERVICES

ARE THEY JUST REALLY SMALL SERVICES?

Bill Schwanitz
Technical Architect
Monolith vs. Microservices

What is a monolith?
Monolith vs. Microservices

What is a monolith?

A single-tiered application where interface, business logic and data access are combined in a single program
Monolith

Problems:
Monolith

Problems:
- Scaling
Monolith

Problems:
- Scaling
- Handling DDOS Attacks
Monolith

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- Handling Security Attacks
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- Changing / Testing Code
Monolith

Problems:
- Scaling
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- Handling Security Attacks
- Changing / Testing Code
- Releasing New Versions
Microservices to the Rescue!

What are microservices?
Microservices to the Rescue!

What are microservices?

Yes, they really are just small services
Microservices to the Rescue!

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Yes, they really are just small services

Each service obeys the Single Responsibility Principle
Microservices to the Rescue!

What are microservices?

Yes, they really are just small services

Each service obeys the Single Responsibility Principle

Microservices talk to other microservices
Microservices Better Than Monolith?

Scaling

Scale just the service under load

- Saves resources
- Scales faster
Handle DDOS Attack

Only need to scale the service being attacked
- All other services unaffected
Microservices Better Than Monolith?

Handle Security Attack

Use a gatekeeper

Apply Principal of Least Privilege
Microservices Better Than Monolith?

Changing / Testing Code

The API for each microservice is its contract

So to test a change, we only need to test the API
Microservices Better Than Monolith?

Releasing New Versions

Just need to release the service(s) that changed
What Could Possibly Go Wrong?
What Could Possibly Go Wrong?

Dependency on monitoring to keep services running
What Could Possibly Go Wrong?

- Dependency on monitoring to keep services running
- Completely dependent on the network
  - Network latency leads to poor service performance
  - Broken interprocess communication
Service Discovery

Eureka
- Service registry
- Services register as they are starting up
- Periodic health checks and heartbeats
- Mid-tier load balancing
Netflix OSS Saves the Day

Interprocess Communication

Hystrix & Ribbon
- Graceful fallback
- Circuit breaking
Netflix OSS Saves the Day

Gatekeeper

Zuul

• Authentication (auth-n) & security
• Load shedding
Netflix OSS Saves the Day

Environment Monitoring

Asgard
- A/B testing
- Canary testing
- Changing number of instances of a service
Netflix OSS Saves the Day

Configuration Service

Archaius

- Dynamic changes of config values
- Can source config params from file or service
Netflix OSS is Not the Only Game in Town

Spring Cloud

Kubernetes

More than a handful of others