St. Louis Java User Group
September 2018

Launching The Micro Future

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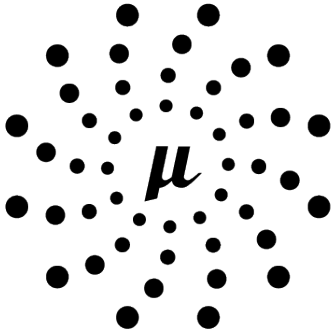
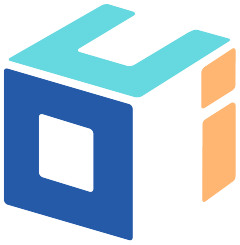


MICRONAUT



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Speaker

- Jeff Scott Brown
  - Co-Founder of Grails and Micronaut
  - Grails and Micronaut Practice Lead at OCI
  - Co-Author
- Definitive Guide To Grails
- Definitive Guide To Grails 2
  - @jeffscottbrown

OCI Engineering Training

- 24+ years experience
- Over 50,000 trained
- 150 current courses
- More than 40 instructors on staff
- All training delivered by practitioners and SME's in their respective fields
- Customized to fit your specific needs
- Flexible training delivery
- Training assessments

Agenda

- A Little History
- Microservice Challenges
- Our Plan To Address Those Challenges
- Launching The Microservice Future

Then And Now

- Much Has Changed Since 2008
- Monoliths Were "The Way"
  - No Angular
  - No Vue
  - No React
  - No Microservices

Adaptation Is Needed

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- Spring And Grails Were Not Designed With Microservices In Mind

What To Do?

- Keep Evolving The Current Stack To Be More Compatible With The Demands Of 2018?
- Go Back To The Drawing Board?

Our Goals

- Create Framework From The Ground Up With Microservices In Mind
- Really Fast Startup Time
- Low Memory Footprint
- Small Executable Jar Files
- Zero Dependencies

Goals vs Current Tech

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- We Related The Goals To Our Current Tech
  - Why can't we achieve these goals today?

What Grails And Spring Do

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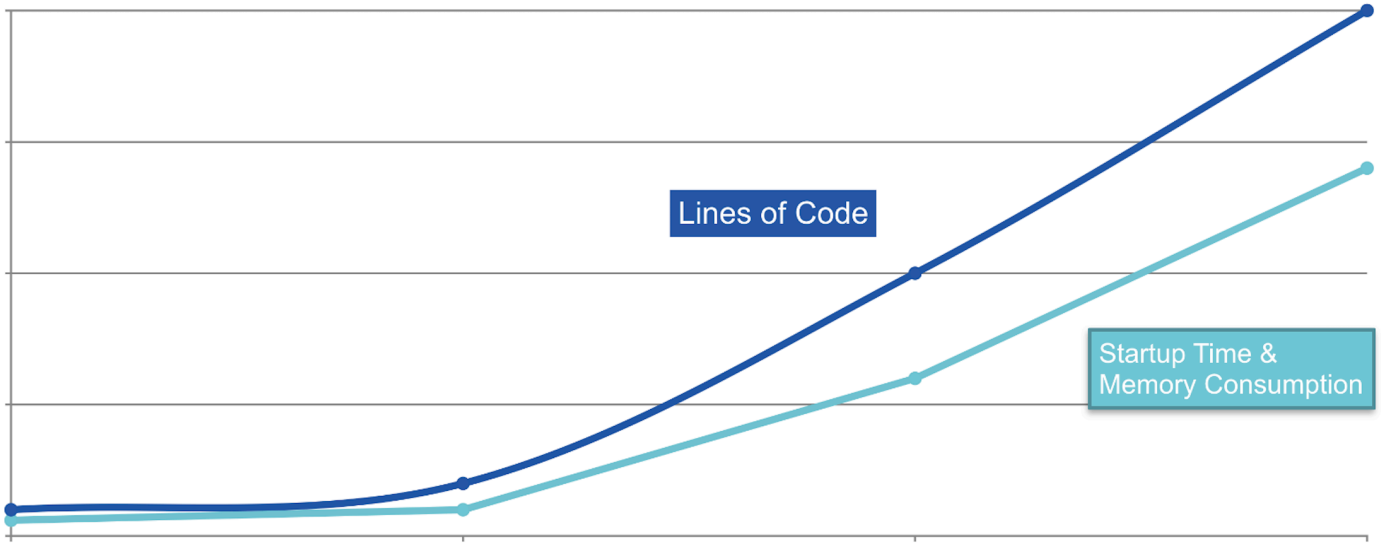
- Read Bytecode For Every Bean In The Context
- Synthesize Mirror Annotations
- Build Reflective Metadata



Facing Reality

- We Love The Programming Model
  - So we live with it
- There Must Be A Better Way

Introducing Micronaut!

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- Designed And Optimized With Microservices In Mind
- Ultra Light Weight
  - Netty based runtime
- Integrated AOP And DI Container
  - No Reflection! (this is a big deal)
- HTTP Client And Server

Demos

- Hello Micronaut
  - Simple controller
  - DI
  - Tests
- Client Side Load Balancing
  - The Micronaut Base Station

Hello Micronaut

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```
import io.micronaut.http.annotation.Controller;
import io.micronaut.http.annotation.Get;

@Controller("/")
public class HelloController {

    private MessageHelper messageHelper;

    public HelloController(MessageHelper messageHelper) {
        this.messageHelper = messageHelper;
    }

    @Get("/hello/{name}")
    public String hello(String name) {
        return messageHelper.createGreeting(name);
    }
}
```

Polyglot Micronaut

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```
// src/main/java/polyglotdemo/JavaHelloController.java
package polyglotdemo;

import io.micronaut.http.annotation.Controller;
import io.micronaut.http.annotation.Get;

@Controller("/java")
public class JavaHelloController {

    @Get("/hello/{name}")
    public String hello(String name) {
        return "Hello " + name + " From Java";
    }
}
```

Polyglot Micronaut

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```groovy
// src/main/groovy/polyglotdemo/GroovyHelloController.groovy
package polyglotdemo

import io.micronaut.http.annotation.Controller
import io.micronaut.http.annotation.Get

@Controller('/groovy')
class GroovyHelloController {

    @Get('/hello/{name}')
    String hello(String name) {
        "Hello $name From Groovy"
    }
}
```

Polyglot Micronaut

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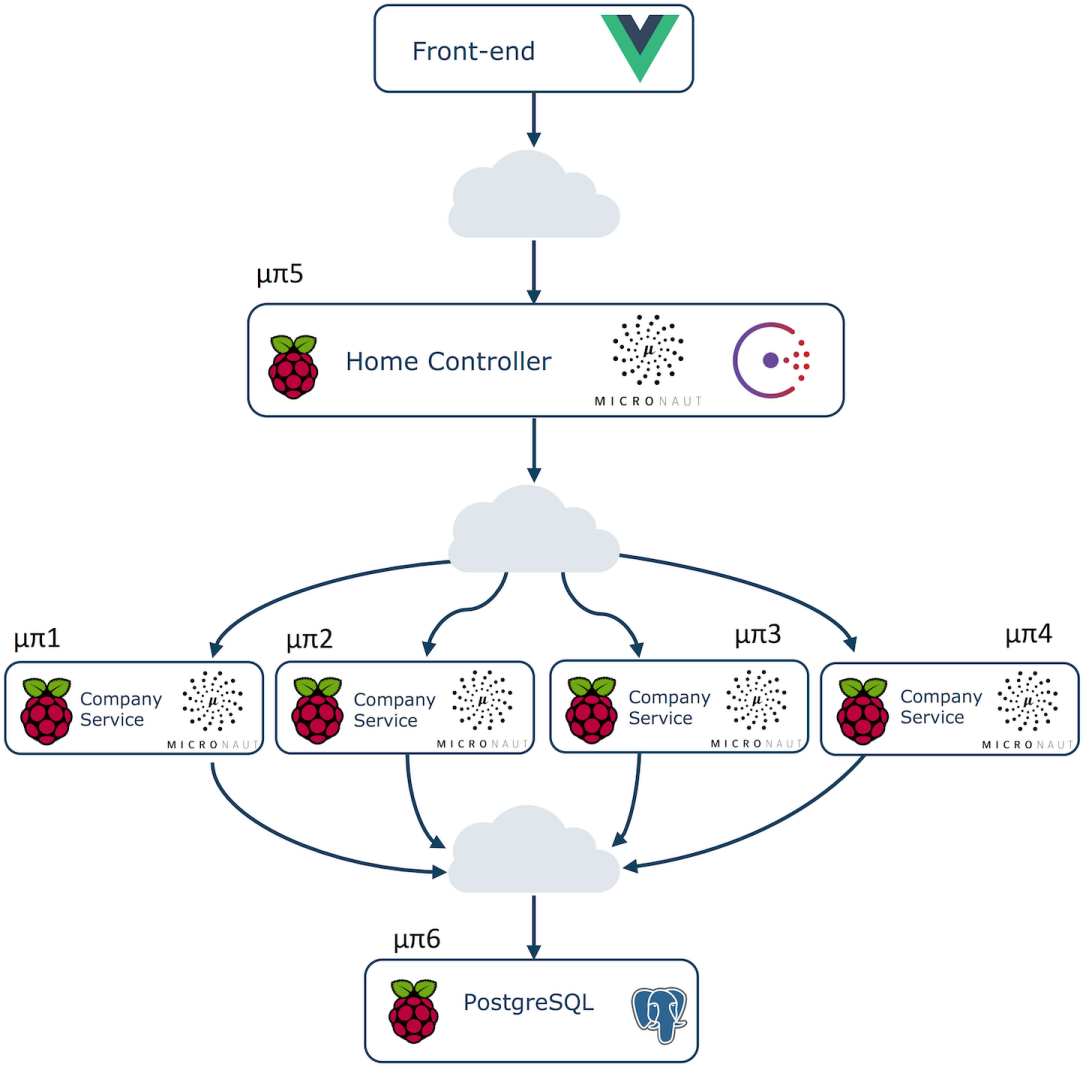
```
// src/main/kotlin/polyglotdemo/KotlinHelloController.kt
package polyglotdemo

import io.micronaut.http.annotation.Controller
import io.micronaut.http.annotation.Get

@Controller("/kotlin")
class KotlinHelloController {

    @Get("/hello/{name}")
    fun hello(name: String): String {
        return "Hello $name From Kotlin"
    }
}
```

Client Side Load Balancing



Some Numbers

- Smallest Micronaut Hello World Jar
  - ~8mb
- Minimum Heap Requirements
  - ~10mb
- Startup Time
  - ~1 second
- No Reflection!

No Reflection

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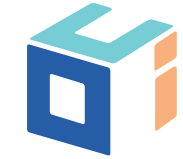
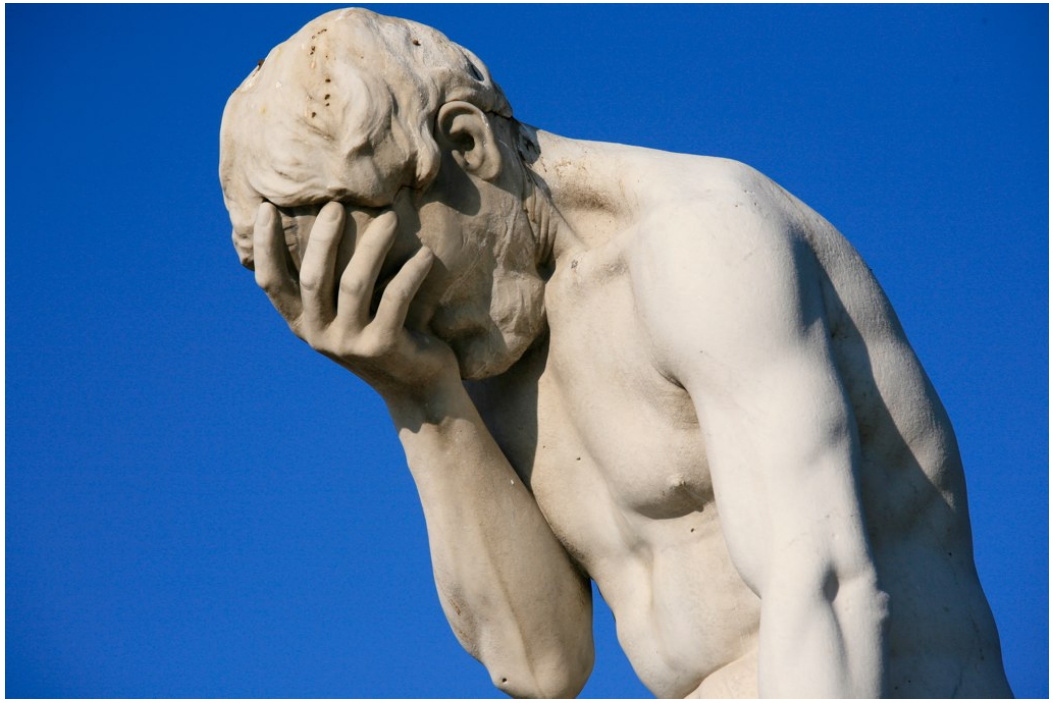
- Compile Time Dependency Injection, AOP, Proxies
  - AST Transformations For Groovy
  - Annotation Processors For Java And Kotlin
- All Annotation Metadata Is Produced At Compile Time

Natively Cloud Native



- Service Discovery
  - Consul, Eureka, etc…
- Configuration Sharing
  - AWS, GCP, etc…
- Client Side Load Balancing
- Serverless Computing
  - AWS Lambda
  - Azure

Yet Another HTTP Server?



1.0 Is Near

- 1.0 Milestone 4 Out Now
- RC1 September 30, 2018

Micronaut Resources

- gitter.im/micronautfw
- docs.micronaut.io
- guides.micronaut.io
- micronaut.io/faq.html
- github.com/micronaut-projects/micronaut-core
- github.com/micronaut-projects/micronaut-examples
- objectcomputing.com/products/micronaut

Q & A

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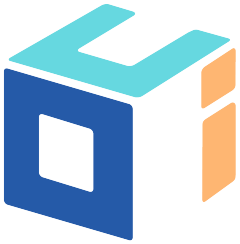

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