

Spring and the Mystery of the Polyglot Stack

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What is a polyglot stack?



Languages

- Java
- Node
- Golang
- Swift
- Python
- Kotlin



Compute

- Kubernetes
- Cloud Foundry
- Virtual Machines
- Servers in your basement



Architecture patterns

- REST APIs
- Reactive
- Serverless



Persistence

- SQL
- NoSQL
- GraphQL
- CQRS / Event sourcing



Why do I care?



No developer is an island





Cloud Native



A wide-angle photograph of a city skyline at sunset or sunrise. The sky is filled with warm, orange and yellow hues. In the foreground, the dark silhouette of a person wearing a hoodie stands on a light-colored stone rooftop, looking out over the city. The city itself is a dense cluster of buildings, with many skyscrapers visible against the bright sky.

Application modernization



Shifting responsibilities

- What belongs in an application library?
- What belongs in the infrastructure?





on Slack!

141

s game, and what does it have to do with
ces? Read on!

a! Get the latest on our adventures, whether
events or just in code.

APIs

e REST APIs. Cleanly documented with
Ready to be poked with sticks.

projects

is open source. All the code. All the words.

images

has pre-built images on Docker Hub to
development easier.

ors

ople helped to build this game. We hope

o.

GAMEON

A Throwback Adventure in Cloud Native Development

You are in a maze of little interconnected rooms,
none alike. And you aren't alone...

ENTER

By entering this site you are agreeing to our [terms](#)



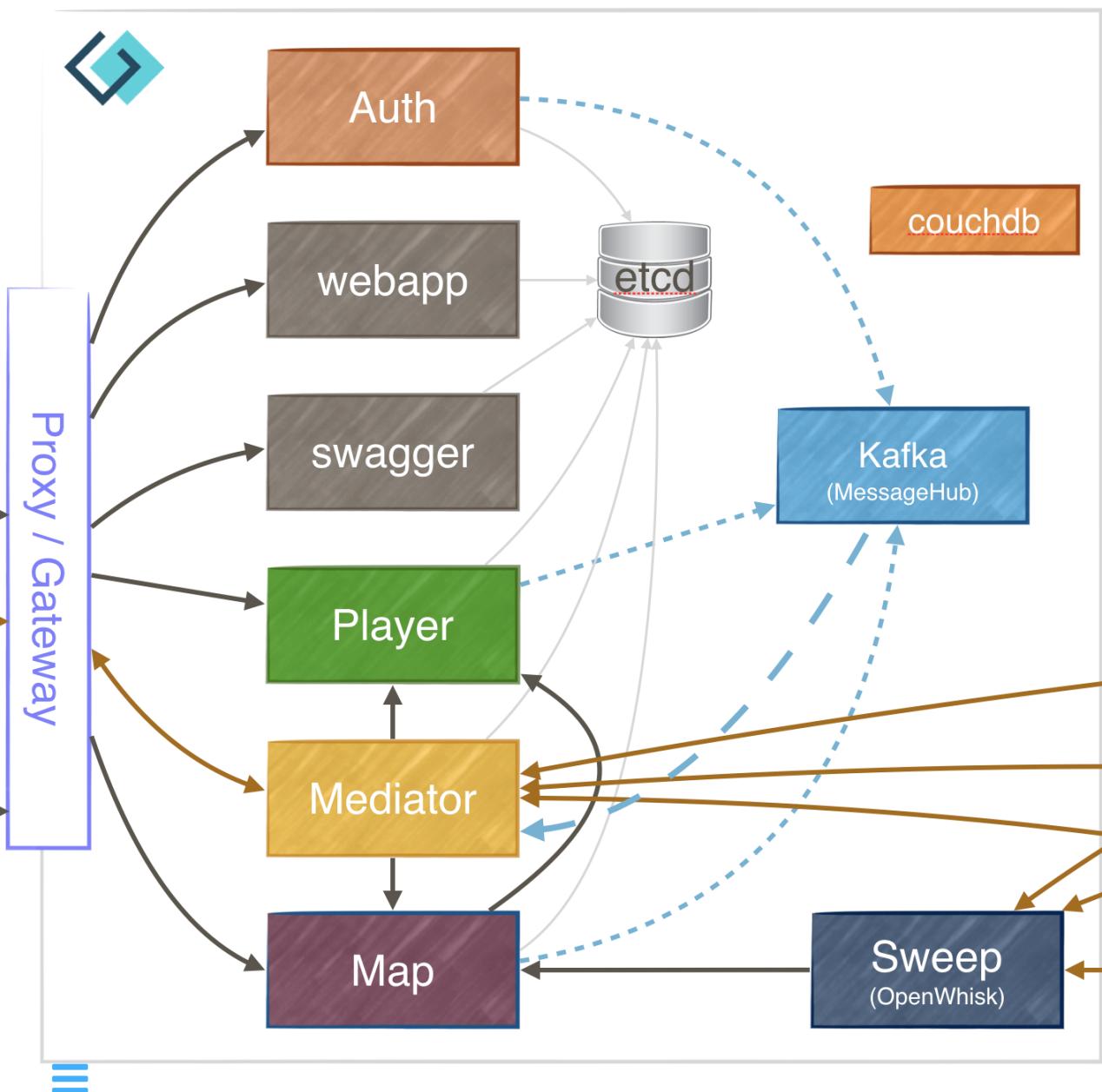
<https://gameontext.org>

Socket

REST API

Publish

Subscribe



<https://gameontex.com>

- ▶ Text-based: simple flow
- ▶ Messing about with backend
- ▶ ▶ Lots of services
- ▶ ▶ Java, Node, static/nginx
- ▶ ▶ Who knows what in Root

Go Ro

Node.js Ro

Java Ro

Game On!

- New shiny room: Spring Boot 2
- REST requests to a service based on Spring Music
<https://github.com/cloudfoundry-samples/spring-music>



Spring does amazing things!

While it does amazing Spring things,
it does not-so-amazing not-Spring things



*“Curious Things, habits.
People themselves never
knew they had them.”*

- Agatha Christie



Configuration abstraction

- Extensive and extensible
- Values in source, `@Value`
- Environment configuration sources



Configuration injection



Configuration injection

- CloudFoundry:
 - VCAP_SERVICES & VCAP_APPLICATION
 - Spring Cloud Connector
- Kubernetes: ...
 - Spring Cloud Kubernetes: Kube API



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 - VCAP_SERVICES & VCAP_APPLICATION
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 - ConfigMap/Secret -> environment variable
 - ConfigMap/Secret -> filesystem
 - Spring Cloud Kubernetes: Kube API



Managing configuration

- Lack of consistent conventions
- Lots of magic
 - Spring Cloud Kubernetes
 - Spring Cloud Connector
 - Spring Cloud Config: extra server / clients
Do you know where your configuration is coming from?



*“Unless you are good at
guessing, it is not much use
being a detective.”*

– Agatha Christie



Logging

Logs are always first when things go wrong.

Where did they go?



*“There is nothing like
first-hand evidence”*

– Sherlock Holmes



Metrics

Spring actuator is a win!



*“Good advice is always
certain to be ignored,
but that’s no reason
not to give it”*

- Agatha Christie



Interoperable Security

You are in a maze of twisty passages, all alike.





About 693,000 results (0.26 seconds)

Using JWT with Spring Security OAuth | Baeldung

<https://www.baeldung.com/spring-security-oauth-jwt> ▾

Mar 19, 2019 - In this tutorial, we'll discuss how to get our **Spring Security OAuth2** implementation to make use of JSON Web Tokens. ... A practical deep-dive into how to implement logout in a **Spring Security OAuth2** application with **JWT**. ... OAuth2 for a **Spring REST API** – Handle the Refresh Token in ...

Spring Security with JWT - DEV Community - Dev.to

<https://dev.to/keysh/spring-security-with-jwt-376> ▾

Jan 14, 2019 - **Spring Security's** default behavior is easy to use for standard web application. ... Here comes the **JWT (JSON Web Token)** – a small digitally signed token. ... If username and password is correct, then filter will create a **JWT token** and returns it in **HTTP Authorization header**.

Spring Security Tutorial: REST Security with JWT | Toptal

<https://www.toptal.com/blog/spring-security-with-jwt> ▾

For this, **JWT** arrives just in time to save the day. In this article, Toptal engineer Dejan ... REST Security with **JWT** using Java and **Spring Security**. View all articles.

Implementing JWT Authentication on Spring Boot APIs - Auth0

<https://auth0.com/blog/implementing-jwt-authentication-on-spring-boot/> ▾

Aug 10, 2017 - Let's learn the correct way to **secure Spring Boot RESTful APIs** with ... When a backend server receives a request with a **JWT**, the first thing ... Enabling User Registration ... · User Authentication and ...

Implementing JWT with Spring Boot and Spring Security - Medium

<https://medium.com/@xoxor/jwt-authentication-service-44658409e12c> ▾

Nov 11, 2017 - Just to throw some background in, we have a wonderful introduction, courtesy of **JWT**. Let's take a look: **JSON Web Token (JWT)** is an open ...

Protect REST APIs with Spring Security and JWT – Hantsy – Medium

<https://medium.com/.../protect-rest-apis-with-spring-security-and-jwt-9bc90305cc5> ▾

Aug 26, 2018 - In the **Spring Security** OAuth based solution, the content of access token can be a signed **JWT token** or an opaque value, and we have to follow ...

Microservices with Spring Boot — Authentication with JWT (Part 3)

<https://medium.com/.../microservices-with-spring-boot-authentication-with-jwt-part-3-...> ▾

Jun 10, 2018 - **JSON Based Token (JWT)** is a **JSON-based open standard** for creating access ... In the **pom.xml** add **spring security** and **JWT** dependencies.

Spring Boot + Spring Security + JWT + MySQL + React Full Stack ...

<https://www.calocoder.com/spring-boot-spring-security-jwt-mysql-react-app-part-2/> ▾

Feb 6, 2018 - Building an End-to-End Full Stack Polling App including Authentication and Authorization with Spring Boot, **Spring Security**, **JWT**, MySQL and ...

GitHub - szerhusenBC/jwt-spring-security-demo: A small demo for ...

<https://github.com/szerhusenBC/jwt-spring-security-demo> ▾

A small demo for using **JWT (Json Web Token)** with **Spring Security** and **Spring Boot 2** – **szerhusenBC/jwt-spring-security-demo**.

JSON Web Token (JWT) in Spring Security - a real-world example

<https://www.linkedin.com/.../json-web-token-jwt-spring-security-real-world-example-bo...> ▾

Jun 23, 2017 - In this article we will see how to integrate a simple REST API authentication using **JSON Web Token (JWT)** standard and **Spring Security** into ...

March 2019 @EnableResourceServer

Jan 2019 Custom HTTP Filters

2016 Custom HTTP Filters

2017 Custom HTTP Filters

2017 Custom HTTP Filters

2018 Custom HTTP Filters

2017 Custom HTTP Filters

JWTs...

Real Code!



Wrapping things up: about that boat trip

Some do's and don'ts for this brave new world



Mind your magic

- Integrate with the platform
- Look for libraries that interoperate
- Spring Cloud Kubernetes config
- opentracing-contrib/java-spring-cloud
(not sleuth)



Use Spring Actuators

- Boot 2
 - `/actuator/health` for readiness
 - `/actuator/metrics`
- Boot 1
 - `/health` for readiness
 - `/metrics`



Use Micrometer!

- Saves your bacon. Any metrics collector.
 - For Kube: prometheus endpoints
- Default for Boot 2
- Backport to Boot 1



Create a simple liveness endpoint

- Health actuator is better for readiness
- Simple liveness for up/down with little/no payload
- In Boot 2, this can be a custom actuator



Punt in-app load-balancing libraries

Let the environment (service mesh) handle it

- Even CF is headed that way
- No reason to duplicate information



Punt Netflix stack entirely

The Spring Cloud Netflix stack has not aged well

- Not under active development
- Hollowed out by Kubernetes and Istio



But **Hystrix**!

Fault tolerance with Hystrix is a tough habit to break

Use Resilience4j instead

<https://github.com/resilience4j/resilience4j>

Or look at Spring Cloud Circuit Breaker

<https://spring.io/blog/2019/04/16/introducing-spring-cloud-circuit-breaker>



Any questions?

We can show more...



Thank you!

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