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Spring Boot

Implementacion microservicios con Spring cloud

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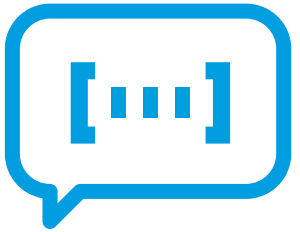
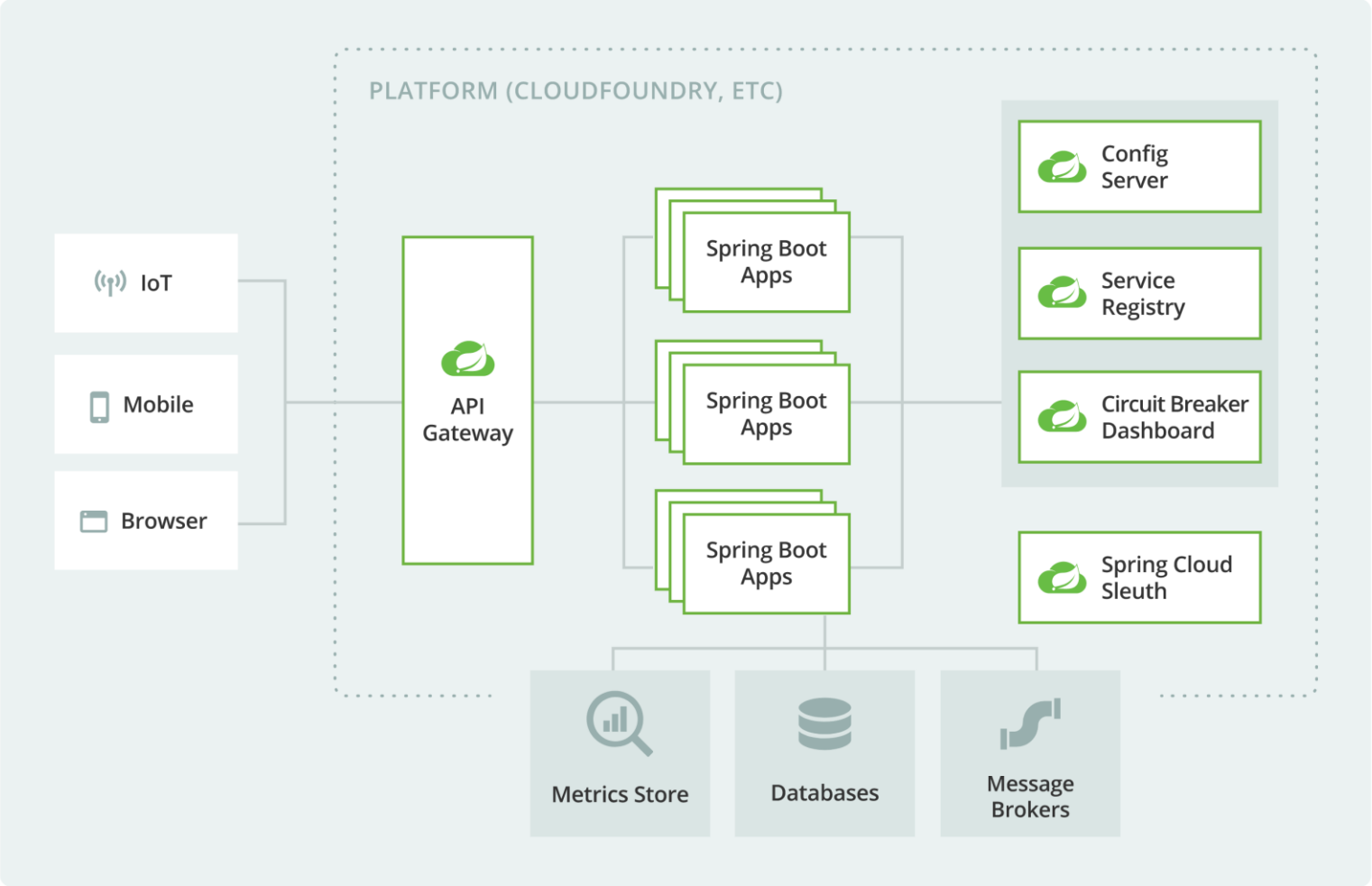


Microservicios con Spring cloud

01

Ecosistema Spring Cloud



- **Componentes básicos** para la nube y microservicios.
- **Infraestructura de microservicios** como Service Discovery, un servidor de configuración y monitoreo.
- Varios otros **proyectos de código abierto** como Netflix OSS.
- **PaaS** como Cloud Foundry, AWS y Heroku.
- Utiliza **starters** estilo Spring Boot

Ecosistema Spring Cloud

- **Service discovery:** Netflix Eureka (https://github.com/Netflix/eureka)
- **API gateway:** Spring Cloud Gateway (https://spring.io/projects/spring-cloud-gateway)
- **Cloud configuration:** Spring Cloud Config (https://spring.io/projects/spring-cloud-gateway)
- **Cloud load balancing:** Spring Cloud Load Balancer
- **Service client:** Spring Cloud Feign
- **Monitoring:** Spring Cloud Actuator
- **Circuit breakers:** Resilience4J, Sentinel, or Hystrix
- **Tracing:** Spring Cloud Sleuth, Zipkin
- **Testing:** Spring Cloud Contract

Otros intereresantes:

- **Clientes API:** Feign e Hystrix
- **API Gateway:** Netflix Zuul

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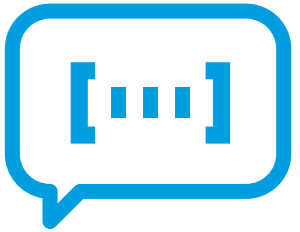
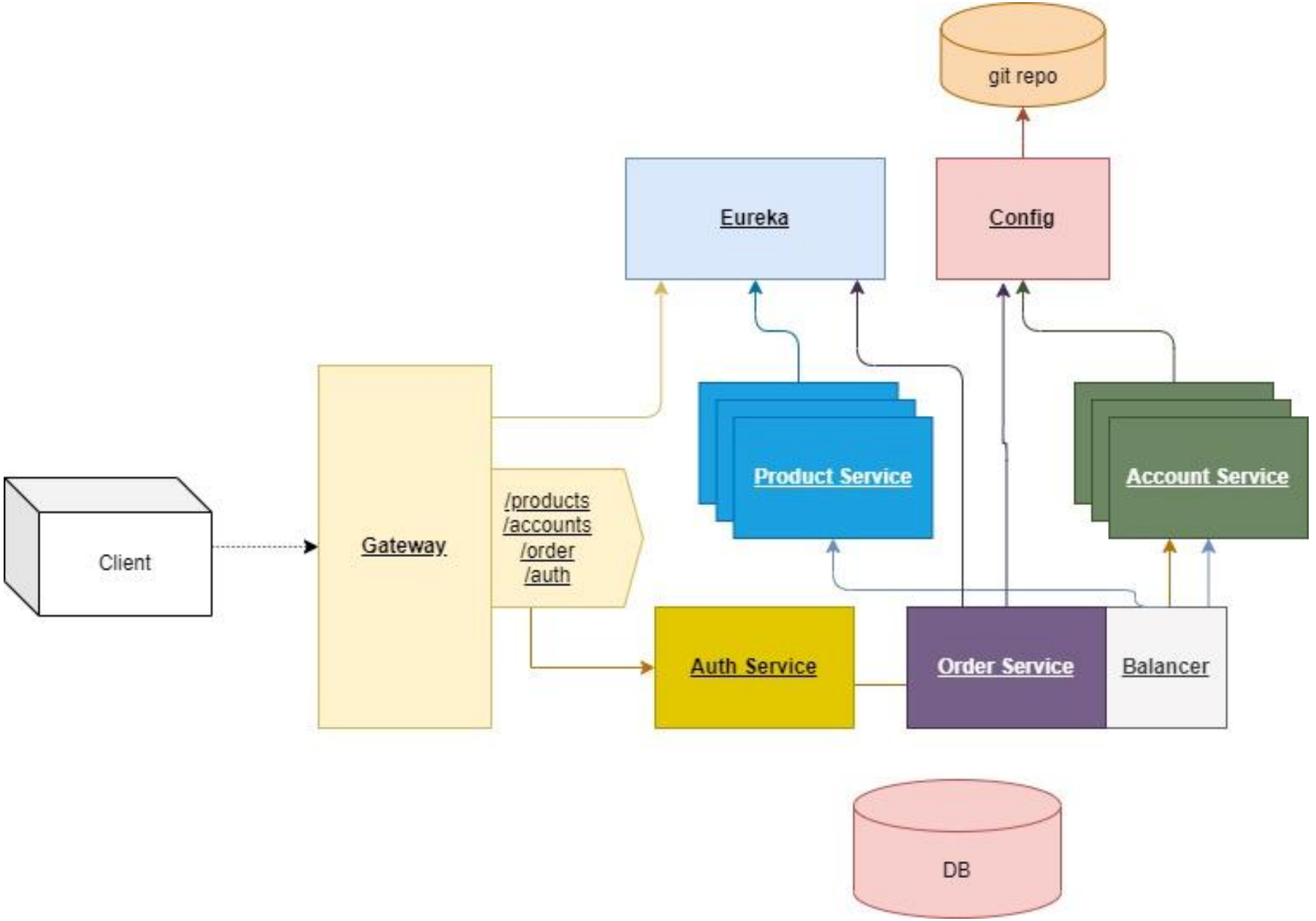
02



Implementando un MSA sencillo

Implementando un sistema de microservicios sencillo



Config service

```
<dependency>
        <groupId>org.springframework.cloud</groupId>
        <artifactId>spring-cloud-config-server</artifactId>
</dependency>
<dependency>
        <groupId>org.springframework.boot</groupId>
        <artifactId>spring-boot-starter-actuator</artifactId>
</dependency>
```

```
spring.application.name: spring-cloud-config-server
server.port: 8888
spring.cloud.config.server.git.default-label: master
spring.cloud.config.server.git.uri: “<path_to_git-localconfig-repo>"
```

```
@SpringBootApplication
@EnableConfigServer
public class SpringCloudConfigServerApplication {
        ...
}
```

El repo git debe tener archivos con nombre:

- `<service-name>.properties`
- `<service-name>-<profile>.properties`

Ver configuración:

- `http://localhost:8888/<service-name>/default`
- `http://localhost:8888/<service-name>/<profile>`

Cliente del Config service

```
<dependency>
        <groupId>org.springframework.cloud</groupId>
        <artifactId>spring-cloud-starter-config</artifactId>
</dependency>
```

```
spring.config.import: configserver:http://localhost:8888 # config server
spring.profiles.active: dev #for activate profile
management.endpoints.web.exposure.include: "*“ # for refresh
```

```
@Component
@ConfigurationProperties(“<service-name>")
@Getter @Setter
public class Configuration {
    // properties
}

...

@Autowired
private Configuration configuration;
```

🔗 **Get actuator env**

```
http://localhost:9100/actuator/env
```

🔗 **Refresh**

```
POST http://localhost:9100/actuator/refresh
```

Eureka

```
<dependency>
        <groupId>org.springframework.cloud</groupId>
        <artifactId>spring-cloud-starter-netflix-eureka-server</artifactId>
</dependency>
```

```
spring.application.name: netflix-eureka-naming-server
server.port: 8761

spring.config.import: configserver:http://localhost:8888
eureka.client.register-with-eureka: false
eureka.client.fetch-registry: false
```

```
@SpringBootApplication
@EnableEurekaServer
public class NetflixEurekaNamingServerApplication {
        ...
}
```

Eureka client

```
<dependency>
    <groupId>org.springframework.cloud</groupId>
    <artifactId>spring-cloud-starter-netflix-eureka-client</artifactId>
</dependency>
```

```
eureka.client.service-url.default-zone: http://localhost:8761/eureka
```

```
@SpringBootApplication
@EnableDiscoveryClient
public class CurrencyExchangeServiceApplication {
        ...
}
```

Feign user

```
<dependency>
    <groupId>org.springframework.cloud</groupId>
    <artifactId>spring-cloud-starter-feign</artifactId>
    <version>1.4.7.RELEASE</version>
</dependency>
```

```
@SpringBootApplication
@EnableFeignClients
@EnableDiscoveryClient
public class CurrencyConversionServiceApplication {
        ...
}
```

```
@FeignClient(name = "<service-to-consume-name>", url = “<service-to-consume-name>")
public interface ServiceToConsumeClient {
    @RequestMapping(method = RequestMethod.<METHOD>, value = “<service-to-consume-uri>")
    public DetinationBean getMethod(
            @PathVariable String any_path_variable
    );

}

...

@Autowired
private ServiceToConsumeClient serviceToConsumeClient;
```

Load balancer

```
<dependency>
    <groupId>org.springframework.cloud</groupId>
    <artifactId>spring-cloud-starter-loadbalancer</artifactId>
</dependency>
<dependency>
         <groupId>org.springframework.cloud</groupId>
         <artifactId>spring-cloud-starter-netflix-eureka-client</artifactId>
</dependency>
```

```
@SpringBootApplication
@EnableFeignClients
@EnableDiscoveryClient
public class CurrencyConversionServiceApplication {
         ...
}
```

```
@FeignClient(name = "<service-to-consume-name>")
@LoadBalancerClient(name = "<service-to-consume-name>", configuration= LoadBalancerConfiguration.class)
public interface ServiceToConsumeClient {
         ...
}
```

Load balancer

```
@Configuration
public class LoadBalancerConfiguration {

    @Bean
    public ServiceInstanceListSupplier
    discoveryClientServiceInstanceListSupplier(ConfigurableApplicationContext context) {
        System.out.println("Configuring Load balancer to prefer same instance");
        return ServiceInstanceListSupplier.builder()
                .withBlockingDiscoveryClient()
                .withSameInstancePreference()
                .build(context);
    }

}
```

🔗 **Lanzar un Segundo servicio**

```
mvn clean install
cd target
java -jar <app>.jar --server.port=<port>
```

API Gateway

```
<dependency>
        <groupId>org.springframework.cloud</groupId>
        <artifactId>spring-cloud-starter-gateway</artifactId>
</dependency>
<dependency>
        <groupId>org.springframework.cloud</groupId>
        <artifactId>spring-cloud-starter-netflix-eureka-client</artifactId>
</dependency>
```

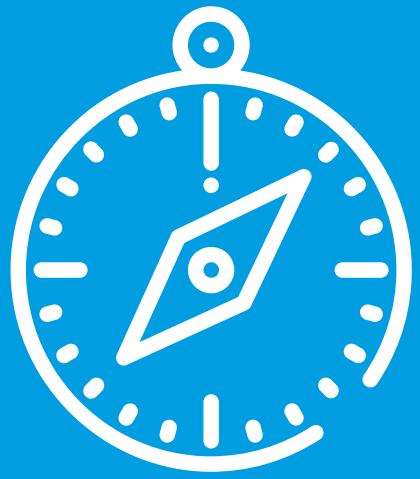
```
@SpringBootApplication
@EnableDiscoveryClient
public class GatewayServerApplication {
        ...
}
```

API Gateway

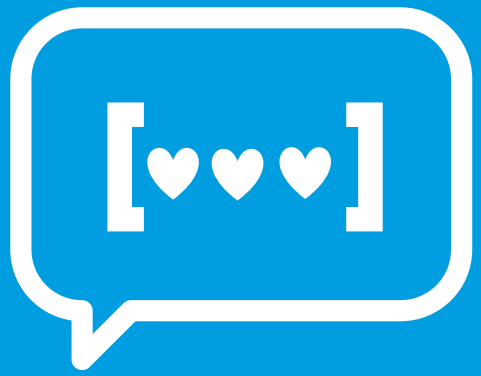
```
spring:
  application.name: gateway-server
  cloud:
    gateway:
      discovery.locator.enabled: true
      routes:
        - id: LocalIdentifier1
          uri: "lb://<service-name-1>/path/"
          predicates:
            - Path=/<gtw_path_1>/**
        - id: LocalIdentifier2
          uri: "lb://<service-name-2>/path/"
          predicates:
            - Path=/<gtw_path_2>/**
eureka.client:
  service-url.default-zone: http://localhost:8761/eureka
  health-check.enabled: true

management:
  endpoint:
    gateway:
      enabled: true
  endpoints:
    web:
      exposure:
        include: gateway
```

API Gateway

```
@Configuration
public class SpringCloudConfig {

    @Bean
    public RouteLocator gatewayRoutes(RouteLocatorBuilder builder) {
        return builder.routes()
                .route(r -> r.path("/<gtw_path_1>/**")
                        .uri("lb://<service-name-1>/path/"))

                .route(r -> r.path("/<gtw_path_2>/**")
                        .uri("lb://<service-name-2>/path/"))

                .build();
    }

}
```



Next steps



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Thanks!

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