

spring-cloud-gateway-example (0.0.1)

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Version 0.0.1, 2018-06-25 05:45:48 UTC

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Travis CI status: [\[Build Status\]](#)

Chapter 1. Introduction

Migrate monolithic app into micro-services with awesome Spring projects!

Read [reference documentation](#) for details

some links:

- [additional hibernate generators](#)
- [Thymeleaf getting ready for Reactive Spring 5](#)
- [YouTube: Thymeleaf by Daniel Fernández](#)
- [Motivated by that Spencer Gibb talk on YouTube: Introducing Spring Cloud Gateway by Spencer Gibb @ Spring I/O 2018](#)
- [YouTube: Mastering Spring Boot's Actuator by Andy Wilkinson @ Spring I/O 2018](#)

generated by [generator-jvm](#) yeoman generator (java-spring-boot)

Chapter 2. Implementation

2.1. props

This module contains all apps props, such as applications url, port, host, etc...

configurations example file: `application-props.yaml`

```
spring:
  profiles:
    active: props
props:
  monolith:
    proto: http
    host: 127.0.0.1
    port: 8001
    url: ${props.monolith.proto}://${props.monolith.host}:${props.monolith.port}
  gateway:
    proto: http
    host: 127.0.0.1
    port: 8002
    url: ${props.gateway.proto}://${props.gateway.host}:${props.gateway.port}
  ui:
    proto: http
    host: 127.0.0.1
    port: 8003
    url: ${props.ui.proto}://${props.ui.host}:${props.ui.port}
  rest:
    proto: http
    host: 127.0.0.1
    port: 8004
    url: ${props.rest.proto}://${props.rest.host}:${props.rest.port}
```

2.2. step 0: monolith

This is a zero step. We will try migrate that monolith app, which is contains: `ui` and few `rest api data` modules into micro-services apps.

Monolith server is using port: 8001

2.3. step 1: gateway

This is a first step in micro-services migration process. First of all we need create entry point of our future system — application gateway. Gateway will forward any requests to proper services of your system.

Gateway server is using port: 8002

gateway routes configuration:

```
final Props props;

@Bean
RouteLocator msRouteLocator(final RouteLocatorBuilder builder) {
    return builder
        .routes()

        // step 5: after step 4 migration is done. monolithic app at this point of
        // time could be completely disabled.

        // step 4: forward rest api calls to ms-3-rest micro-service
        .route("ms-3-rest", p -> p
            .path("/api/**")
            .uri(props.getRest().getUrl()))

        // step 3: everything else (except itself gateway actuator endpoints) forward
        // to ms-2-ui micro-service
        .route("ms-2-ui", p -> p
            .path("/actuator/**")
            .negate()
            .uri(props.getUi().getUrl()))

        /*

        // step 2: oops, gateway actuator endpoints should respond by themselves, but
        // not with monolith's...
        .route("ms-1-gateway", p -> p
            .path("/actuator/**")
            .negate()
            .uri(props.getMonolith().getUrl()))

        // step 1: forward everything to monolith app
        .route("ms-0-monolith", p -> p
            .path("/")
            .uri(props.getMonolith().getUrl()))

        */

        .build();
}
```

this configuration shows how we can forward every request to monolith (except itself actuator requests)

2.4. step 2: ui

In this module we moved all UI related stuff:

- react frontend app
- SPA index thymeleaf controller
- API forwarder to gateway (to avoid frontend CORS issue)

SPA Index Page thymeleaf controller:

```
@Controller
@RequiredArgsConstructor
class IndexPage {

    @GetMapping("/")
    String index() {
        return "index";
    }
}
```

WebFlux REST API proxy forwarder config:

```
@Log4j2
@Configuration
@RequiredArgsConstructor
class RestApiProxyConfig {

    final Props props;

    @Bean
    WebClient webClient() {
        return WebClient.create(props.getGateway().getUrl());
    }

    @Bean
    RouterFunction routes(WebClient webClient) {

        final ParameterizedTypeReference<Map> maps = new ParameterizedTypeReference<Map>()
        {};
        final ParameterizedTypeReference<String> strings = new ParameterizedTypeReference
        <String>() {};

        return route(
            GET("/api/contents"),
            request -> ok().contentType(APPLICATION_JSON).body(webClient
                .get().uri("/api/contents")
                .accept(APPLICATION_JSON)
                .header("Content-Type", APPLICATION_JSON_VALUE)
                .retrieve().bodyToFlux(maps), maps)
        ).andRoute(
            GET("/api/**"),
            request -> ok().contentType(APPLICATION_JSON).body(webClient
                .get().uri("/api/")
                .accept(APPLICATION_JSON)
                .header("Content-Type", APPLICATION_JSON_VALUE)
                .retrieve().bodyToFlux(strings), strings)
        ).andOther(
            resources("/**", new ClassPathResource("public/"))
        );
    }
}
```

UI is using port: 8003

2.5. step 3: rest

Last part of our application is REST API. We gonna split webflux rest api from monolith into separate service.

spring-data:

```
@Data
@Entity
@NoArgsConstructor
@Accessors(chain = true)
class Content implements Serializable {

    private static final long serialVersionUID = -7618202574843387015L;

    @Id
    @GeneratedValue(generator = "uuid")
    @GenericGenerator(name = "uuid", strategy = "uuid2")
    String id;

    String body;
}

interface Contents extends JpaRepository<Content, String> {}
```

```
@Log4j2
@Configuration
@RequiredArgsConstructor
class WebfluxRoutesConfig {

    final Contents contents;

    @Bean
    RouterFunction routes() {
        return
            nest(
                path("/api"),
                route(
                    GET("/contents"),
                    contentsHandler()
                )
            ).andRoute(
                GET("/**"),
                fallbackHandler()
            )
        ;
    }

    @Bean
    HandlerFunction<ServerResponse> contentsHandler() {
        return request -> {
            final Flux<Content> publisher = Flux.fromIterable(contents.findAll());
            final ParameterizedTypeReference<Content> type = new ParameterizedTypeReference
<Content>() {};
            return ok().body(publisher, type);
        };
    }

    @Bean
    HandlerFunction<ServerResponse> fallbackHandler() {
        return request -> {
            final ParameterizedTypeReference<List<String>> type = new
ParameterizedTypeReference<List<String>>() {};
            final List<String> api = singletonList("GET contents -> /api/contents");
            final Mono<List<String>> publisher = Mono.just(api);
            return ok().body(publisher, type);
        };
    }
}
```

Rest server is using port: 8004

Chapter 3. Post implementation steps:

- remove monolith `self-actuator` gateway route
- remove `ms-0-monolith` project
- remove useless configurations from `props` module

Chapter 4. Links

- [GitHub repo](#)
- [GitHub pages](#)