

# Spring Retrosocket 0.0.1-SNAPSHOT Reference Guide

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Spring Retrosocket aims to provide a Feign-like or Retrofit-like experience for declarative [RSocket](#)-based clients. This guide introduces Retrosocket functionality and their uses.

# Chapter 1. Build the Code

You can find the [code on Github](#).

Build the code:

```
mvn clean install
```

It's early days yet, so there may be some build breaks. Skip the tests if needed:

```
mvn -DskipTests=true clean install
```

## Chapter 2. Configuring Your Build

The easiest way might be to go to the Spring Initializr and generate a new project. Make sure that you specify the `spring-milestones` or `spring-snapshots` repositories defined in your build. Add the following to your build, taking care to replace `$PROJECT-VERSION` with the correct version of the library. The latest is **0.0.1-SNAPSHOT**. This version has been built against Spring Boot **2.3.1.RELEASE**.

```
<dependency>
  <groupId>org.springframework.retry</groupId>
  <artifactId>spring-retry</artifactId>
  <version>$PROJECT-VERSION</version>
</dependency>
```

If you have an existing build, make sure that you have the `spring-milestones` or `spring-snapshots` Spring repositories.

```
<repositories>
  <repository>
    <id>spring-milestones</id>
    <name>Spring Milestones</name>
    <url>https://repo.spring.io/milestone</url>
  </repository>
  <repository>
    <id>spring-snapshots</id>
    <name>Spring Snapshots</name>
    <url>https://repo.spring.io/snapshot</url>
    <snapshots>
      <enabled>true</enabled>
    </snapshots>
  </repository>
</repositories>
```

## Chapter 3. Basic Usage

In your Java code, you need to enable the RSocket client support. Use the `@EnableRSocketClient` annotation. You'll also need to define an `RSocketRequester` bean.

```
@SpringBootApplication
@EnableRSocketClient
class RSocketClientApplication {

    @Bean
    RSocketRequester requester(RSocketRequester.Builder builder) {
        return builder.connectTcp("localhost", 8888).block();
    }
}
```

then, define an RSocket client interface, like this:

```
@RSocketClient
interface GreetingClient {

    @MessageMapping("supplier")
    Mono<GreetingResponse> greet();

    @MessageMapping("request-response")
    Mono<GreetingResponse> requestResponse(Mono<String> name);

    @MessageMapping("fire-and-forget")
    Mono<Void> fireAndForget(Mono<String> name);

    @MessageMapping("destination.variables.and.payload.annotations.{name}.{age}")
    Mono<String> greetMonoNameDestinationVariable(
        @DestinationVariable("name") String name,
        @DestinationVariable("age") int age,
        @Payload Mono<String> payload);
}
```

If you invoke methods on this interface, it'll, in turn, invoke endpoints using the configured `RSocketRequester` for you, turning destination variables into route variables and turning your payload into the data for the request.

## Chapter 4. Mapping Headers (RSocket metadata) to the RSocket request

You can map `@Header` elements to parameters in the method invocation. The header parameters get sent as composite RSocket metadata. Normal invocations of RSocket metadata would require two parts - a mime type and a value that can be encoded. The encoding is a separate issue - Spring ships with a ton of encoders/decoders out of the box, but by default, Spring Framework's built-in support uses something called `CBOR`. There is still the question of how to communicate the mime-type. We expect the mime-type as the `value()` attribute for the `@Header` annotation. Thus:

```
import com.joshlong.rsocket.client.RSocketClient;
import org.springframework.messaging.handler.annotation.Header;
import org.springframework.messaging.handler.annotation.MessageMapping;
import org.springframework.messaging.handler.annotation.Payload;
import reactor.core.publisher.Mono;

@RSocketClient
interface GreetingClient {

    @MessageMapping("greetings")
    Mono<String> greet(@Header("messaging/x.bootiful.client-id") String clientId,
        @Payload Mono<String> name);
}
```

This method definition should line up with the expectations for composite metadata on the responder side, of course.

## Chapter 5. Pairing `RSocketRequesters` to `@RSocketClient` interfaces

You can annotate your interfaces with a `@Qualifier` annotation (or a meta-annotated qualifier of your own making ) and then annotate an `RSocketRequester`. This module will use that `RSocketRequester` when servicing methods on a particular interface.

The following demonstrates the concept in action. `RSocket` connections are stateful. Once they've connected, they stay connected, and all subsequent interactions are assumed to be against the already established connection. Therefore, each `RSocketRequester` talks to a different logical (and physical) service, unlike, e.g., a `WebClient`, which may you may use to talk to any arbitrary host and port.



```

@RSocketClient
@Qualifier(Constants.QUALIFIER_2)
interface GreetingClient {

    @MessageMapping("greetings-with-name")
    Mono<Greeting> greet(Mono<String> name);

}

@RSocketClient
@PersonQualifier
interface PersonClient {

    @MessageMapping("people")
    Flux<Person> people();

}

@EnableRSocketClients
@SpringBootApplication
class RSocketClientConfiguration {

    @Bean
    @PersonQualifier // meta-annotation
    // @Qualifier(Constants.QUALIFIER_1)
    RSocketRequester one(@Value("${" + Constants.QUALIFIER_1 + ".port}") int port,
        RSocketRequester.Builder builder) {
        return builder.connectTcp("localhost", port).block();
    }

    @Bean
    @Qualifier(Constants.QUALIFIER_2) // direct-annotation
    RSocketRequester two(@Value("${" + Constants.QUALIFIER_2 + ".port}") int port,
        RSocketRequester.Builder builder) {
        return builder.connectTcp("localhost", port).block();
    }
}

@Target({ ElementType.FIELD, ElementType.METHOD, ElementType.TYPE, ElementType
    .PARAMETER })
@Retention(RetentionPolicy.RUNTIME)
@Qualifier(Constants.QUALIFIER_1)
@interface PersonQualifier {
}

```

# Chapter 6. Contact us

Did you not find what you sought? We're happy to help! We're always available on the Github Issues section for this repository.