

# REST Service Calls for Java - 1.0

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## Extension ID

`com.castsoftware.java.service`

## What's new?

See [REST service call for Java - 1.0 - Release Notes](#) for more information.

## Description

This extension provides support for some web services calls from Java.

## Supported REST client libraries

<b>Native</b>	<ul style="list-style-type: none"><li>• <code>java.net.URLConnection</code></li><li>• <code>java.net.HttpURLConnection</code></li></ul>
<b>JAX-RS</b>	<ul style="list-style-type: none"><li>• <code>javax.ws.rs.client.ClientBuilder</code></li><li>• <code>javax.ws.rs.client.Client</code></li><li>• <code>org.glassfish.jersey.client.JerseyClient</code></li><li>• <code>javax.ws.rs.client.WebTarget</code></li><li>• <code>javax.ws.rs.client.Invocation</code></li><li>• <code>javax.ws.rs.client.Invocation.Builder</code></li><li>• <code>javax.ws.rs.core.UriBuilder</code></li><li>• <code>org.jboss.resteasy.client.jaxrs.ResteasyClient</code></li><li>• <code>org.jboss.resteasy.client.jaxrs.ResteasyWebTarget</code></li><li>• <code>org.jboss.resteasy.client.ClientRequest</code></li><li>• <code>com.sun.jersey.api.client.Client</code></li><li>• <code>com.sun.jersey.api.client.WebResource</code></li></ul>
<b>Spring</b>	<ul style="list-style-type: none"><li>• <code>org.springframework.web.client.RestTemplate</code></li><li>• <code>org.springframework.web.util.UriComponentsBuilder</code></li><li>• <code>org.springframework.web.util.UriComponents</code></li><li>• <code>org.springframework.web.util.HtmlUtils</code></li><li>• <code>org.springframework.social.support.URIBuilder</code></li><li>• <code>org.springframework.web.reactive.function.client.WebClient</code></li></ul>

<b>Apache</b>	<ul style="list-style-type: none"><li>• org.apache.cxf.jaxrs.client.WebClient</li><li>• org.apache.http.client.HttpClient</li><li>• org.apache.http.impl.client.CloseableHttpClient</li><li>• org.apache.http.impl.nio.client.CloseableHttpAsyncClient</li><li>• org.apache.http.client.utils.URIBuilder</li><li>• org.apache.wink.client.Resource</li><li>• org.apache.wink.client.RestClient</li></ul>
<b>Vert.x</b>	<ul style="list-style-type: none"><li>• io.vertx.core.http.HttpClientRequest</li><li>• io.vertx.ext.web.client.HttpRequest</li><li>• io.vertx.ext.web.client.WebClient</li></ul>
<b>Other</b>	<ul style="list-style-type: none"><li>• org.resthub.web.Client</li><li>• org.springframework.cloud.openfeign.FeignClient</li><li>• org.springframework.cloud.netflix.feign.FeignClient</li><li>• feign.Feign</li><li>• feign.RequestLine</li><li>• retrofit2.http.DELETE</li><li>• retrofit2.http.GET</li><li>• retrofit2.http.PATCH</li><li>• retrofit2.http.POST</li><li>• retrofit2.http.PUT</li></ul>

# Function Point, Quality and Sizing support

This extension provides the following support:

- **Function Points (transactions):** A green tick indicates that OMG Function Point counting and Transaction Risk Index are supported
- **Quality and Sizing:** A green tick indicates that CAST can measure size and that a minimum set of Quality Rules exist

Function Points (transactions)	Quality and Sizing
	




## AIP Core compatibility

This extension is compatible with:


AIP Core release	Supported
8.3.x	

## Supported DBMS servers

This extension is compatible with the following DBMS servers:

CAST AIP release	CSS	Oracle	Microsoft
All supported releases			

## Prerequisites

	Installation of any compatible release of AIP Core (see table above)
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## Dependencies with other extensions

The **REST Service Calls for Java** extension requires that **1.2.8-funcnrel** of the **JEE Analyzer** is also installed and used in order to ensure the most complete set of results. This dependency with the **JEE Analyzer** is **not automatically handled** when downloading the **REST Service Calls for Java** extension via CAST Extension Downloader, CAST Server Manager or AIP Console, therefore you must **MANUALLY** download and install the **JEE Analyzer** before starting an analysis.

## Download and installation instructions

Please see:

- [Download an extension](#)
- [Install an extension](#)

## Packaging, delivering and analyzing your source code

Package your JEE code as described in [JEE - Prepare and deliver the source code](#) - the **REST Service Calls for Java** extension will be run when you perform the analysis.

## What results can you expect?

### Features

This extension analyzes web service calls made from Java code through classic fluent APIs. For example with **com.sun.jersey**:

```

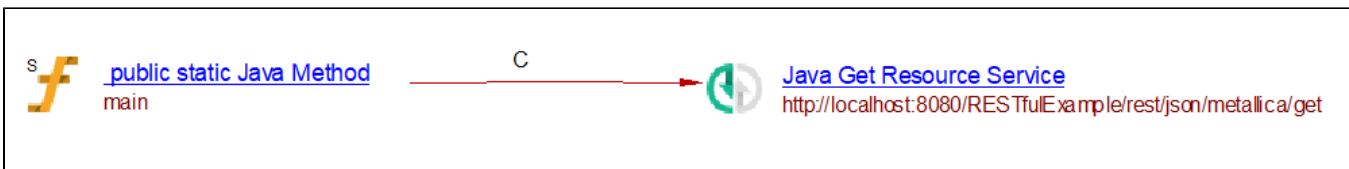
import com.sun.jersey.api.client.Client;
import com.sun.jersey.api.client.ClientResponse;
import com.sun.jersey.api.client.WebResource;

class Main
{
    public static void main(String[] args) {
        Client client = Client.create();

        WebResource webResource = client
            .resource("http://localhost:8080/RESTfulExample/rest/json/metallica/get");

        ClientResponse response = webResource.accept("application/json")
            .get(ClientResponse.class);
    }
}

```



## Client side load balancing

Usage of [org.springframework.cloud.client.loadbalancer.LoadBalancerClient](#) allows to choose a service to call so impacts the URL called:

```

import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.web.client.RestTemplate;
import org.springframework.cloud.client.loadbalancer.LoadBalancerClient;
import org.springframework.cloud.client.ServiceInstance;
import java.net.URI;

class Main
{
    @Autowired
    private LoadBalancerClient loadBalancerClient;

    void f()
    {
        RestTemplate client ;
        ServiceInstance serviceInstance = loadBalancerClient.choose("user-auth");
        String path = serviceInstance.getUri().toString() + "/oauth/token";
        client.put(path, client);
    }
}

```



## Feign

Feign is a declarative web service client which makes writing web service clients easier. Native sample: "RequestLine" annotation indicates the presence of feign web service:

```

interface GitHub {
    @RequestLine("GET /repos/{owner}/{repo}/contributors")
    List<Contributor> contributors(@Param("owner") String owner, @Param("repo") String repo);
}

public static class Contributor {
    String login;
    int contributions;
}

public class MyApp {
    public static void main(String... args) {
        GitHub github = Feign.builder()
            .decoder(new GsonDecoder())
            .target(GitHub.class, "https://api.github.com");

        // Fetch and print a list of the contributors to this library.
        List<Contributor> contributors = github.contributors("OpenFeign", "feign");
        for (Contributor contributor : contributors) {
            System.out.println(contributor.login + " (" + contributor.contributions + ")");
        }
    }
}

```



**public abstract Java Method**  
contributors

C



**Java Get Resource Service**  
/repos/{owner}/{repo}/contributors

"FeignClient" annotation associated with "RequestMapping" and "GetMapping" annotations indicates the presence of feign web service:

```

import java.util.List;

@FeignClient(
    name = "${client.name}",
    path = "${client.path}",
    configuration = FeignConfiguration.class
)
public interface ClientConfiguration {

    @RequestMapping(method = RequestMethod.POST, value = "/services/clients")
    List<SupplierTransitionDTO> getData(@RequestBody List<String> codes) throws FeignException;
}

```



**public abstract Java Method**  
getData

C



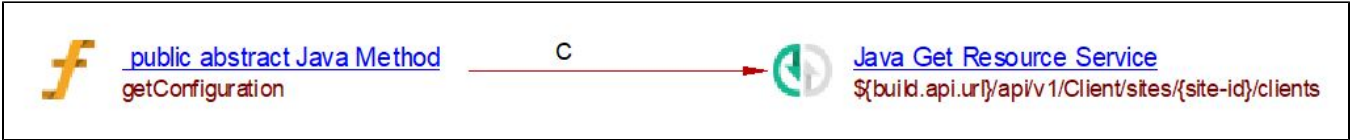
**Java Post Resource Service**  
\${client.path}/\${client.name}/services/clients

```

@FeignClient(name = "Client", url = "${build.api.url}", path = "/api/v1")
public interface ClientConfiguration {

    @GetMapping("/sites/{site-id}/clients")
    ConsentResponse getConfiguration(
        @PathVariable("site-id") String siteId,
        @RequestParam("types") List<ConfigType> types);
}

```

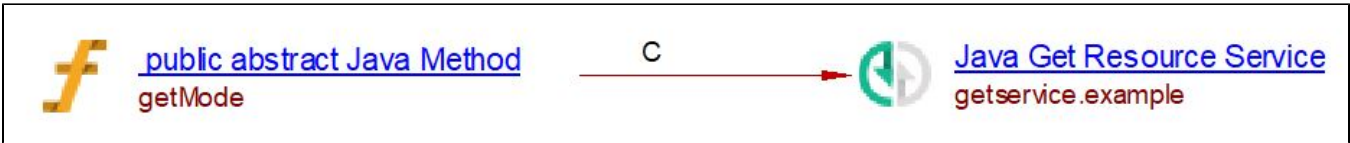


### Retrofit2.http

With Retrofit 2, endpoints are defined inside an interface using special retrofit annotations to encode details about the parameters and request method. Annotations like "GET", "POST", "PUT", "DELETE" and "PATCH", for example:

```
import retrofit2.http.GET;

public interface ExampleGetService {
    @GET("getservice.example")
    Single<ExampleApi> getMode();
}
```



### Objects

The following objects are displayed in CAST Enlighten:

Icon	Description
	Delete Resource Service
	Get Resource Service
	Post Resource Service
	Put Resource Service
	Patch Resource Service

### Rules

None.

### Limitations

- When the code uses a custom URL builder, we cannot evaluate the URL.
- When the standard java API is encapsulated in a custom method where the "http method" (put, get, post, delete) is passed as a parameter, the dynamic evaluation will generally fail.

```
class MyHttpCall
{
    void execute(String url, String method)
    {
        Client client = ClientBuilder.newClient();
        WebTarget myResource = client.target(url);

        if (method == "GET")
        {
            String response = myResource.request(MediaType.TEXT_PLAIN).get(String.class);
        }
        else if (method == "PUT")
        {
            myResource.request(MediaType.TEXT_PLAIN).put(null);
        }
    }
}
```

- @Value on constructor or method parameters are not handled
- For feign annotations, \${name} where name is a property/yaml variable name are kept as is instead of being expanded
- Manual creation of feign clients is not supported