Testing and Debugging Adapters

Overview

You can use IDEs, such as Eclipse, IntelliJ, or similar ones, to test Java and JavaScript adapters, and debug Java code that is implemented for use in Java or JavaScript adapters.

This tutorial demonstrates how to test adapters by using the MobileFirst CLI and by using Postman, and also how to debug a Java adapter by using the Eclipse IDE.

Jump to:

Testing Adapters

MobileFirst adapters are available via a REST interface. This means that if you know the URL of a resource, you can use HTTP tools such as Postman to test requests and pass `URL` parameters, `path` parameters, `body` parameters or `headers` as you see fit.

The structure of the URL used to access the adapter resource is:

- In JavaScript adapters - `http://hostname-or-ip-address:port-number/mfp/api/adapters/{adapter-name}/{procedure-name}`
- In Java adapters - `http://hostname-or-ip-address:port-number/mfp/api/adapters/{adapter-name}/{path}`

Passing parameters

- When using Java adapters, you can pass parameters in the URL, body, form, etc, depending on how you configured your adapter.
- When using JavaScript adapters, you pass parameters as `params=["param1", "param2"]`. In other words, a JavaScript procedure receives only one parameter called `params` which needs to be **an array of ordered, unnamed values**. This parameter can either be in the URL (`GET`) or in the body (`POST`) using `Content-Type: application/x-www-form-urlencoded`.

Handling security

The MobileFirst security framework requires an access token for any adapter resource even if the resource is not explicitly assigned a scope. So unless you specifically disabled security, the endpoint is always protected.

To disable security in Java adapters, attach the `OAuthSecurity` annotation to the method/class:

```
@OAuthSecurity(enabled=false)
```

To disable security in JavaScript adapters, add the `secured` attribute to the procedure:

```
<procedure name="adapter-procedure-name" secured="false"/>
```

Alternatively, the development version of the MobileFirst Server includes a test token endpoint to bypass the security challenges.

Using Postman

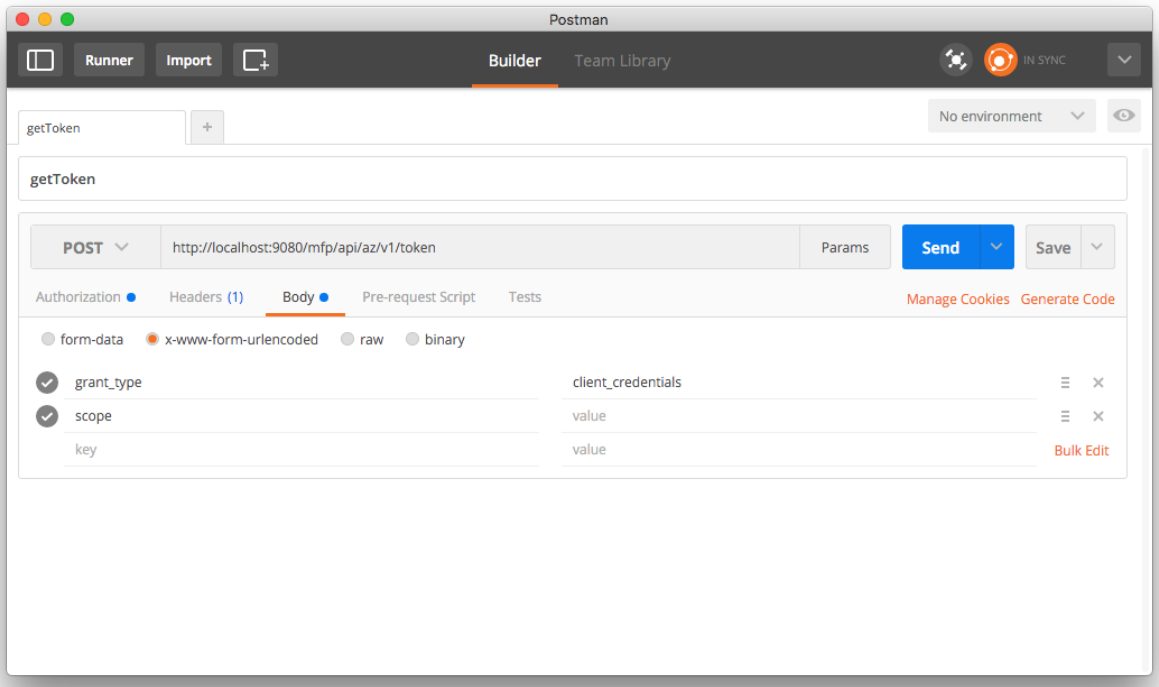
Test Token

To receive a Test Token, either click the “Run in Postman” button below to import a Collection to your Postman app that contains a ready request, or follow the next steps to create the request yourself.

▶ Run in Postman
(https://app.getpostman.com/run-collection/d614827491450d43c10e)

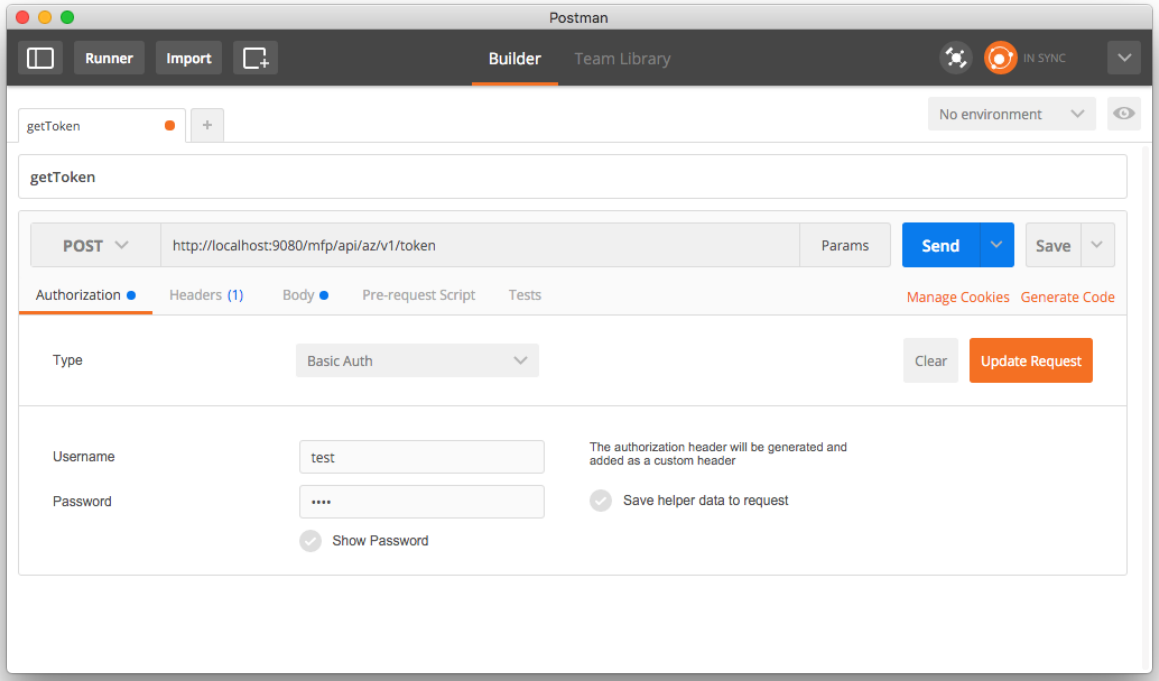
1. Use your HTTP client (Postman) to make an HTTP `POST` request to `http://<IP>:<PORT>/mfp/api/az/v1/token` with the following parameters using `Content-Type: application/x-www-form-urlencoded`:

- `grant_type` : `client_credentials`
- `scope` : Use the scope protecting the resource.
  If you don’t use a scope to protect your resource, use an empty string.



2. Add an `authorization header` using `Basic authentication` with Confidential Client ID (“test”) and Secret (“test”).

> Learn more about Confidential Client in the Confidential Client (../../authentication-and-security/confidential-clients) tutorial.

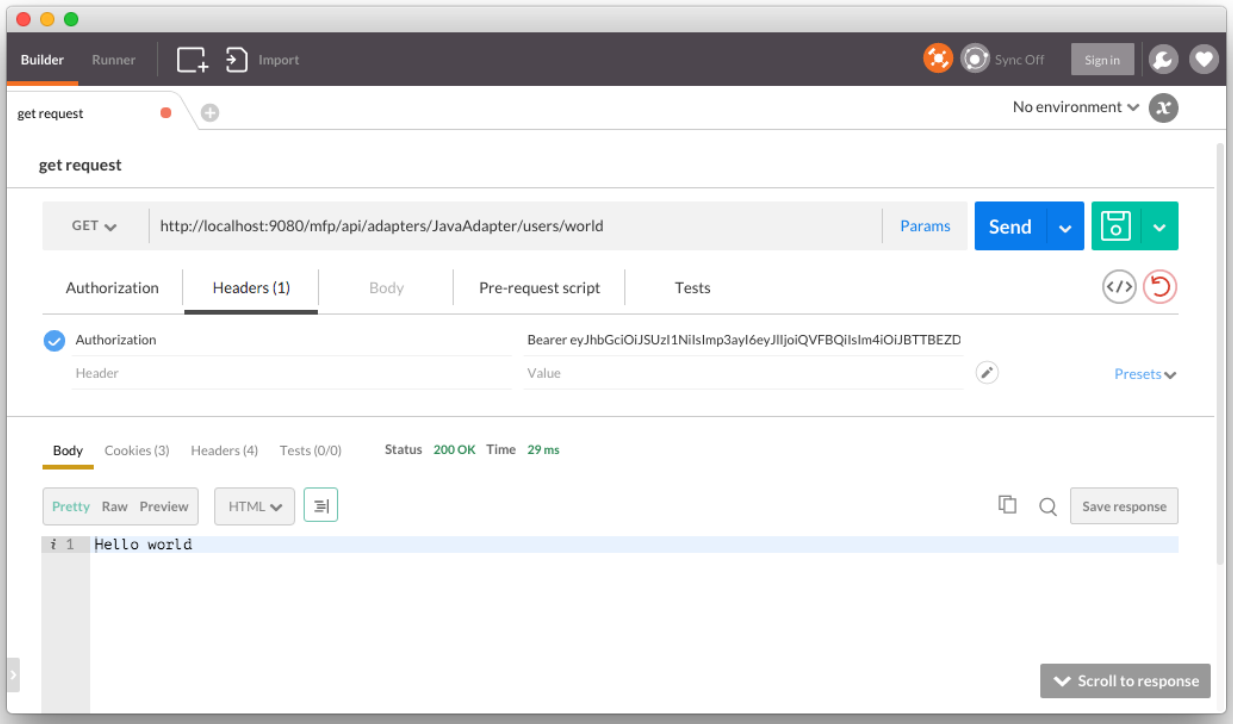


The result is a JSON object with a temporary valid access token:


```
{
  "access_token": "eyJhbGciOiJSUzI1NiIsImp3ayI6eyJlIjoiQVFBQiIsIm4iOiJBTTBEZDd
4QWR2NkgteWdMN3I4cUNMZEUtM0kya2s0NXpnWnREZF9xczhmdm5ZZmRpcVRTVjRfMnQ2T0dHOENWNUNl
NDFQTXBJd21MNDEwWDlJWm52aHhvWWlGY01TYU9lSXFvZS1ySkEwdVp1dzJySGhYWjNXVkNlS2V6UlZjQ
09Zc1FOLW1RSzBtZno1XzNvLWV2MFVZd1hrU093QkJsMUVocUl3VkR3T2llZzJKTUdsMEVYc1BaZmtOWk
ktSFU0b01paS1Uck5MelJXa01tTHZtMDloTDV6b3NVTkExNXZlQ0twaDJXcG1TbTJTNjFuRGhIN2dMRW9
5bURuVEVqUFk1QW9oMmluSS0zNlJHWVZNVVViTzQ2Q3JOVVl1SW9iT2lYbEx6QklodUlDcGZWZHhUX3g3
c3RLWDVDOUJmTVRCNEdrT0hQNWNVdjdOejFkRGhJUHU4Iiwia3R5IjoiUlNBIiwia2lkIjoidGVzdCJ9f
Q.eyJpc3MiOiJjb20uaWJtLm1mcCIsInN1YiI6InRlc3QiLCJhdWQiOiJjb20uaWJtLm1mcCIsImV4cCI
6MTQ1MjUxNjczODAwNSwic2NvcGUiOiJ4eCJ9.vhjSkv5GShCpcDSu1XCp1FlgSpMHZa-fcJd3iB4JR-x
r_3HOK54c36ed_U5s3rvXViao5E4HQUZ7PlEOl23bR0RGT2bMGJHiU7c0lyrMV5YE9FdMxqZ5MKHvRnSO
eWlt2Vc2izh0pMMTZd-oL-0w1T8e-F968vycyXeMs4UAbp5Dr2C3DcXCzG_h9jujsNNxgXL5mKJem8EpZP
olQ9Rgy2bqt45D06QTW7J9Q9GXKt1XrkZ9bGpL-HgE2ihYeHBygFll80M8O56By5KHwfSvGDJ8BMdasHF
fGDRZUtC_yz64mH1lVxz5o0vWqPwEuyfslTNCN-M8c3W9-6fQRjO4bw",
  "token_type": "Bearer",
  "expires_in": 3599,
  "scope": "**"
}
```


Sending request

Now with any future request to adapter endpoints, add an HTTP header with the name `Authorization` and the value you received previously (starting with Bearer). The security framework will skip any security challenges protecting your resource.

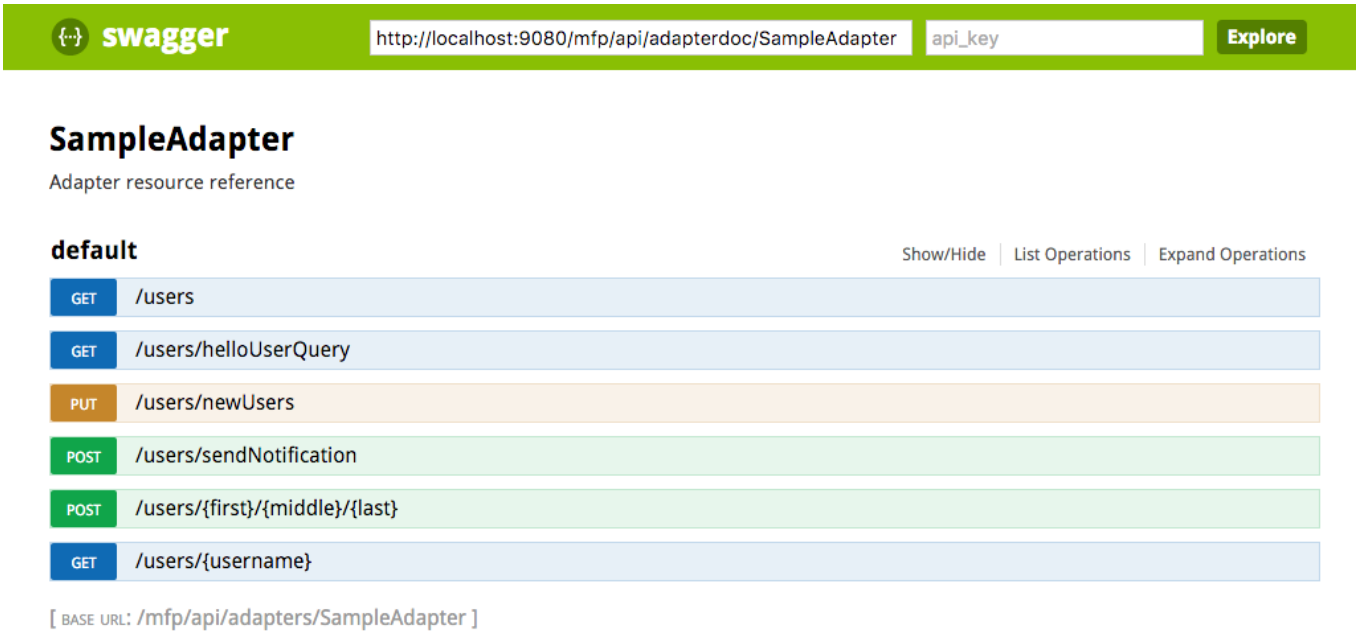


Using Swagger

The Swagger docs UI is a visual representation of an adapter's REST endpoints.
Using Swagger, a developer can test the adapter endpoints before they are consumed by a client application.

To access Swagger:

1. Open the MobileFirst Operations Console and select an adapter from the adapters list.
2. Click on the **Resources** tab.
3. Click on the **View swagger Docs** button.
4. Click on the **Show/Hide** button.



Test Token

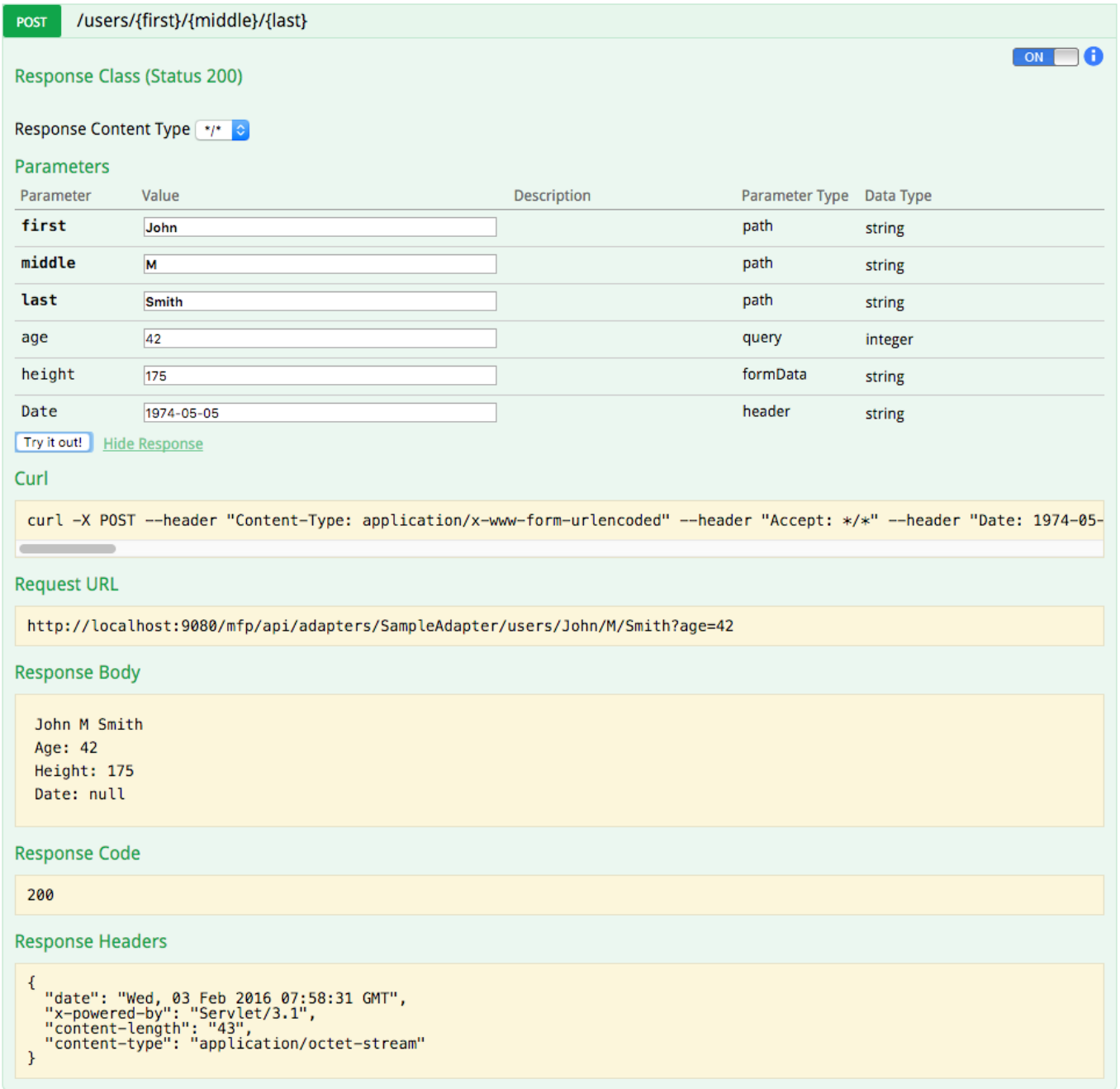
To add a Test Token to the request, so that the security framework skips any security challenges protecting your resource, click the **on/off switch** button on the right corner of an endpoint's operation.

You will be asked to select which scopes you want to grant to the Swagger UI (for testing purposes, you can select all). If you are using the Swagger UI for the first time, you might be required to log in with a Confidential Client ID and Secret. For this, you will need to create a new confidential client with `*` as its **Allowed Scope**.

> Learn more about Confidential Client in the Confidential Client (../../authentication-and-security/confidential-clients) tutorial.

Sending Request

Expand the endpoint's operation, enter the required parameters (if needed) and click on the **Try it out!** button.



Swagger Annotations

Available only in Java adapters.

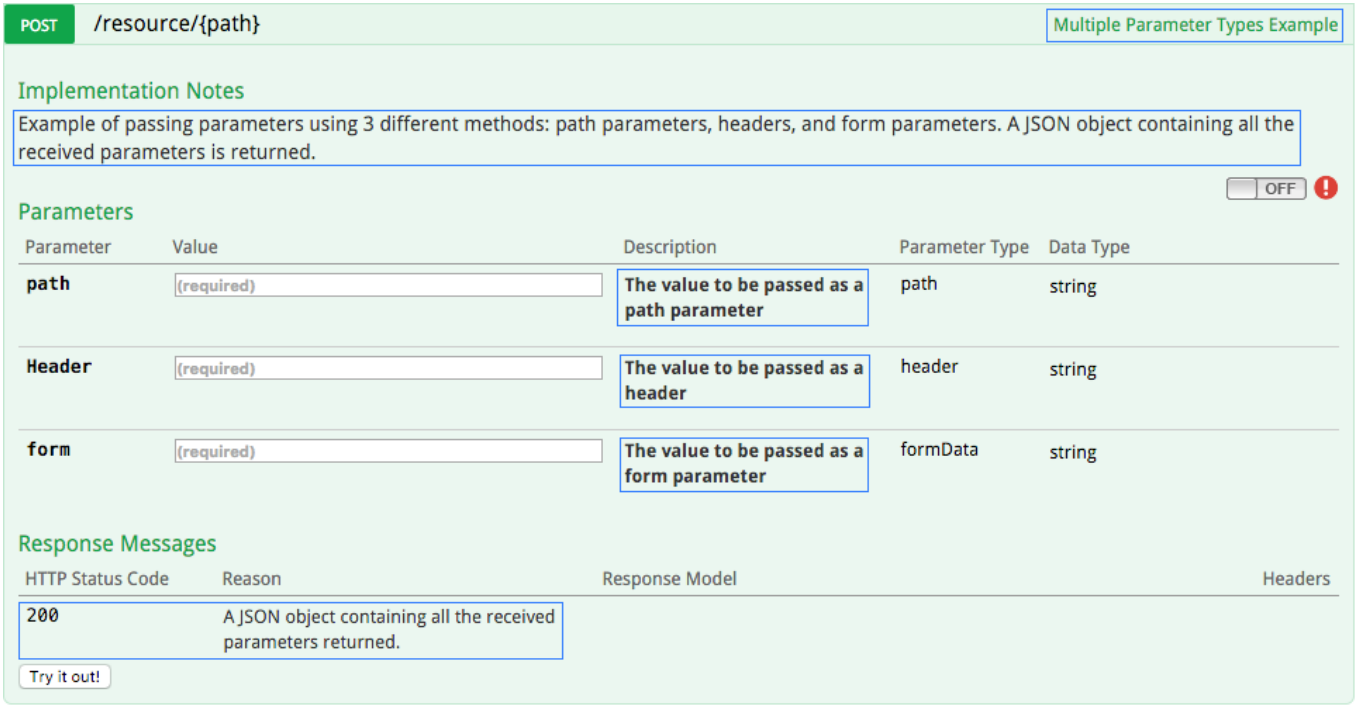
To generate Swagger documentation for Java adapters, use Swagger-supplied annotations in your Java implementation.

> To learn more about Swagger Annotations, see the Swagger documentation (https://github.com/swagger-api/swagger-core/wiki/Annotations-1.5.X).

```
@ApiOperation(value = "Multiple Parameter Types Example", notes = "Example of
passing parameters by using 3 different methods: path parameters, headers, and
form parameters. A JSON object containing all the received parameters is returned.
")
@ApiResponses(value = { @ApiResponse(code = 200, message = "A JSON object contain
ing all the received parameters returned.") })
@POST
@Produces(MediaType.APPLICATION_JSON)
@Path("/{path}")
public Map<String, String> enterInfo(
    @ApiParam(value = "The value to be passed as a path parameter", required = tr
ue) @PathParam("path") String path,
    @ApiParam(value = "The value to be passed as a header", required = true) @Hea
derParam("Header") String header,
    @ApiParam(value = "The value to be passed as a form parameter", required = tr
ue) @FormParam("form") String form) {
  Map<String, String> result = new HashMap<String, String>();

  result.put("path", path);
  result.put("header", header);
  result.put("form", form);

  return result;
}
```



Debugging Adapters

JavaScript adapters

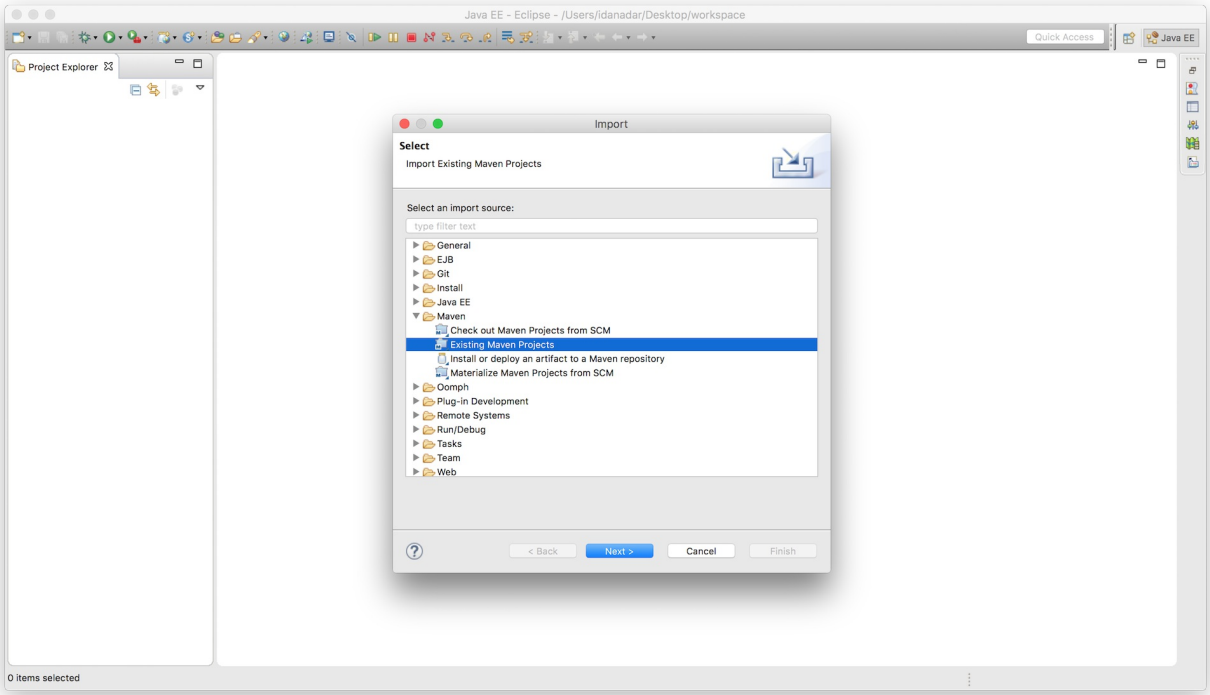
You can debug JavaScript code in JavaScrit adapters by using the `MFP.Logger` API.
Available logging levels, from least to most verbose, are: `MFP.Logger.error`, `MFP.Logger.warn`, `MFP.Logger.info` and `MFP.Logger.debug`.

The logs are then printed to the log file of the application server.
Be sure to set the server verbosity level accordingly, otherwise you will not see the logging in the log file.

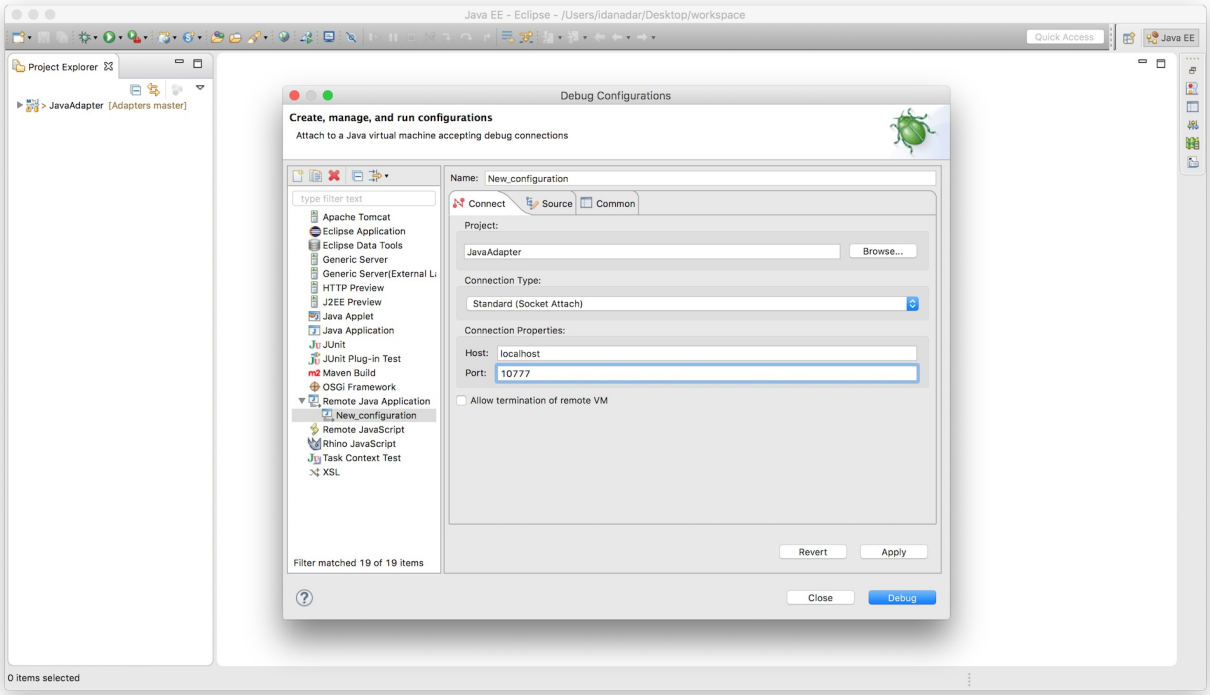
Java adapters

Before an adapter's Java code can be debugged, Eclipse needs to be configured as follows:

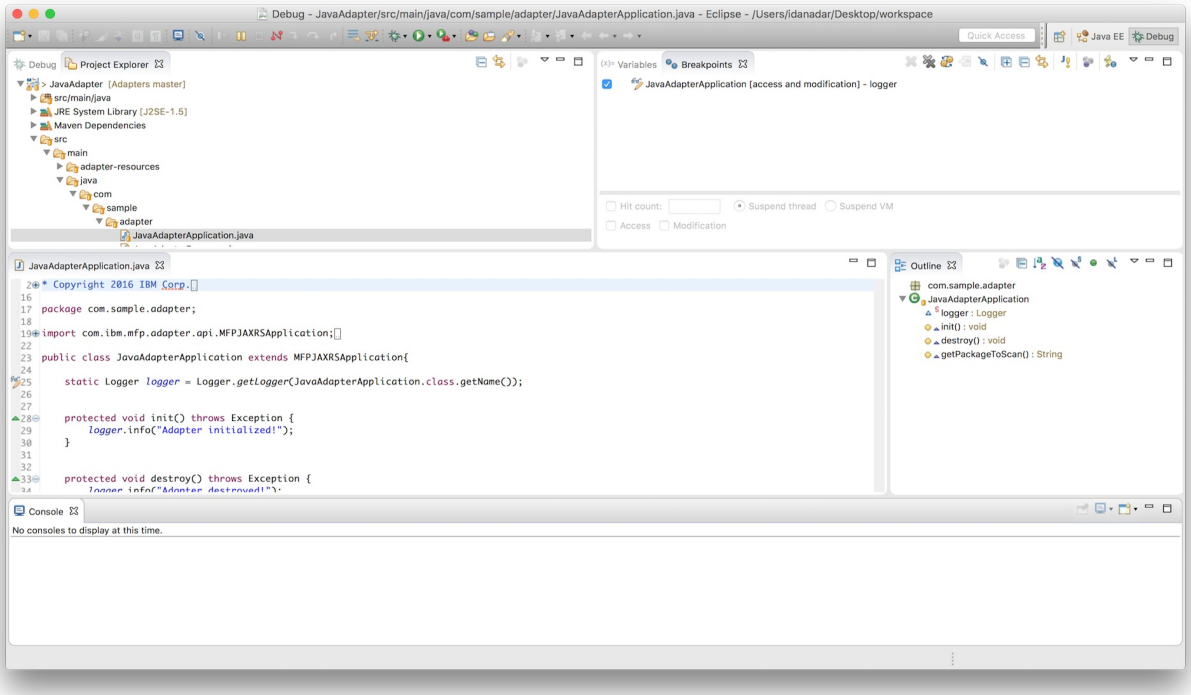
1. **Maven integration** - Starting Eclipse Kepler (v4.3), Maven support is built-in in Eclipse.
   If your Eclipse instance does not support Maven, follow the m2e instructions (http://www.eclipse.org/m2e/) to add Maven support.
2. Once Maven is available in Eclipse, import the adapter Maven project:



3. Provide debugging parameters:
   - Click **Run → Debug Configurations**.
   - Double-click on **Remote Java application**.
   - Provide a **Name** for this configuration.
   - Set the **Host** value: use "localhost" if running a local server, or provide your remote server host name.
   - Set the **Port** value to "10777".
   - Click **Browse** and select the Maven project.
   - Click **Debug**.



4. Click on **Window → Show View → Debug** to enter *debug mode*. You can now debug the Java code normally as you would do in a standard Java application. You need to issue a request to the adapter to make the code run and hit any set breakpoints. This can be accomplished by following the instructions on how to call an adapter resource in the Testing adapters section.



For instructions how to use IntelliJ to debug Java adapters see theUsing IntelliJ to Develop MobileFirst Java Adapters (file:////home/travis/build/MFPSamples/DevCenter/_site/blog/2016/03/31/using-intellij-to-develop-adapters) Blog Post.

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