Testing and Debugging Adapters

Overview

You can test Java and JavaScript adapters as well as debug Java code implemented for use in Java or JavaScript adapters via IDEs such as Eclipse, IntelliJ and alike.

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

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- Testing Adapters
  - Using Postman
  - Using Swagger
- Debugging Adapters
  - JavaScript adapters
  - Java adapters

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, parameters can be passed in the URL, body, form, etc, depending on how you configured your adapter.
- When using JavaScript adapters, parameters are passed 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

If your resource is protected by a scope, the request prompts you to provide a valid authorization header. Note that by default, MobileFirst uses a simple security scope even if you did not specify any. So unless you specifically disabled security, the endpoint is always protected.

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

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

To disable security in JavaScript adapters you should 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.

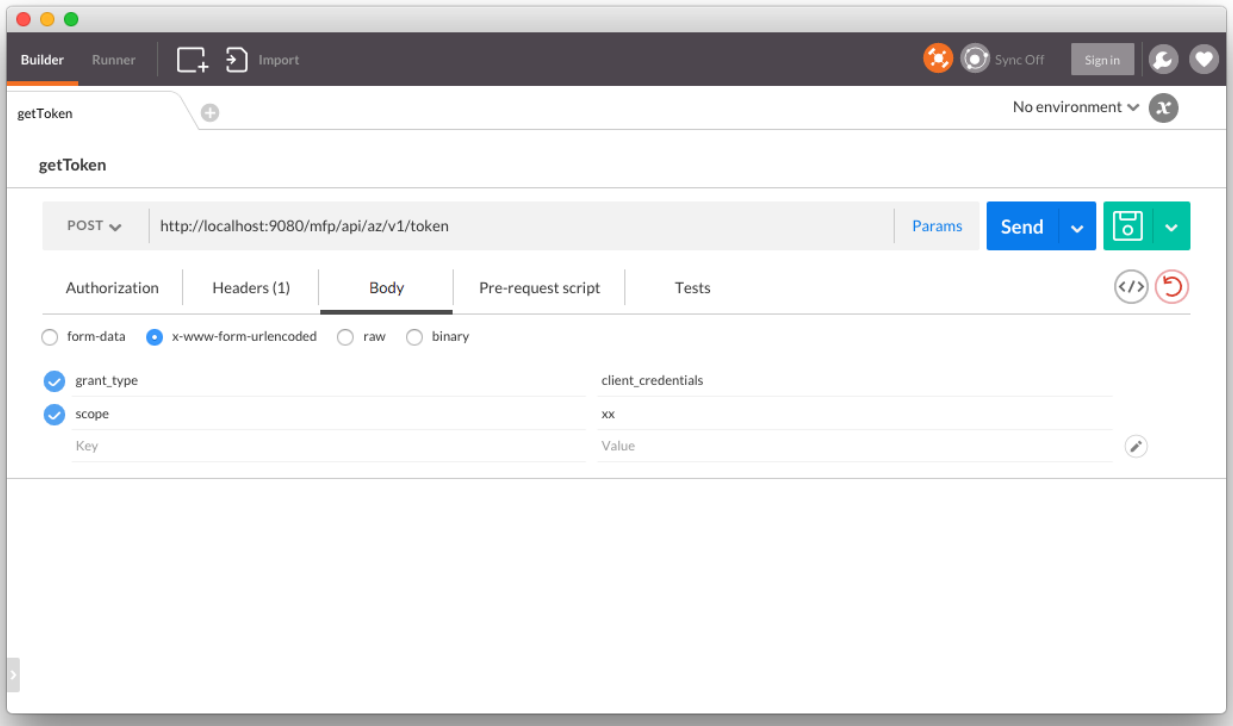
Using Postman

Test Token

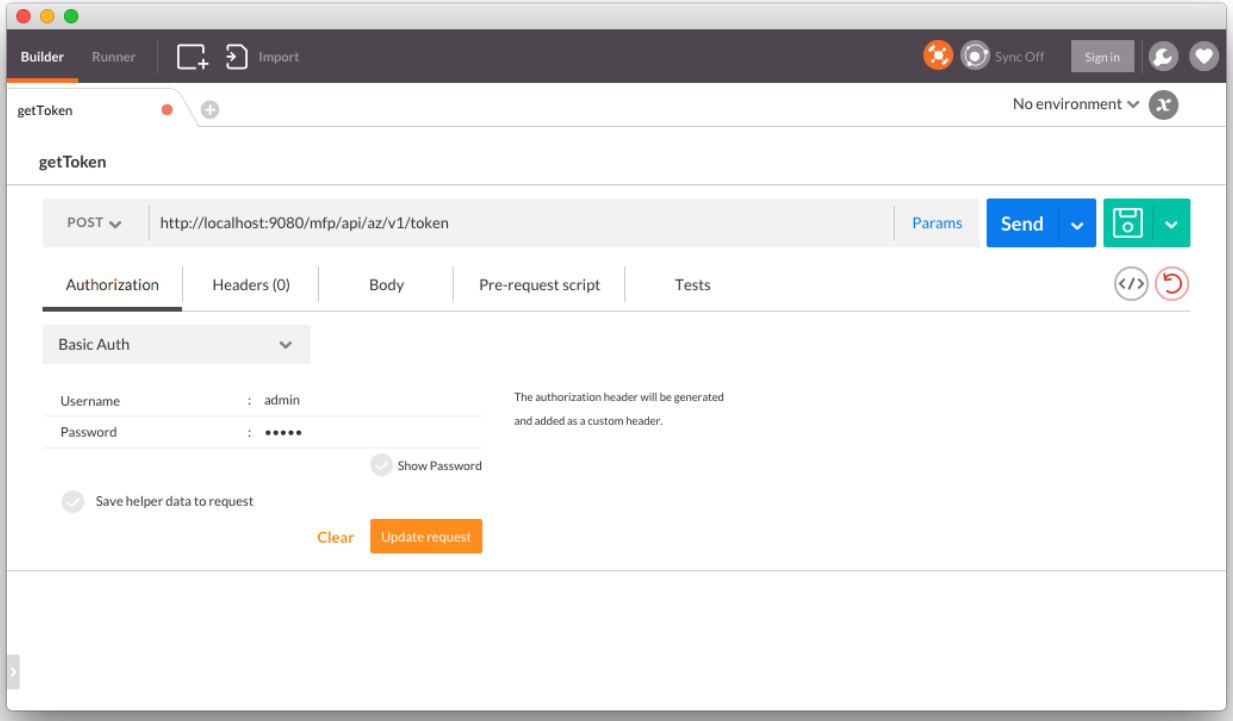
To receive a Test Token you should:

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 : **
   ```



2. Add an `authorization header` using `Basic authentication` with username "test" and password "test".

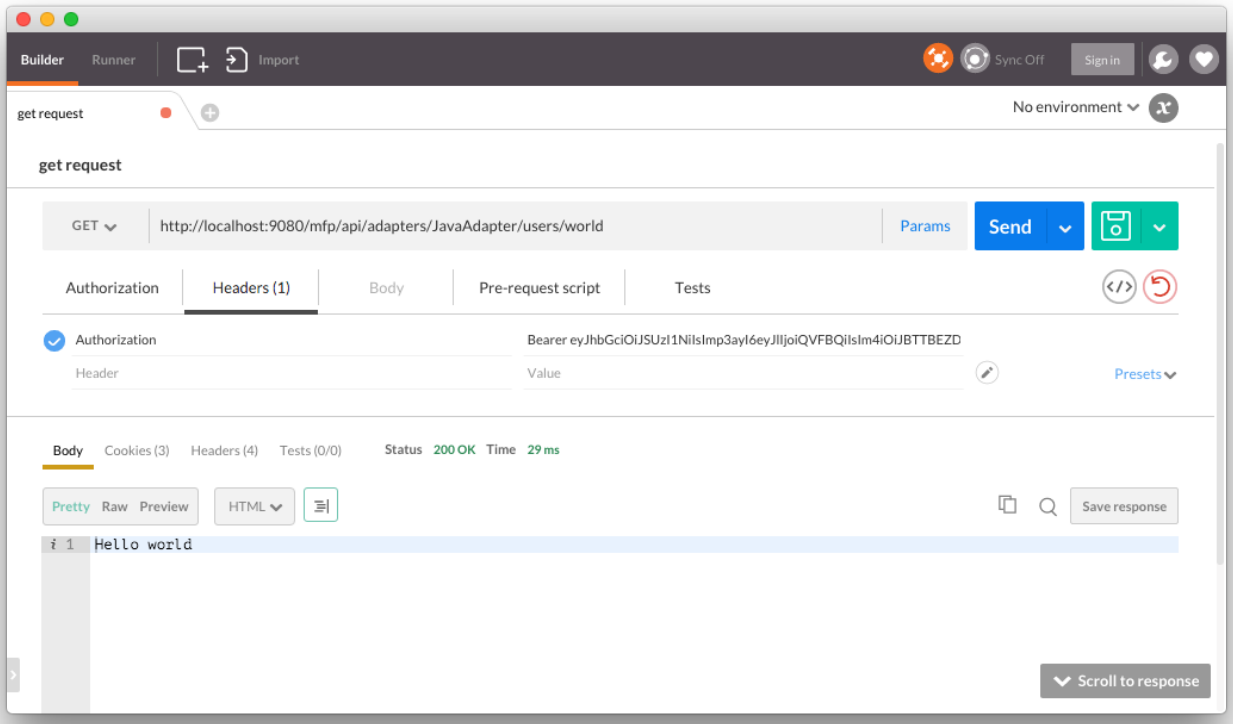


The result will be a JSON object with a temporary valid access token:


```
{
  "access_token": "eyJhbGciOiJSUzI1NiIsImp3ayI6eyJlIjoiQVFBQiIsIm4iOiJBTTBEZDd4QWR2NkgteWd
MN3I4cUNMZEUtM0kya2s0NXpnWnREZF9xczhmdm5ZZmRpcVRTVjRfMnQ2T0dHOENWNUNlNDFQTX
BJd21MNDEwWDlJWm52aHhvWWlGY01TYU9lSXFvZS1ySkEwdVp1dzJySGhYWjNXVkNlS2V6UlZjQ09
Zc1FOLW1RSzBtZno1XzNvLWV2MFVZd1hrU093QkJsMUVocUl3VkR3T2llZzJKTUdsMEVYc1BaZmtOWk
ktSFU0b01paS1Uck5MelJXa01tTHZtMDloTDV6b3NVTkExNXZlQ0twaDJXcG1TbTJTNjFuRGhlN2dMRW9
5bURuVEVqUFk1QW9oMmluSS0zNlJHWVZNVVViTzQ2Q3JOVVl1SW9iT2lYbEx6QklodUlDcGZWZHhU
X3g3c3RLWDVDOUJmTVRCNEdrT0hQNWNVdjdOejFkRGhJUHU4Iiwia3R5IjoiUlNBIiwia2lkIjoidGVzdCJ9
Q.eyJpc3MiOiJjb20uaWJtLm1mcCIsInN1YiI6InRlc3QiLCJhdWQiOiJjb20uaWJtLm1mcCIsImV4cCI6MTQ1
MjUxNjczODAwNSwic2NvcGUiOiJ4eCJ9.vhjSkv5GShCpcDSu1XCp1FlgSpMHZa-fcJd3iB4JR-xr_3HOK54
c36ed_U5s3rvXViao5E4HQUZ7PlEOl23bR0RGT2bMGJHiU7c0lyrMV5YE9FdMxqZ5MKHvRnSOeWlt2Vc2
izh0pMMTZd-oL-0w1T8e-F968vycyXeMs4UAbp5Dr2C3DcXCzG_h9jujsNNxgXL5mKJem8EpZPolQ9Rgy2
bqt45D06QTW7J9Q9GXKt1XrkZ9bGpL-HgE2ihYeHBygFll80M8O56By5KHwfSvGDJ8BMdasHFfGDRZUt
C_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

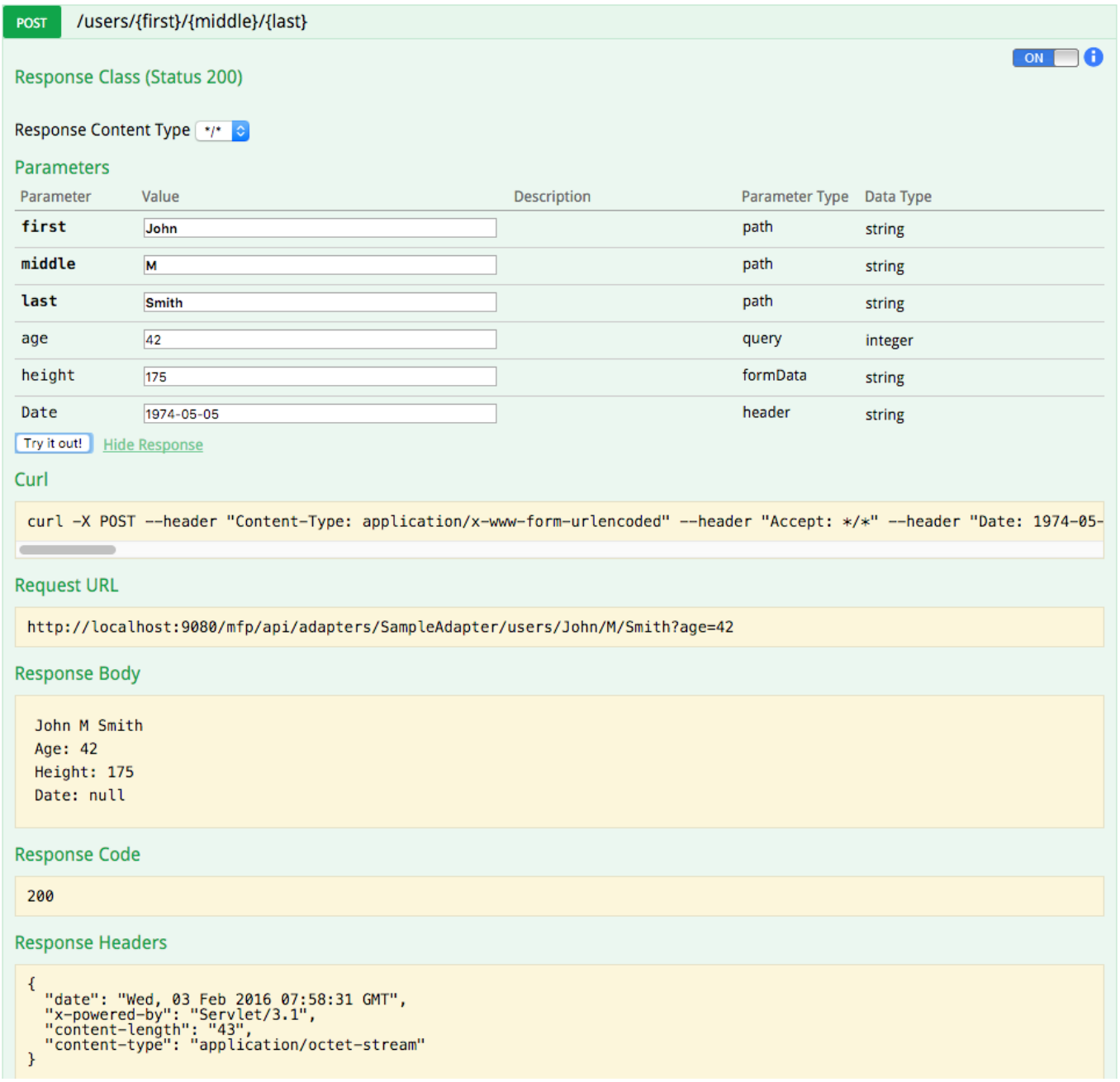
To add a Test Token to the request, so the security framework will skip any security challenges protecting your resource, click the **on/off switch** button on the right corner of an endpoint's operation.

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 may be required to log in with the Confidential Client ID ("test") and Secret ("test").

> Learn more about Confidential Client in the user documentation.

Sending request

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



Debugging Adapters

JavaScript adapters

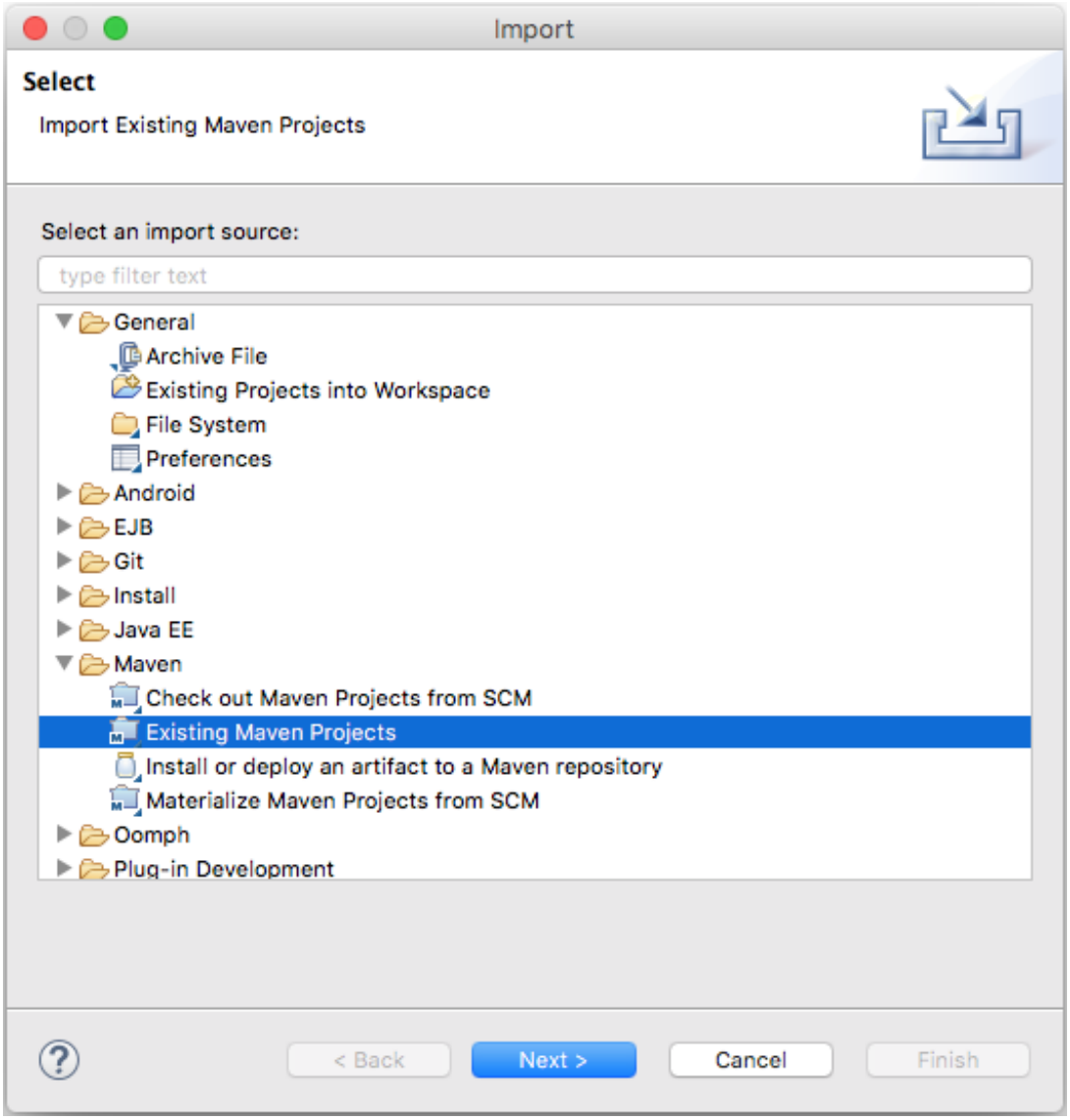
You can debug JavaScript code in JavaScrit adapters by using the `MFP.Logger` API.
Available logging levels, from least to most verbose, are: `MFP.Logger.error`, `MFP.Logger.warn`, `MFP.Logger.info` and `MFP.Logger.debug`.

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.

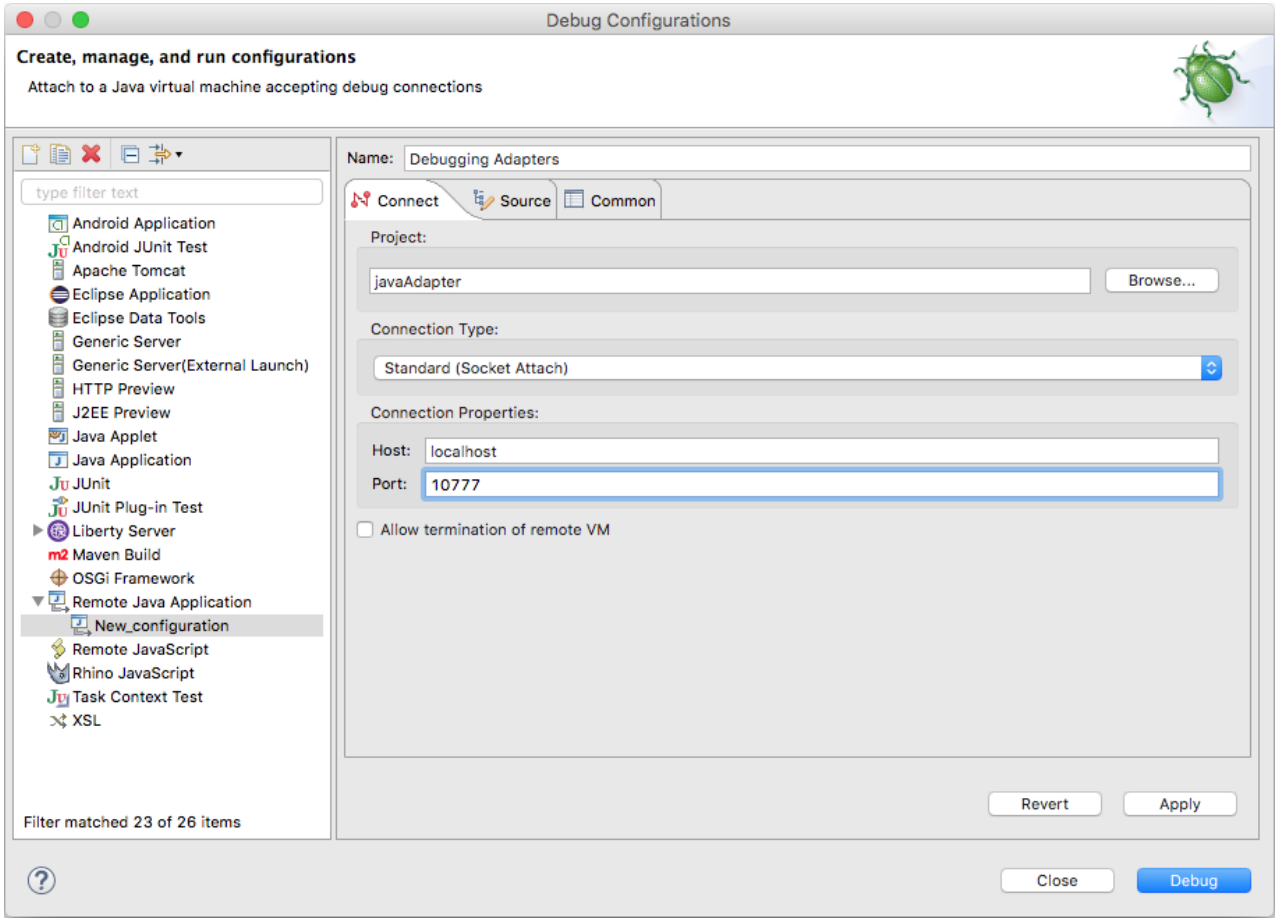
Java adapters

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

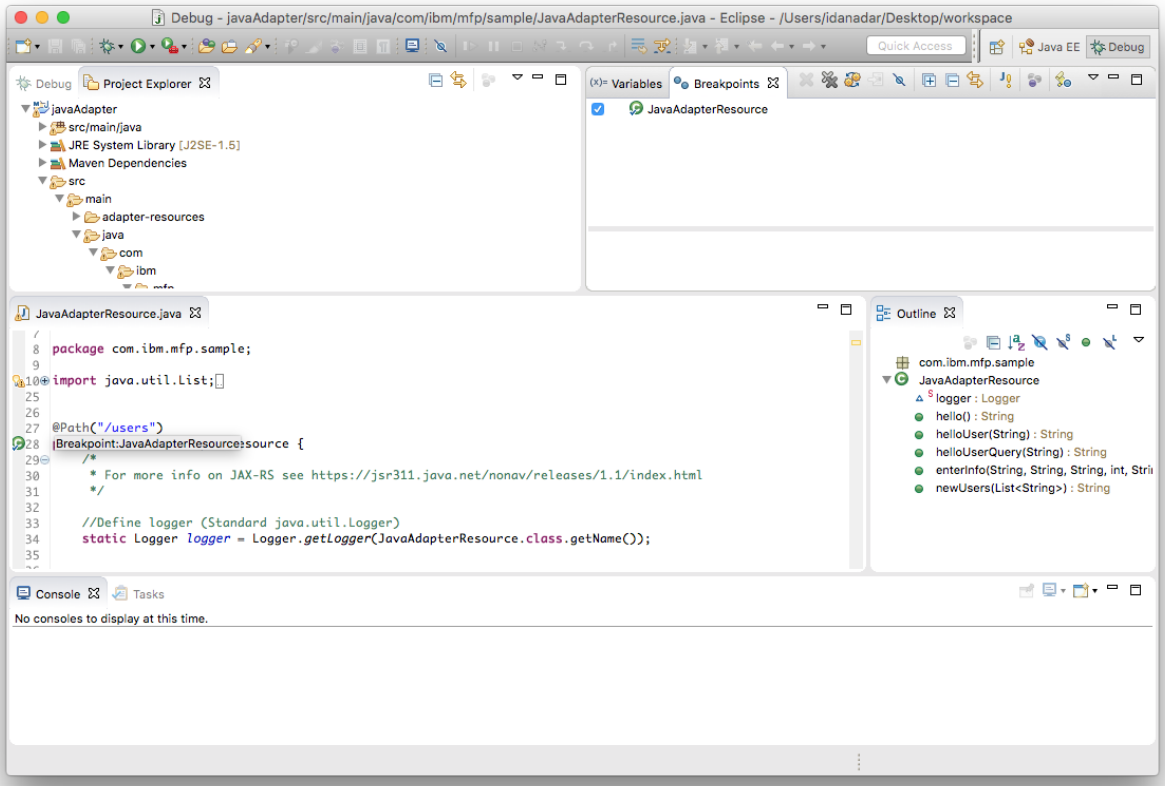
1. **Maven integration** - Starting Eclipse Kepler (v4.3), Maven support is built-in in Eclipse.
   If your Eclipse instance does not support Maven, follow the m2e instructions
   (http://www.eclipse.org/m2e/) to add Maven support.
2. Once Maven is available in Eclipse, import the adapter Maven project:



3. Provide debugging parameters:
    - Click **Run → Debug Configurations**.
    - Double-click on **Remote Java application**.
    - Provide a **Name** for this configuration.
    - Set the **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 (../creating-adapters/#testing-adapters).



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/2016/03/21/using-intellij-to-develop-adapters) Blog Post.