

# Creating Java and JavaScript Adapters

## Overview

Adapters are Maven projects that contains server-side code implemented in either Java or JavaScript. An adapter project can be created by using Maven, MobileFirst CLI or MobileFirst Operations Console. This tutorial demonstrates how to create either a Java or JavaScript adapter using the above methods.

The adapter project is based on the Maven Archetype "adapter-maven-archetype" which is based on the Maven archetype toolkit (<https://maven.apache.org/guides/introduction/introduction-to-archetypes.html>).

**Prerequisite:** Make sure that you read the Adapters Overview (./adapters-overview) tutorial first.

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## Creating Adapters Using Maven Archetype "adapter-maven-archetype"

The "adapter-maven-archetype" is based on the Maven archetype toolkit (<https://maven.apache.org/guides/introduction/introduction-to-archetypes.html>) in order to create the adapter as a Maven project.

## Install Maven

In order to create an adapter, you first need to download and install Maven. Go to the [Apache Maven website](https://maven.apache.org/) (<https://maven.apache.org/>) and follow the instructions how to download and install Maven.

## Create an Adapter

To create a Maven adapter project, use the `archetype:generate` command. You can choose to run the command interactively or directly.

### Interactive Mode

1. Run:

```
mvn archetype:generate -DarchetypeGroupId=com.ibm.mfp -DarchetypeArtifactId=<adapter type artifact ID> -DarchetypeVersion=8.0.0
```

- The Archetype Group Id and Archetype Version are required parameters to identify the archetype.

- The Archetype Artifact Id is a required parameter to identify the adapter type:
  - Use adapter-maven-archetype-java to create a Java adapter
  - Use adapter-maven-archetype-http to create a JavaScript HTTP adapter
  - Use adapter-maven-archetype-sql to create a JavaScript SQL adapter
- 2. Enter a Group Id of the Maven project to be build. For example:

```
Define value for property 'groupId': : com.mycompany
```

- 3. Enter an Artifact Id of the Maven project **which will later be used also as the adapter name** . For example:

```
Define value for property 'artifactId': : SampleAdapter
```

- 4. Enter a Maven project version (the default is 1.0-SNAPSHOT). For example:

```
Define value for property 'version': 1.0-SNAPSHOT: : 1.0
```

- 5. Enter a Java adapter package name (the default is the groupId). For example:

```
Define value for property 'package': com.mycompany: : com.mypackage
```

- 6. Enter y to confirm:

```
[INFO] Using property: archetypeVersion = 8.0.0
Confirm properties configuration:
groupId: com.mycompany
artifactId: SampleAdapter
version: 1.0
package: com.mypackage
archetypeVersion: 8.0.0
Y: : y
```

## Direct Mode

Replace the placeholders with the actual values and run:

```
mvn archetype:generate -DarchetypeGroupId=com.ibm.mfp -DarchetypeArtifactId=<ad
apter type artifact ID> -DarchetypeVersion=8.0.0 -DgroupId=<maven_project_group
id> -DartifactId=<maven_project_artifactid> -Dversion=<maven_project_version> -
Dpackage=<java_adapter_package_name>
```

For more information about the archetype:generate command see the Maven documentation.

After creating the adapter the result will be a Maven project containing a src folder and a pom.xml file:



## Build and Deploy Adapters

### Build

The adapter will be built every time you run the `mvn install` command to build your Maven project. The end result is the `.adapter` file in the project `target` folder:



### Deploy

1. The `pom.xml` file contains the following properties parameters:

```
<properties>
  <!-- parameters for deploy mfpf adapter -->
  <mfpfUrl>http://localhost:9080/mfpadmin</mfpfUrl>
  <mfpfUser>demo</mfpfUser>
  <mfpfPassword>demo</mfpfPassword>
</properties>
```

- Replace the IP and PORT with your MobileFirst Server IP and port.
  - Replace the mfpfUser and mfpfPassword with your MobileFirst admin user name and password.
2. Open the project's root folder in terminal and run the mvn:adapter command:

```
mvn adapter:deploy
```

**NOTE:** The deploy command is available only during development (for security reasons).

## Dependencies

In order to use an external library in your adapter, follow these suggested instructions:

1. Add a lib folder under the root Maven project folder and put the external library in it.
2. Add the library path under the dependencies element in the Maven project pom.xml file.

For example:

```
<dependency>
  <groupId>sample</groupId>
  <artifactId>com.sample</artifactId>
  <version>1.0</version>
  <scope>system</scope>
  <systemPath>${project.basedir}/lib/</systemPath>
</dependency>
```

For more information about dependencies see the Maven documentation.

## Grouping Adapters in a Single Maven Project

If you have several adapters in your project you may want to arrange them under a single Maven project. Grouping adapters provides many benefits such as build all and deploy all abilities, sharing dependencies etc.

To group adapters you need to:

1. Create a root folder and call it, for example, "GroupAdapters".
2. Put the Maven adapter projects in it.
3. Create a pom.xml file:

```

<project xmlns="http://maven.apache.org/POM/4.0.0" xmlns:xsi="http://www.w
3.org/2001/XMLSchema-instance"
    xsi:schemaLocation="http://maven.apache.org/POM/4.0.0 http://maven.apa
che.org/xsd/maven-4.0.0.xsd">

    <modelVersion>4.0.0</modelVersion>
    <groupId>com.sample</groupId>
    <artifactId>GroupAdapters</artifactId>
    <version>1.0-SNAPSHOT</version>
    <packaging>pom</packaging>

    <modules>
        <module>Adapter1</module>
        <module>Adapter2</module>
    </modules>

    <properties>
        <!-- parameters for deploy mfpf adapter -->
        <mfpfUrl>http://localhost:9080/mfpadmin</mfpfUrl>
        <mfpfUser>demo</mfpfUser>
        <mfpfPassword>demo</mfpfPassword>
    </properties>

    <build>
        <plugins>
            <plugin>
                <groupId>com.ibm.mfp</groupId>
                <artifactId>adapter-maven-plugin</artifactId>
                <version>8.0.0</version>
                <extensions>true</extensions>
            </plugin>
        </plugins>
    </build>

</project>

```

1. Define a **groupId** element of your choice
  2. Add an **artifactId** element - the root folder's name
  3. Add a **module** element for each adapter
  4. Add the **build** element
  5. Replace the **IP** and **PORT** with your MobileFirst Server IP and port.
  6. Replace the **mfpfUser** and **mfpfPassword** with your MobileFirst admin user name and password.
4. To build or deploy all adapters, run the commands from the root "GroupAdapters" project.

## Creating Adapters Using MobileFirst CLI

## Creating Adapters Using MobileFirst Operations Console

- **Using the MobileFirst Operations Console:**

1. Open your browser of choice and load the MobileFirst Operations Console using the address `http://<IP>:<PORT>/mfpconsole/`.
2. Drag and drop the `.adapter` file from the target folder into the Console.