Integrating with Cloudant Using an Adapter

Overview

Cloudant is a NoSQL Database based on CouchDB, which is available as a stand-alone product as well as a Database-as-a-Service (DBaaS) on IBM Bluemix and `cloudant.com`.

As described in the Cloudant documentation:

> Documents are JSON objects. Documents are containers for your data, and are the basis of the Cloudant database.
> All documents must have two fields: a unique `_id` field, and a `_rev` field. The `_id` field is either created by you, or generated automatically as a UUID by Cloudant. The `_rev` field is a revision number, and is essential to the Cloudant replication protocol. In addition to these two mandatory fields, documents can contain any other content expressed as JSON.

The Cloudant API is documented on the IBM Cloudant Documentation (https://docs.cloudant.com/index.html) site.

You can use IBM MobileFirst Platform adapters to communicate with a remote Cloudant database. This tutorial shows you some examples.

This tutorial assumes that you are comfortable with adapters. See JavaScript HTTP Adapter (../javascript-adapters/js-http-adapter) or Java Adapters (../java-adapters).

Jump to:

JavaScript HTTP adapter

The Cloudant API can be accessed as a simple HTTP web service.

Using an HTTP adapter, you can connect to the Cloudant HTTP service with the `invokeHttp` method.

Authentication

Cloudant supports several forms of authentication. See the Cloudant documentation about authentication at https://docs.cloudant.com/authentication.html (https://docs.cloudant.com/authentication.html). With a JavaScript HTTP adapter, you can use **Basic Authentication**.

In your adapter XML file, specify the `domain` for your Cloudant instance, the `port` and add an `authentication` element of type `basic`. The framework will use those credentials to generate an `Authorization: Basic` HTTP header.

Note: With Cloudant, you can generate unique API keys to use instead of your real username and password.

```
<connectivity>
  <connectionPolicy xsi:type="http:HTTPConnectionPolicyType">
    <protocol>https</protocol>
    <domain>CLOUDANT_ACCOUNT.cloudant.com</domain>
    <port>443</port>
    <connectionTimeoutInMilliseconds>30000</connectionTimeoutInMilliseconds>
    <socketTimeoutInMilliseconds>30000</socketTimeoutInMilliseconds>
    <authentication>
      <basic/>
        <serverIdentity>
          <username>CLOUDANT_KEY</username>
          <password>CLOUDANT_PASSWORD</password>
        </serverIdentity>
    </authentication>
    <maxConcurrentConnectionsPerNode>50</maxConcurrentConnectionsPerNode>
    <!-- Following properties used by adapter's key manager for choosing specific certificate from key store
    <sslCertificateAlias></sslCertificateAlias>
    <sslCertificatePassword></sslCertificatePassword>
    -->
  </connectionPolicy>
</connectivity>
```

Procedures

Your adapter procedures use the `invokeHttp` method to send an HTTP request to one of the URLs that are defined by Cloudant.
For example, you can create a new document by sending a `POST` request to `/{*your-database*}/` with the body being a JSON representation of the document that you wish to store.

```
function addEntry(entry){

    var input = {
          method : 'post',
          returnedContentType : 'json',
          path : DATABASE_NAME + '/',
          body: {
              contentType : 'application/json',
              content : entry
          }
        };

    var response = MFP.Server.invokeHttp(input);
    if(!response.id){
        response.isSuccessful = false;
    }
    return response;

}
```

The same idea can be applied to all Cloudant functions. See the Cloudant documentation about documents at https://docs.cloudant.com/document.html (https://docs.cloudant.com/document.html)

Java adapters

Cloudant provides a Java client library (https://github.com/cloudant/java-cloudant) for you to easily use all the features of Cloudant.

During the initialization of your Java adapter, set up a `CloudantClient` instance to work with.
Note: With Cloudant, you can generate unique API keys to use instead of your real username and password.

```
CloudantClient cloudantClient = new CloudantClient(cloudantAccount,cloudantKey,cloudantPassword);
db = cloudantClient.database(cloudantDBName, false);
```

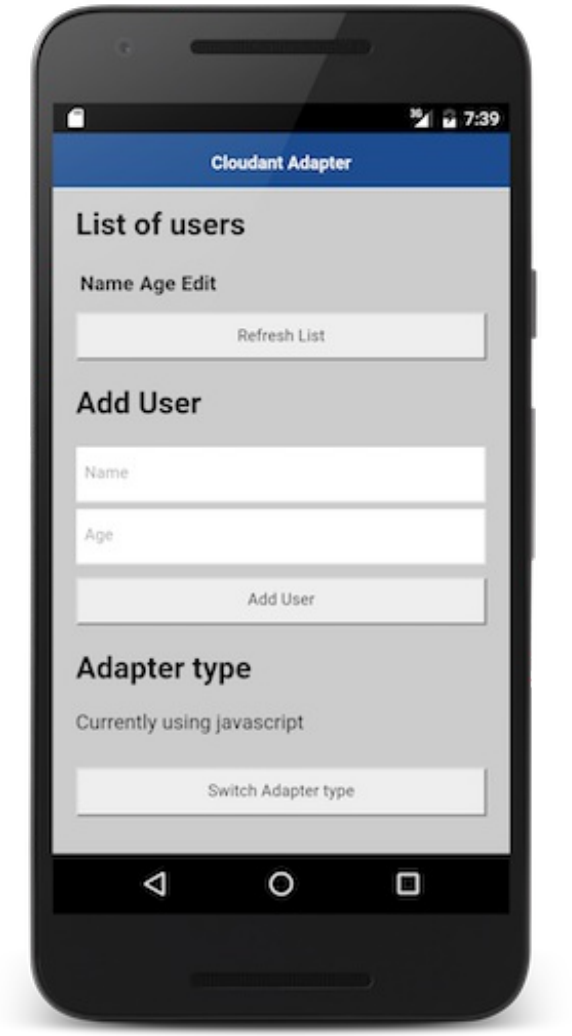
Using Plain Old Java Objects (https://en.wikipedia.org/wiki/Plain_Old_Java_Object) and standard Java API for RESTful Web Services (JAX-RS 2.0), you can create a new document on Cloudant by sending a JSON representation of the document in the HTTP request.

```
@POST
@Consumes(MediaType.APPLICATION_JSON)
public Response addEntry(User user){
   if(user!=null && user.isValid()){
      db.save(user);
      return Response.ok().build();
   }
   else{
      return Response.status(418).build();
   }
}
```

Sample application

Click to download (https://github.com/MobileFirst-Platform-Developer-Center/CloudantAdapter/tree/release80) the Cordova project.

The sample contains two adapters, one in JavaScript and one in Java.
It also contains a Cordova application that works with both the Java and JavaScript adapters.



Sample usage

Adapter setup

1. Create a database in Cloudant and generate an API key. Make sure that you provide read and write rights for this key.
2. To connect to Cloudant, update the Cloudant configuration:

- CloudantJS:

    1. Open the adapter XML file and replace the `CLOUDANT_ACCOUNT`, `KEY` and `PASSWORD` placeholders with the actual values.
    2. Open the **CloudantJS-impl.js** file and replace the `DATABASE_NAME` placeholder with your database name.
    3. Use either Maven or MobileFirst Developer CLI to build and deploy the JavaSQL adapter (../creating-adapters/).
- CloudantJava:

    1. Use either Maven or MobileFirst Developer CLI to build and deploy the JavaSQL adapter (../creating-adapters/).
    2. In the **MobileFirst Operations Console → [your adapter] → Configurations tab**, fill in the **Cloudant DB name**, **Cloudant account**, **Cloudant key** and **Cloudant account** fields with the actual values.

> To learn more about the adapter's configurations properties see theJava Adapters (../java-adapters) tutorial.

Application setup

1. From a **Command-line**, navigate to the **CloudantAdapterApp** project's root folder.
2. Add a platform using the `cordova platform add` command.
3. Register the application by running the command: `mfpdev app register`.
4. Run the application by running the `cordova run` command.