Advanced adapter usage and mashup

fork and edit tutorial (https://github.ibm.com/MFPSamples/DevCenter/tree/master/tutorials/en/foundation/7.0/server-side-development/advanced-adapter-usage-mashup.html) | report issue (https://github.ibm.com/MFPSamples/DevCenter/issues/new)

Now that basic usage of different types of adapters has been covered, it is important to remember that adapters can be combined to make a procedure that uses different adapters to generate one processed result. You can combine several sources (different HTTP servers, SQL, etc).

In theory, from the client side, you could make several requests successively, one depending on the other. However, writing this logic on the server side could be faster and cleaner.

This tutorial covers the following topics:

- invokeProcedure
- Data mashup example
- Sample application

invokeProcedure

At the heart of this mashup scenario is the `WL.Server.invokeProcedure(invocationData)` API. Almost identical to its client-side counterpart, it enables you to invoke a procedure on any of your adapters.

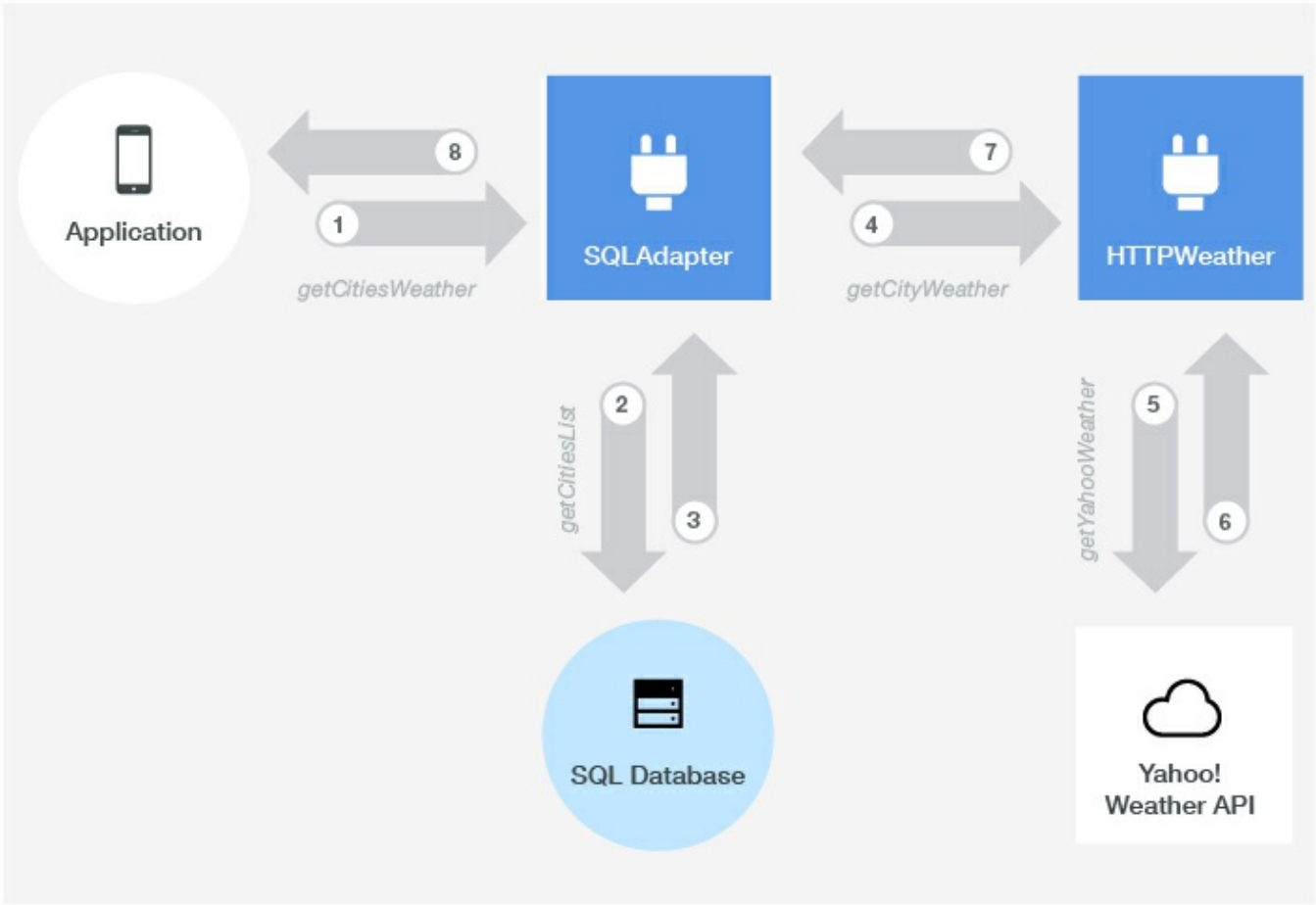
The `invocationData` parameter has the same format as the client-side API.

```
 <br />
WL.Server.invokeProcedure({ adapter : "AcmeBank", procedure : " getTransactions", parameters : [acco
untId, fromDate, toDate], });<br />
```

However, while the client-side `invokeProcedure` uses a success handler, the server-side one returns the result object itself.

Data mashup example

The following example shows how to mash up data from two data sources and to return the data stream to the application as a single `invocationResult` object.



Data mashup can be implemented in the same way for any number of data sources and across different adapter types.
As an example, mash up data from the following sources:

- SQL:
    - Extract a list of cities from a “weather” database table.
    - The result contains the list of several cities around the world, their Yahoo! Weather identifier and some description.
- HTTP:
    1. Connect to the Yahoo! Weather Service.
    2. Extract an updated weather forecast for each of the cities that are retrieved via SQL.

Afterward, the mashed-up data is returned to the application for display.

HTTP Adapter

1. Create an HTTP adapter and name it **HTTPWeather**. This adapter connects to Yahoo! Weather RSS feed at `http://weather.yahooapis.com/forecastrss`.
   The adapter has a single procedure called `getYahooWeather`.
   The HTTP request has the following parameters:
    - `w` – Where in the world ID, a city ID used by Yahoo!
    - `u` – units. Can be "c" for Celsius or "f" for Fahrenheit.
2. Create the `getYahooWeather` function in the `HTTPWeather-impl.js` file and use it to retrieve and return the weather data by using the Yahoo! Weather API:

```
function getYahooWeather(woeid) {
   var input = {
      method : 'get',
      returnedContentType : 'xml',
      path : 'forecastrss',
      parameters : {
         'w' : woeid,
         'u' : 'c' //celsius
      }
   };

   return WL.Server.invokeHttp(input)
;
}
```

SQL Adapter

1. Create an SQL adapter and name it **SQLAdapter**. This adapter contains:
   - `getCitiesWeather` – A public procedure, which is declared in the adapter XML file. It is called from the application and returns the mashed-up data.
   - `getCitiesList` – An internal (private) function, which is not declared in the adapter XML file. It is called from the adapter through server API to get the cities list from the SQL server.
   - `getCityWeather` – An internal (private) function, which is not declared in the adapter XML file. It calls the `getYahooWeather` procedure from a different adapter (HTTP) with the Yahoo! Weather ID as a parameter.

   An example of city list in SQL is provided with the attached sample, under `server/mobilefirstTraining.sql`.
   Remember that SQL adapters require a JDBC connector driver, which must be downloaded separately by the developer and added to the `server/lib` folder of the project.
2. Create a `getCitiesList` function in the `SQLAdapter-impl.js` file and use it to retrieve and return the city list from the SQL database.

   ```
   var getCitiesListStatement = WL.Server.createSQLStatement("select city, identifier, summary fro
   m weather;");
   function getCitiesList() {
      return WL.Server.invokeSQLStatement({
         preparedStatement : getCitiesListStatement,
         parameters : []
      });
   }
   ```

3. Create a `getCityWeather` function in the `SQLAdapter-impl.js` file and use it to retrieve and return the weather data from the HTTPWeather adapter:

```
function getCityWeather(woeid){
   return WL.Server.invokeProcedure(
{
      adapter : 'HTTPWeather',
      procedure : 'getYahooWeather',
      parameters : [woeid]
   });
}
```

4. In the SQL adapter, extract a city identifier from the city list that was retrieved earlier and use it to call the `getYahooWeather` procedure of the HTTPWeather adapter.
5. Repeat for each city, attaching the received data to the city object.

```
function getCitiesWeather(){
   var cityList = getCitiesList();
   for (var i = 0; i < cityList.resultSet.length; i++) {
      var yahooWeatherData = getCityWeather(cityList.resultSet[i].identifier);
      if (yahooWeatherData.isSuccessful)
         cityList.resultSet[i].weather = yahooWeatherData.rss.channel.item.descriptio
n;
   }

   return cityList;
}
```

6. Return the mashed-up data to the application, which you can process in client-side code.

Sample application

Click to download (http://public.dhe.ibm.com/software/products/en/MobileFirstPlatform/docs/v700/AdapterMashUpProject.zip) the Studio project.

CityWeather

Select city: New York

Current Conditions:
Fair, 7 C

Forecast:
Wed - AM Showers. High: 17 Low: 7
Thu - Cloudy. High: 13 Low: 6
Fri - Showers. High: 7 Low: 7
Sat - AM Clouds/PM Sun. High: 16 Low: 4
Sun - Sunny. High: 13 Low: 4

Full Forecast at Yahoo! Weather

(provided by The Weather Channel)

New York City, which is geographically the largest city in the state and most populous in the United States, is known for its history as a gateway for immigration to the United States and its status a...