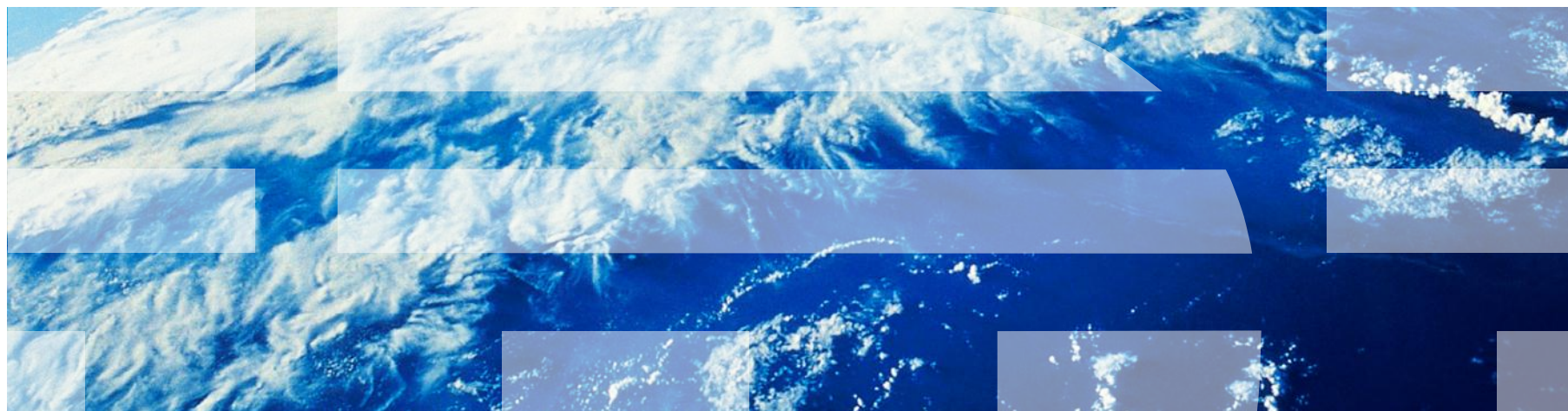


IBM Worklight Foundation V6.2.0 Getting Started

Advanced adapter usage and mashup



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Agenda

- **Server-side scripting**
 - Why?
- Worklight server-side API
 - Invoking procedures
 - Getting server configuration
 - Logging
- Data mashup example
 - Augmenting DB data with Yahoo! Weather RSS data
- Exercise

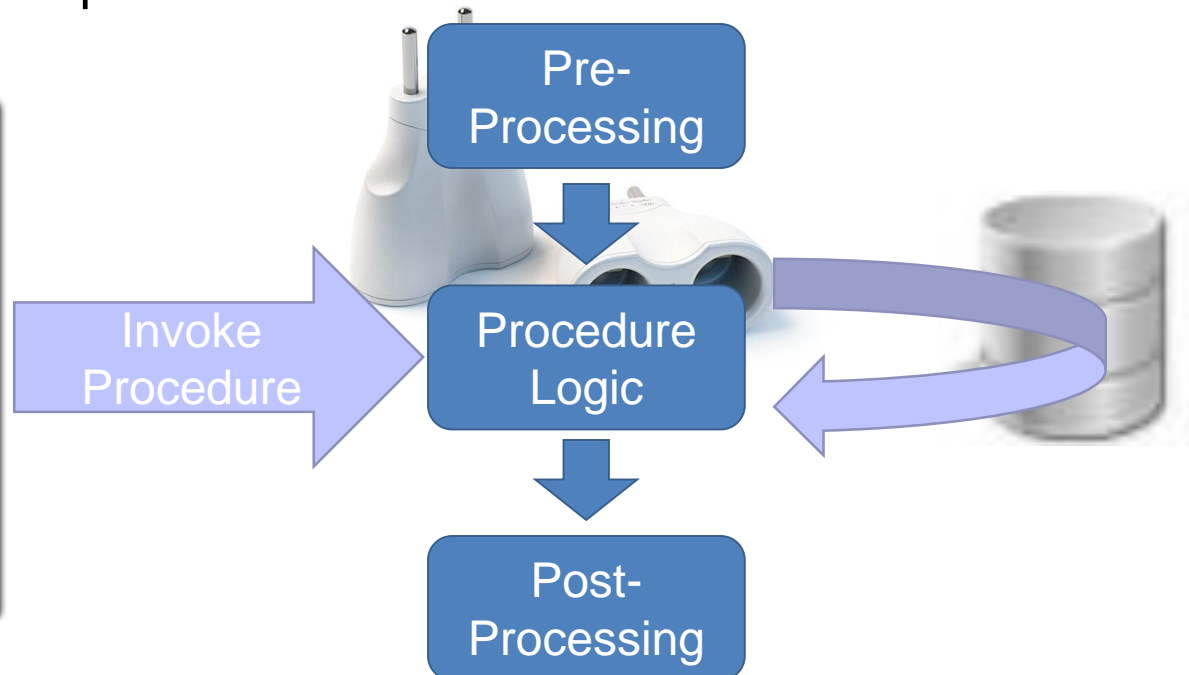
Server-side scripting

Why?

- Enhancing adapter capabilities:
 - Pre- & post-processing logic.
 - All processing can be done with only one call to the server and in one transaction.
 - Enables data mashups from different sources.

Symbol	Price	Chg	% Chg
.SPX	1194.37	7.93	0.67
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Worklight® Server-side API

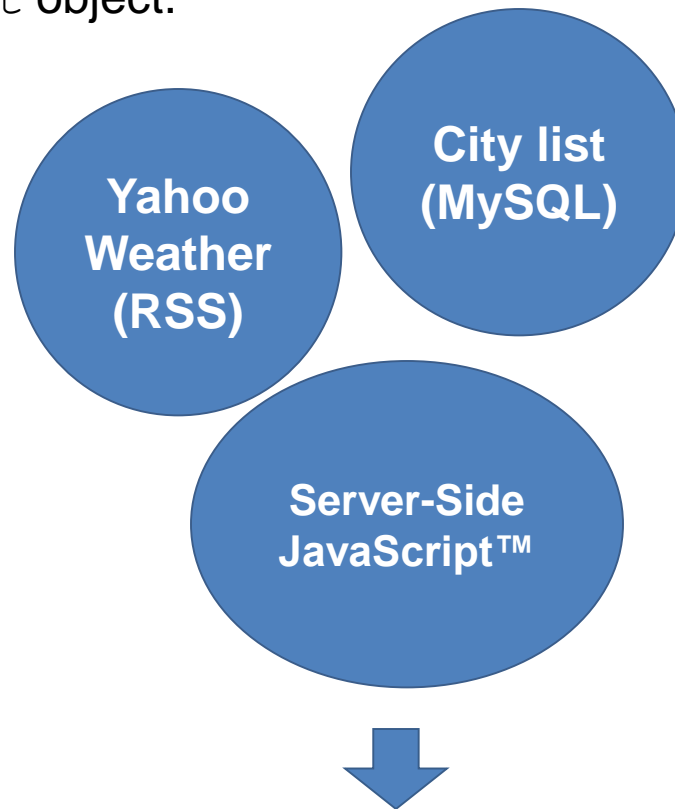
- `WL.Server.InvokeProcedure (invocationData)`
 - Procedure invocation from the current or another adapter.
 - Same syntax as a client-side `WL.Client.invokeProcedure`.
- `WL.Logger.debug (msg)`
 - Outputs messages to the console.
 - Used for debugging.
- `WL.Server.configuration` object
 - A map that contains all the server properties that are defined in the `worklight.properties` file.
 - Syntax:
 - `WL.Server.configuration["property-name"]`
 - Example:
 - `var addr = WL.Server.configuration["local.IPAddress"];`

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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 example – continued

- Data mashup can be implemented in the same way for any number of data sources and across different adapter types.
- As an example, mashup data from the following sources:
 - **SQL:**
 - Extract a list of cities from a database’s “weather” table.
 - The result contains the list of several cities around the world, their Yahoo! Weather identifier and some description.
 - **HTTP:**
 - Connect to the Yahoo! Weather Service.
 - 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.

Data mashup example - continued

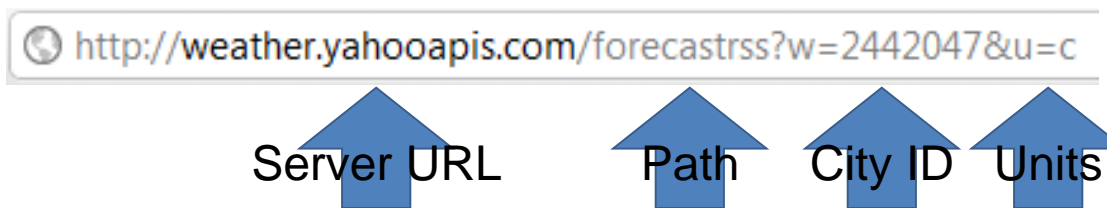
SQL Adapter

- Create a SQL adapter and name it ***SQLAdapter***.
 - This adapter contains:
 - ***getCitiesWeather*** – a public procedure, declared in the adapter XML file. It is called from the application and returns the mashed-up data.
 - ***getCitiesList*** – an internal (private) function, not declared in the adapter XML file. It is called from the adapter by using server API to get the cities list from the SQL server.
 - ***getCityWeather*** – an internal (private) function, 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.
 - Functions are implemented with server-side JavaScript™.

Data mashup example – continued

HTTP Adapter

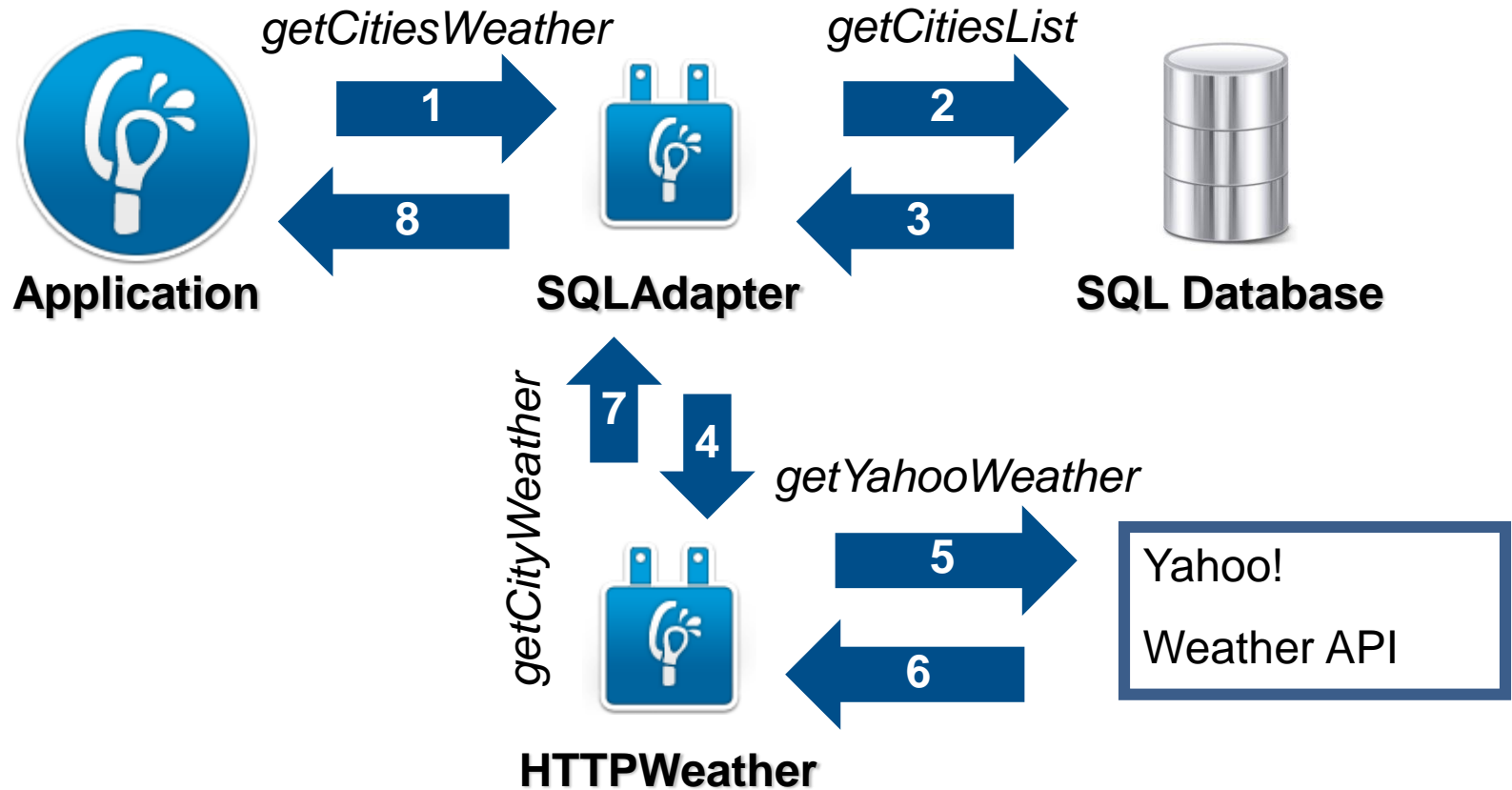
- Create an HTTP adapter and name it **HTTPWeather**.
- This adapter connects to Yahoo! Weather RSS feed at <http://weather.yahooapis.com/forecastrss>.
- The adapter has a single procedure called **getYahooWeather**.
- The HTTP request has the two following parameters:
 - w – **Where in the world ID**, a city ID used by Yahoo!
 - u – units. Can be “c” for Celsius or “f” for Fahrenheit.
- Full request URL example:



- City ID parameter is to be provided by procedure invoker.
- Units parameter is hardcoded.

Data mashup example – continued

Mashup schema



Data mashup example – continued

Mashup schema

Application calls the **getCitiesWeather** procedure from **SQLAdapter**

SQLAdapter retrieves the list of cities from SQL database

SQLAdapter calls **getYahooWeather** from **HTTPWeather** adapter with city ID as a parameter

HTTPWeather adapter retrieves weather data from Yahoo! Weather API and returns it to **SQLAdapter**

SQLAdapter returns mashed-up data to the application



Repeated for each city

Data mashup example – continued

Server-side JavaScript

- Create a SQL adapter and name it **SQLAdapter**.
- Declare the **getCitiesWeather** procedure in the adapter XML file.
- Its function is to get data from two different adapters and mashup the result into one data object.
- Create a **getCitiesList** function in adapter .js file and use it to retrieve and return the cities list from the SQL database.

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

- The retrieved data contains a list of cities with the following fields:
 - **city** - a city name.
 - **identifier** – city ID for Yahoo! Weather API.
 - **summary** – a brief description of the city.

Data mashup example – continued

Server-side JavaScript

- Create a **getCityWeather** function in the SQL adapter `.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]  
    });  
}
```

Data mashup example – continued

Server-side JavaScript

- Declare the **getYahooWeather** procedure in the HTTPWeather XML file.
- Its task is to retrieve the weather data by using the supplied city ID as a parameter.
- Create the **getYahooWeather** function in the HTTPWeather .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' //celcius  
        }  
    };  
    return WL.Server.invokeHttp(input);  
}
```


Data mashup example – continued

Server-side JavaScript

- In the SQLAdapter, extract a city identifier from the city list that was retrieved earlier, and use it to call the **getYahooWeather** procedure of the HTTPWeather adapter.
- 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.description;  
    }  
    return cityList;  
}
```

- Return the mashed-up data to the application.

Data mashup example – continued

Examine the result

Invocation Result of procedure: 'getCitiesWeather' from the Worklight Server:

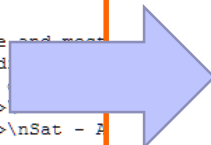
```

{
  "isSuccessful": true,
  "resultSet": [
    {
      "city": "New York",
      "identifier": "2459115",
      "summary": "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 as a financial, cultural, transportation, and manufacturing center. Accord city were named for the 17th century Duke of York, James Stuart, future James II and VII
      "weather": "<img src=\"http://1.yimg.com/a/i/us/we/52/33.gif\"/><br />
Low: 7<br />\nThu - Cloudy. High: 13 Low: 6<br />\nFri - Showers. High: 10 Low: 7<br />\nSat - P
href=\"http://us.rd.yahoo.com/dailynews/rss/weather/New_York_NY/*http://weather.yahoo.co
href=\"http://www.weather.com\" >The Weather Channel</a><br />"
    },
    {
      "city": "Sydney",
      "identifier": "1105779",
      "summary": "Sydney is the largest and most populous city in Australia and the state capit
approximate population of 4.5 million in the Sydney metropolitan area the city is the largest muni
international population of people from many places around the world.",
      "weather": "<img src=\"http://1.yimg.com/a/i/us/we/52/34.gif\"/><br />\n<b>Curr
24 Low: 18<br />\nThu - Partly Cloudy. High: 26 Low: 19<br />\nFri - Showers. High: 23 Low: 18<b
href=\"http://us.rd.yahoo.com/dailynews/rss/weather/Sydney_AU/*http://weather.yahoo.com\
href=\"http://www.weather.com\" >The Weather Channel</a><br />"
    },
    {
      "city": "San Francisco",
      "identifier": "2487956",
      "summary": "The City and County of San Francisco is the fourth most populous city in Cali
[9] The only consolidated city-county in California,[11] it encompasses a land area of 46.7 squa
densely populated large city (greater than 200,000 population) in the United States.[13] San Fran
financial, cultural, and transportation center of the larger San Francisco Bay Area, a region of 7
      "weather": "<img src=\"http://1.yimg.com/a/i/us/we/52/29.gif\"/><br />\n<b>Curr
High: 12 Low: 7<br />\nWed - Partly Cloudy. High: 14 Low: 8<br />\nThu - Cloudy. High: 14 Low: 9
/>\n<a href=\"http://us.rd.yahoo.com/dailynews/rss/weather/San_Francisco_CA/*http://wea
<a href=\"http://www.weather.com\" >The Weather Channel</a><br />"
    },
  ]
}

```


SQL data

Yahoo!
Weather data



CityWeather

Select city:



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...

Agenda

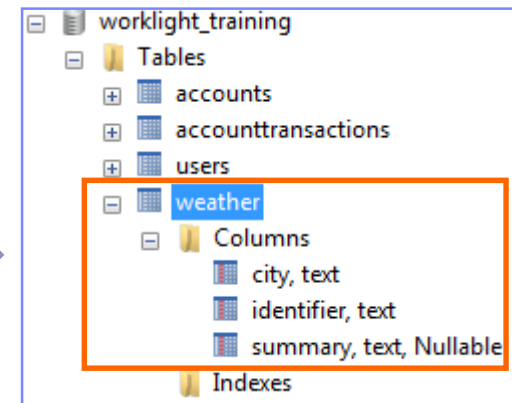
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Exercise: Preparation

CityWeather Application

- Create a database
 - Run the `worklightTraining.sql` file that is found under the `\server` folder on your local `mySQL` server to create a training database.

```
/*!40101 SET NAMES utf8 */;  
/*!40101 SET SQL_MODE=''*/;  
  
CREATE DATABASE IF NOT EXISTS `WorkLight Training`;  
  
USE `WorkLight Training`;  
  
/*!40014 SET @OLD_FOREIGN_KEY_CHECKS=@@FOREIGN_KEY_CHECKS,  
/*!40101 SET @OLD_SQL_MODE=@@SQL_MODE, SQL_MODE='NO_AUTO_VA  
/*!Table structure for table `accounts` */  
  
DROP TABLE IF EXISTS `accounts`;  
  
CREATE TABLE `accounts` (  
  `accountId` VARCHAR(15) NOT NULL,  
  `userId` VARCHAR(100) NOT NULL DEFAULT '',  
  `accountType` VARCHAR(50) NOT NULL
```



Exercise

- Create the CityWeather application and implement the example that is shown in this module.
- Two adapters (SQL and HTTP) must be implemented.
- SQLAdapter requires a JDBC connector driver.
 - Must be downloaded separately by the developer and added to the `server\lib\` folder of the Worklight project.
 - JDBC connector driver can be downloaded at MySQL/Oracle/DB2 website.
 - For this exercise, download MySQL version.
- In the connectivity section of the SQLAdapter XML file, supply the connection details for the database as follows:

```

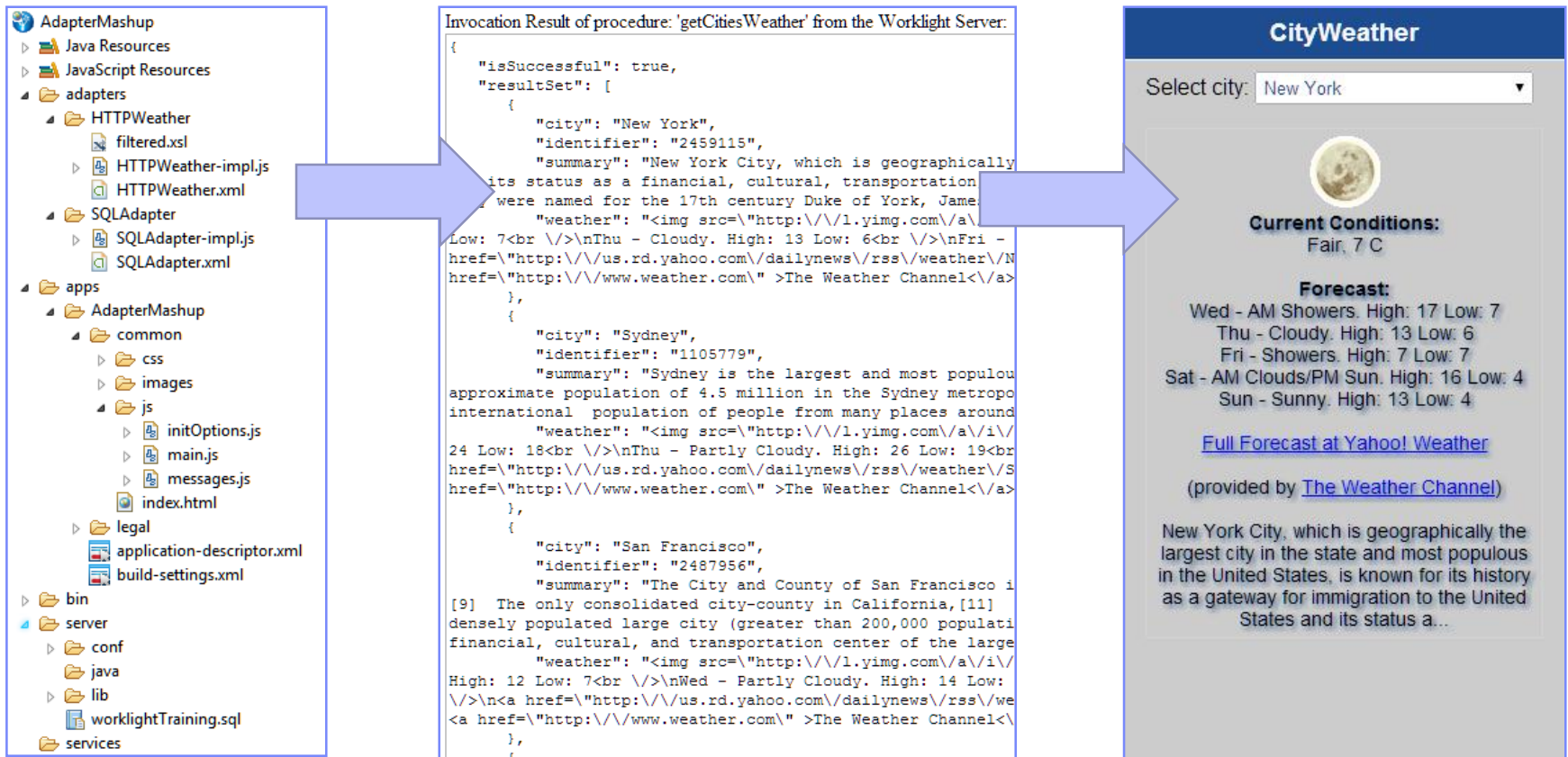
<connectivity>
  <connectionPolicy xsi:type="sql:SQLConnectionPolicy">
    <dataSourceDefinition>
      <driverClass>com.mysql.jdbc.Driver</driverClass>
      <url>jdbc:mysql://127.0.0.1:3306/worklight_training</url>
      <user>Worklight</user>
      <password>Worklight</password>
    </dataSourceDefinition>
  </connectionPolicy>
  <loadConstraints maxConcurrentConnectionsPerNode="5" />
</connectivity>

```

- When the application starts, it connects to the SQL database with the SQL adapter and retrieves the cities list from the weather table.
- After you receive the cities list, the SQL adapter uses the HTTP adapter to connect to the Yahoo! Weather API to retrieve the weather data for each of the cities on the list.
- The application receives the mashed-up data and displays it.
- Note: the application makes only one call to the adapter. All the mashup logic is implemented by the server-side API.

Exercise: Solution

- The sample for this training module can be found on the Getting Started page of the Worklight documentation website at <http://www.ibm.com/mobile-docs>.



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