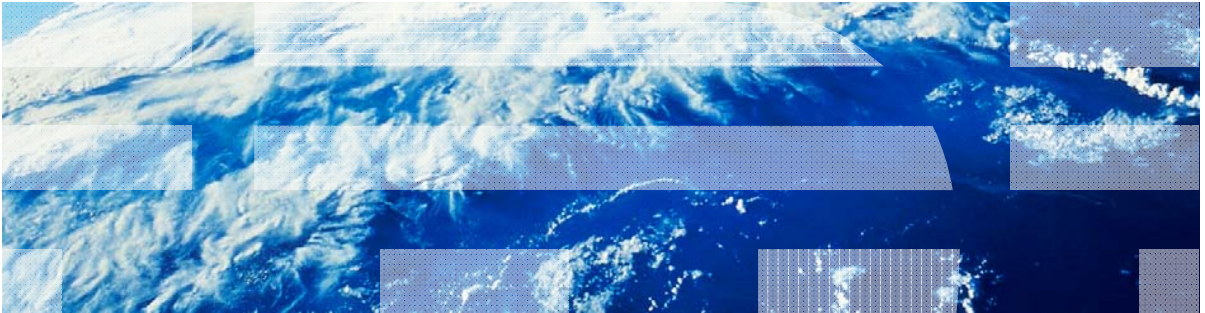


IBM Worklight V6.0.0 Getting Started

Advanced adapter usage and mashup



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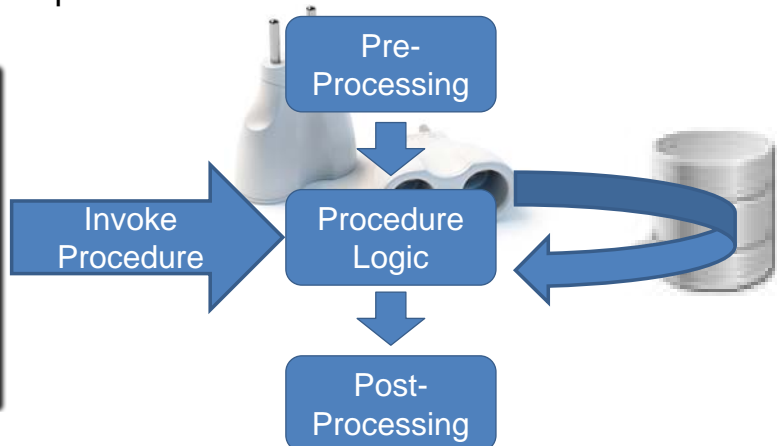
- Server-side scripting:
 - Why?
- The Worklight® server-side API
 - Invoking procedures
 - Getting server configuration
 - Logging
- Data mashup example
 - Augmenting DB data with Yahoo! Weather RSS data
- Exercise

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
.DJI	10997.35	70.28	0.64
ORCL	26.13	0.05	0.19
AAPL	241.79	0.00	0.00
MOT	7.39	0.00	0.00
VRSN	26.84	0.00	0.00
MSFT	30.34	0.00	0.00
SNE	36.81	0.00	0.00
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Server-side API

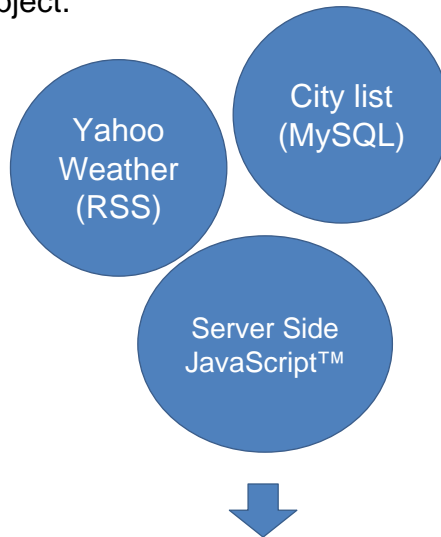
- **WL.Server.InvokeProcedure (invocationData)**
 - Procedure invocation from the current or another adapter
 - Same syntax as a client-side WL.Client.invokeProcedure
- **WL.Logger.debug (msg)**
 - Outputs messages to the console
 - Used for debugging
- **WL.Server.configuration object**
 - A map that 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 mashup data from two data sources and to return the data stream to the application as a single **invocationResult** object.



Data mashup example

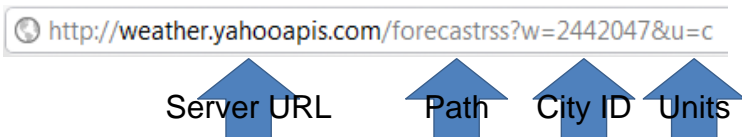
- Data mashup can be implemented in the same way for any number of data sources and across different adapter types.
- As an example, mash up data from the following sources:
 - **SQL:**
 - Extract a list of cities from the weather table
 - The result contains the list of several cities around the world, 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 with SQL
- Afterward, the mashed-up data is returned to the application for display

Data mashup example: SQL Adapter

- Create a SQL adapter and name it ***SQLAdapter***
 - This adapter contains three procedures:
 - ***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 a 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™

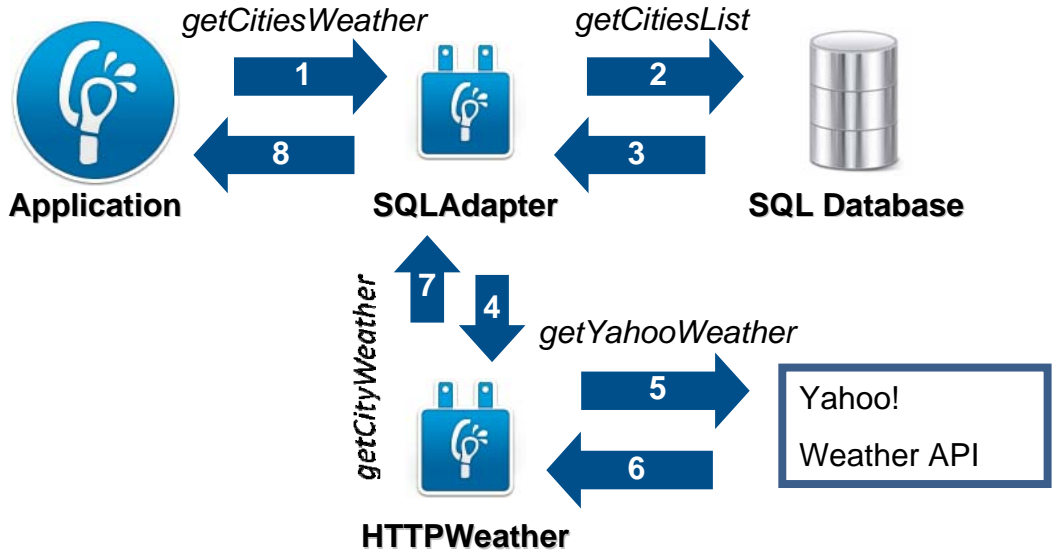
Data mashup example: HTTP Adapter

- 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: Mashup schema



Data mashup example: Mashup schema

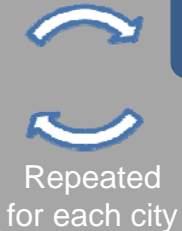
Application calls the `getCitiesWeather` procedure from **SQLAdapter**

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



Data mashup example: Server-side JS (1 of 4)

- Declare the getCitiesWeather procedure in the SQLAdapter XML file. Its function is to get data from two different adapters and mashup the result into one data object
- Create getCitiesList function in the SQLAdapter .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 : []
    });
}
```

- 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: Server-side JS (2 of 4)

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

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

Data mashup example: Server-side JS (3 of 4)

- Declare the getYahooWeather procedure in the HTTPWeather XML file
- Its task is to retrieve 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 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: Server-side JS (4 of 4)

- In SQLAdapter, extract a city identifier from city list that is retrieved earlier and use it to call the getYahooWeather procedure of the HTTPWeather adapter
- Repeat for each city, attaching the received data to city object

```
function getCitiesWeather() {  
    var cityList = getCitiesList();  
    for (var i = 0; i < cityList.resultSet.length; i++) {  
        var yahooWeatherData = getCityWeather(cityList.resultSet[i].identifier);  
        cityList.resultSet[i].weather = yahooWeatherData;  
    }  
    return cityList;  
}
```

- Return mashed-up data to application

Data mashup example: Examine the result


Invocation Result 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 history as a gateway for immigration to the United States and its status as a financial According to the U.S. Department of Commerce, it is also a destination of choice for ma 17th century Duke of York James Square - future James II and III of England and Scotlan",
      "weather": {
        "errors": [],
        "info": [],
        "isSuccessful": true,
        "rss": {
          "channel": {
            "astronomy": {
              "sunrise": "7:18 am",
              "sunset": "4:32 pm"
            },
            "atmosphere": {
              "humidity": "83",
              "pressure": "982.05",
              "rising": "0",
              "visibility": "2.41"
            },
            "description": "Yahoo! Weather for New York, NY",
            "image": {
              "height": "18",
              "link": "http://weather.yahoo.com",
              "title": "Yahoo! Weather",
              "url": "http://l.yimg.com/a/i/brand/purplelogo//uh/us/news-wea.gif",
              "width": "142"
            }
          }
        }
      }
    }
  ],
}
```



CityWeather

Select city:



Current Conditions:
Cloudy, -5 C

Forecast:
Mon - Blizzard. High: -3 Low: -6
Tue - Mostly Sunny. High: 2 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

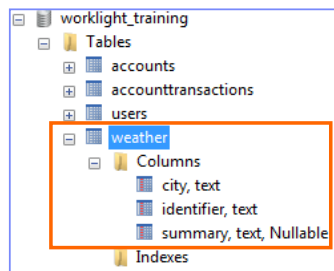
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Exercise: Preparation

CityWeather Application

- Create a database
 - Run the `worklightTraining.sql` file, 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_V  
/*!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 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 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 IBM Worklight documentation website at <http://www.ibm.com/mobile-docs>.

The diagram illustrates the data flow for a mobile application. On the left, a file explorer shows the project structure for 'CityWeatherProj', including resources, adapters, and applications. A blue arrow points from the 'CityWeather.html' file to a central window titled 'Invocation Result from the WorkLight Server'. This window displays a JSON response with weather data for New York City. A second blue arrow points from the JSON response to a mobile application interface on the right, titled 'CityWeather'. The interface shows a city selection dropdown set to 'New York', a weather icon, current conditions ('Cloudy, -5 C'), a forecast for the next two days, and a link to a full forecast.

```

Invocation Result from the WorkLight Server:
{
  "isSuccessful": true,
  "resultSet": [
    {
      "city": "New York",
      "identifier": "2459115",
      "summary": "New York City, which
      history as a gateway for immigration to
      According to the U.S. Department of Cos
      17th century Duke of York, James Stuart
      "weather": {
        "errors": [],
        "info": [],
        "isSuccessful": true,
        "rss": {
          "channel": {
            "astronomy": {
              "sunrise": "7:18 am",
              "sunset": "4:32 pm"
            },
            "atmosphere": {
              "humidity": "83",
              "pressure": "982.05",
              "rising": "0",
              "visibility": "2.41"
            }
          }
        }
      }
    }
  ]
}
  
```

CityWeather

Select city:

Current Conditions:
Cloudy, -5 C

Forecast:
Mon - Blizzard. High: -3 Low: -6
Tue - Mostly Sunny. High: 2 Low: -4

[Full Forecast at Yahoo! Weather](#)
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