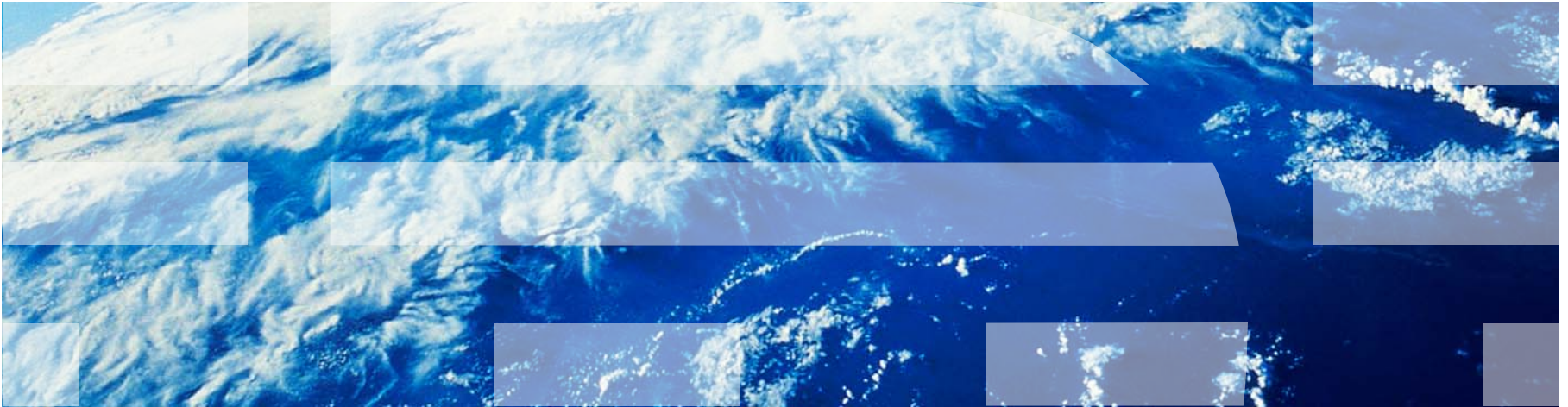


IBM Worklight V6.1.0 Getting Started

Using IBM Worklight API in native Android applications



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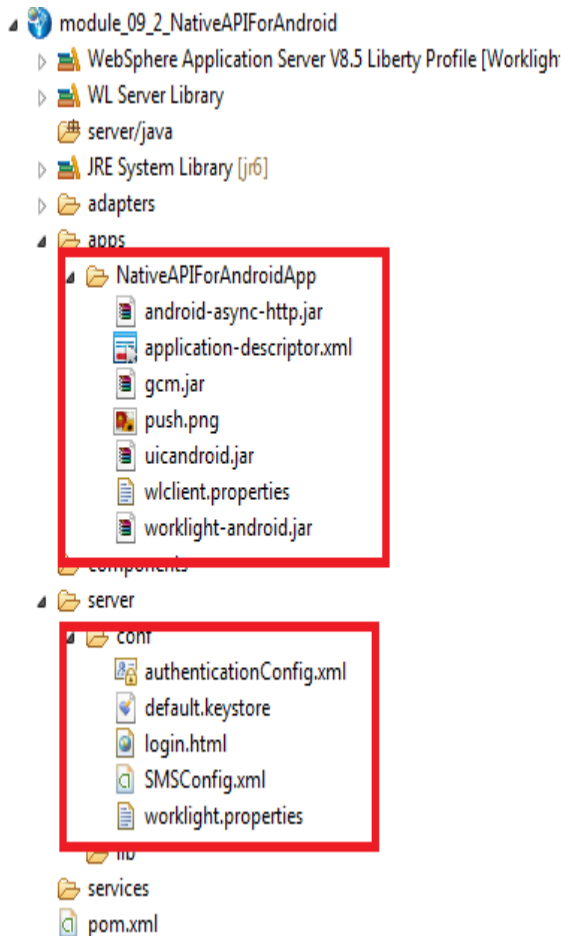
- Creating an IBM Worklight native API
- Creating and configuring an Android native application
- Initializing the WLClient
- Invoking an IBM Worklight procedure
- Receiving a procedure response

Creating an IBM Worklight native API (1 of 4)

- IBM Worklight® provides the ability for the native Android applications to communicate with a Worklight Server by using the IBM Worklight native API library.
- To serve a native Android application, the Worklight Server must be aware of it.
- The IBM Worklight native API is in the `apps` folder of your IBM Worklight project.
- The IBM Worklight native API folder serves two purposes:
 - It contains a native API library and configuration file that you must copy to your native Android project.
 - It contains the `application-descriptor.xml` file, which you must deploy to a Worklight Server as an entry point, similar to an IBM Worklight application.
- In this module, you learn how to create an IBM Worklight native API and how to use its components in your native Android application.

Creating an IBM Worklight native API (2 of 4)

- An IBM Worklight native API contains several components:



You use the `application-descriptor.xml` file to define application metadata and to configure security settings that the Worklight Server enforces.

The `wlclient.properties` file contains the connectivity settings that a native Android application uses. You must copy this file to your native Android project.

The `worklight-android.jar` is an IBM Worklight API library that you must copy to your native Android project.

You use the `gcm.jar` and `push.png` files for Google push notification services.

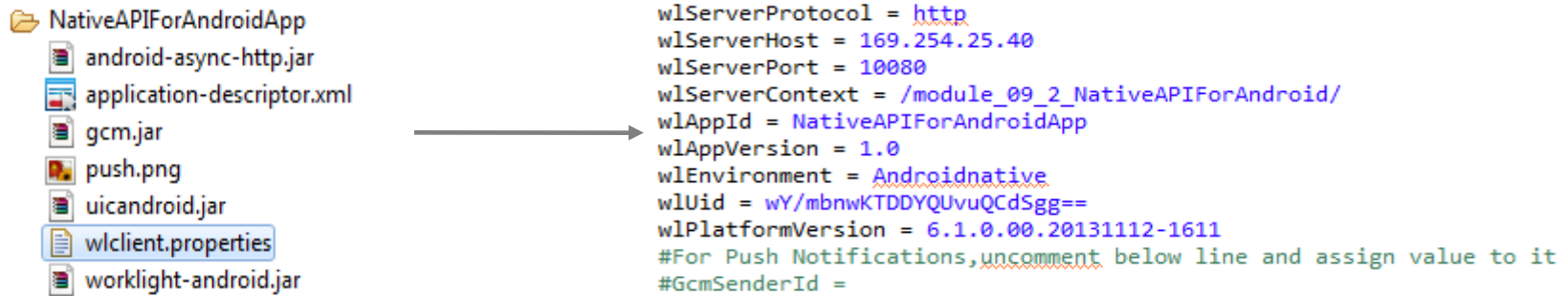
Like with any Worklight project, you can create server configuration by modifying the files that are in the `server\conf` folder.

Creating an IBM Worklight native API (3 of 4)

1. In Worklight Studio, create a Worklight project, and add an IBM Worklight Native API.
2. In the **New Worklight Native API** dialog, enter your Native API name, and select **Android** for the **Environment** field.
3. Right-click the **IBM Worklight native API** folder and select **Run As > Deploy Native API**.

Creating an IBM Worklight native API (4 of 4)

- Edit the `wlclient.properties` file, which holds server configuration:



```

wlServerProtocol = http
wlServerHost = 169.254.25.40
wlServerPort = 10080
wlServerContext = /module_09_2_NativeAPIForAndroid/
wlAppId = NativeAPIForAndroidApp
wlAppVersion = 1.0
wlEnvironment = Androidnative
wlUid = wY/mbnwKTDDYQUvuQCdSgg==
wlPlatformVersion = 6.1.0.00.20131112-1611
#For Push Notifications, uncomment below line and assign value to it
#GcmSenderId =
  
```

- `wlServerProtocol`** – The communication protocol to the Worklight Server, which can be either `http` or `https`.
- `wlServerHost`** – The hostname of the Worklight Server.
- `wlServerPort`** – The port of the Worklight Server.
- `wlServerContext`** – The context root path of the application on the Worklight Server.
- `wlAppId`** – The application ID as defined in the `application-descriptor.xml` file.
- `wlAppVersion`** – The application version.
- `wlEnvironment`** – The target environment of the native application (Android/iOS).
- `wlUid`** – This property is used by MTWW to identify this as a Worklight application.
- `wlPlatformVersion`** – The Worklight Studio version.
- `GcmSenderId`** – This property defines the GCM Sender ID to be used for push notifications. By default, this property is commented.

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- Creating an IBM Worklight native API
- **Creating and configuring a native Android application**
- Initializing the WLClient
- Invoking an IBM Worklight procedure
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Creating and configuring an Android native application

- Create a native Android application.
- Copy the `worklight-android.jar`, `uicandroid.jar`, and `android-async-http.jar` files from the IBM Worklight native API folder to the new native Android application, in the `/libs` directory.
- Copy the file `wlclient.properties` from the IBM Worklight native API folder to the new native Android application, in the `/assets` directory.
- Add the internet permission to the `AndroidManifest.xml` file.

```
android:largeScreensVersion="15" />  
<uses-permission android:name="android.permission.INTERNET"/>  
<application
```

- Add the WiFi permission to the `AndroidManifest.xml` file.

```
<uses-permission android:name="android.permission.ACCESS_WIFI_STATE"/>  
<application
```

- Add the IBM Worklight UI activity to the `AndroidManifest.xml` file.

```
</activity>  
<activity android:name="com.worklight.wlclient.ui.UIActivity" />
```

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- Creating an IBM Worklight native API
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- **Initializing the WLClient**
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Initializing the WLClient

- Start by creating an instance of the `WLClient`.
- The `WLClient` instance requires a reference to the activity in which it is running.

```
final WLClient client = WLClient.createInstance(this);
```

- To establish a connection to the Worklight Server, use the `connect` method by specifying the `MyConnectListener` class instance as a parameter.
 - You learn how to create it in the following slides.

```
buttonConnect.setOnClickListener(new OnClickListener() {  
    public void onClick(View v) {  
        updateTextView("Connecting...");  
        client.connect(new MyConnectListener());  
    }  
});
```

Initializing the *WLClient*

- The `WLClient` instance tries to connect to the Worklight Server according to the properties of the `wlclient.properties` file.
- After the connection is established, it invokes one of the methods of the `MyConnectListener` class.
- First, specify that the `MyConnectListener` class implements the `WLResponseListener` interface.

```
public class MyConnectListener implements WLResponseListener {
```

- The `WLResponseListener` interface defines two methods:
 - The public void `onSuccess` (`WLResponse response`) { }
 - The public void `onFailure` (`WLFailResponse response`) { }
- Use the previous methods to process connection success or connection failure.

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Invoking an IBM Worklight procedure (1 of 3)

- After the connection is established with a Worklight Server, you can use the `WLClient` instance to invoke adapter procedures.

```
buttonInvoke.setOnClickListener(new OnClickListener() {  
    public void onClick(View v) {  
        updateTextView("Invoking procedure...");  
  
        String adapterName = "RSSReader";  
        String procedureName = "getStoriesFiltered";  
  
        WLProcedureInvocationData invocationData =  
            new WLProcedureInvocationData(adapterName, procedureName);  
  
        Object[] parameters = new Object[] {"world"};  
        invocationData.setParameters(parameters);  
  
        WLRequestOptions options = new WLRequestOptions();  
        options.setTimeout(30000);  
  
        WLClient client = WLClient.getInstance();  
        client.invokeProcedure(invocationData, new MyInvokeListener(), options);  
    }  
});
```

- Create a `WLProcedureInvocationData` object with the adapter and procedure names.

Invoking an IBM Worklight procedure (2 of 3)

- After the connection is established with a Worklight Server, you can use the `WLClient` instance to invoke adapter procedures.

```
buttonInvoke.setOnClickListener(new OnClickListener() {
    public void onClick(View v) {
        updateTextView("Invoking procedure...");

        String adapterName = "RSSReader";
        String procedureName = "getStoriesFiltered";

        WLProcedureInvocationData invocationData =
            new WLProcedureInvocationData(adapterName, procedureName);

        Object[] parameters = new Object[] {"world"};
        invocationData.setParameters(parameters);

        WLRequestOptions options = new WLRequestOptions();
        options.setTimeout(30000);

        WLClient client = WLClient.getInstance();
        client.invokeProcedure(invocationData, new MyInvokeListener(), options);
    }
});
```

- Add the required parameters as an object array and set request options (for example: timeout).

Invoking an IBM Worklight procedure (3 of 3)

- After the connection is established with a Worklight Server, you can use the `WLClient` instance to invoke adapter procedures.

```
buttonInvoke.setOnClickListener(new OnClickListener() {
    public void onClick(View v) {
        updateTextView("Invoking procedure...");

        String adapterName = "RSSReader";
        String procedureName = "getStoriesFiltered";

        WLProcedureInvocationData invocationData =
            new WLProcedureInvocationData(adapterName, procedureName);

        Object[] parameters = new Object[] {"world"};
        invocationData.setParameters(parameters);

        WLRequestOptions options = new WLRequestOptions();
        options.setTimeout(30000);

        WLClient client = WLClient.getInstance();
        client.invokeProcedure(invocationData, new MyInvokeListener(), options);
    }
});
```

- Get the existing `WLClient` instance and use it to invoke an adapter procedure.
- Specify the `MyInvokeListener` class instance as a parameter.
- You learn how to define it in the following slides.

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Receiving a procedure response (1 of 3)

- After the procedure invocation is completed, the `WLClient` instance calls one of the methods of the `MyInvokeListener` class.
- As before, you must specify that the `MyConnectListener` class implements the `WLResponseListener` interface.

```
import com.worklight.wlclient.api.WLFailResponse;  
import com.worklight.wlclient.api.WLResponse;  
import com.worklight.wlclient.api.WLResponseListener;  
  
public class MyInvokeListener implements WLResponseListener {
```

- The `onSuccess` and `onFailure` methods are invoked by the `WLClient`.

Receiving a procedure response (2 of 3)

- If the procedure invocation is successful, the `onSuccess` method of `MyInvokeListener` is invoked.
 - Use it to get data that is retrieved from the adapter.

```
public class MyConnectListener implements WLResponseListener {
    public void onSuccess(WLResponse response) {
        String responseText = response.getResponseText();
        Log.d("ConnectSuccess", responseText);
        AndroidNativeApp.updateTextView("Connected Successfully\n" + responseText);
    }

    public void onFailure(WLFailResponse response) {
        String responseText = response.getResponseText();
        Log.d("ConnectFail", responseText);
        AndroidNativeApp.updateTextView("Connection Failure\n" + responseText);
    }
}
```

- The `response` object contains the response data.
- You can use its methods and properties to retrieve the required information.

Receiving a procedure response (3 of 3)

- You can find the sample for this training module in the Getting Started page of the IBM Worklight documentation website at <http://www.ibm.com/mobile-docs>.
- The sample contains two projects:
 - The `NativeAPIForAndroid.zip` file contains an IBM Worklight Native API that you can deploy to your Worklight Server.
 - The `AndroidNativeApp.zip` file contains a native Android application that uses an IBM Worklight native API library to communicate with a Worklight Server.
- Make sure to update the `wlclient.properties` file in `AndroidNativeApp` with the relevant server settings.



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