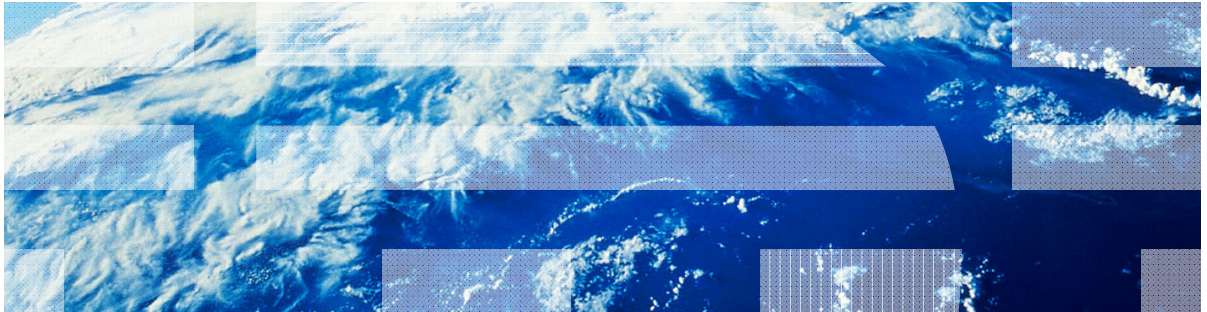


IBM Worklight V5.0.5 Getting Started

Module 9.2 – Android Development Using Worklight API in a Native Application



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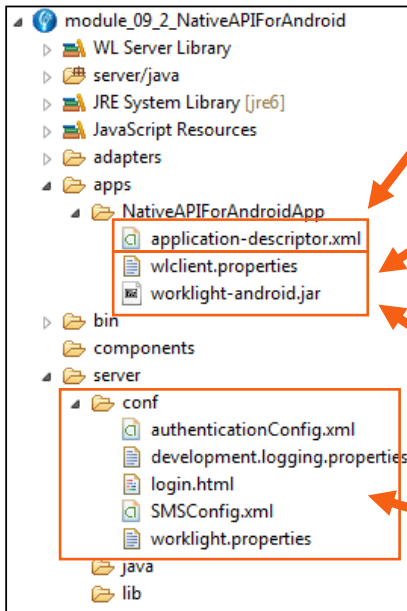
- Creating a Worklight native API
- Create and configure an Android native application
- Initializing the WLClient
- Invoking a Worklight procedure
- Receiving a procedure response

Creating a Worklight native API

- IBM Worklight® provides the ability for the native Android applications to communicate with a Worklight server by using the Worklight native API library.
- In order to be able to serve a native Android application the Worklight server needs to be aware of it.
- A Worklight native API is located under apps folder of your Worklight project, similar to a regular Worklight application.
- A Worklight native API folder serves two purposes:
 - It contains a native API library and a configuration file that must be copied to your native Android project.
 - It contains an application-descriptor.xml file, which can be deployed to a Worklight Server to serve as an entry point, similar to a Worklight application.
- In this module, you learn how to create a Worklight native API and use its components in your native Android application.

Creating a Worklight native API

- A Worklight native API contains several components:



The **application-descriptor.xml** file is used to define the application meta data and configure the security settings to be enforced by a Worklight server.

The **wlclient.properties** file contains the connectivity settings to be used by a native Android application. This file should be copied to your native Android project.

The **worklight-android.jar** is a Worklight API library that should be copied to your native Android project.

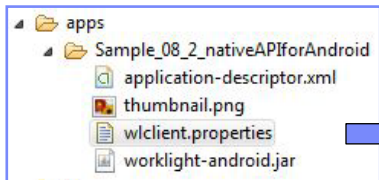
Just like with any Worklight project, the server configuration is done by modifying the files under the **server/conf** folder.

Creating a Worklight native API

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

Creating a Worklight native API

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



```
wlServerProtocol = http
wlServerHost = 9.148.225.65
wlServerPort = 8080
wlServerContext = /
wlAppId = Sample_08_2_nativeAPIforAndroid
wlAppVersion = 1.0
wlEnvironment = androidnative
```

- **wlServerProtocol** – The communication protocol to the Worklight Server. 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 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).

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Create and configure an Android native application

- Create a native Android application.
- Copy the file **worklight-android.jar** from the Worklight native API folder to the new native Android application under the **/libs** directory.
- Copy the file **wlclient.properties** from the Worklight native API folder to the new native Android application under the **/assets** directory.
- Add the internet permission to the **AndroidManifest.xml** file.

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

- Add the Worklight UI activity to the **AndroidManifest.xml** file.

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

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- Creating a Worklight native API
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- **Initializing the WLClient**
- Invoking a Worklight procedure
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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 a Worklight Server, use the **connect** method by specifying the **MyConnectListener** class instance as a parameter.
 - You learn how to create it in following slides.

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

MyConnectListener

- The **WLClient** instance will try to connect to a Worklight server according to 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 them to process connection success or connection failure.

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Invoking a Worklight procedure

- 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 = "getFeedsFiltered";  
  
        WLProcedureInvocationData invocationData =  
            new WLProcedureInvocationData(adapterName, procedureName);  
  
        Object[] parameters = new Object[] {"param1", "param2", 3, false};  
        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 a Worklight procedure

- 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 = "getFeedsFiltered";  
  
        WLProcedureInvocationData invocationData =  
            new WLProcedureInvocationData(adapterName, procedureName);  
  
        Object[] parameters = new Object[] {"param1", "param2", 3, false};  
        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 a Worklight procedure

- 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 = "getFeedsFiltered";

        WLProcedureInvocationData invocationData =
            new WLProcedureInvocationData(adapterName, procedureName);

        Object[] parameters = new Object[] {"param1", "param2", 3, false};
        invocationData.setParameters(parameters);

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

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

- Get existing the **WLClient** instance and use it to invoke 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

- 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 will be invoked by the **WLClient**.

Receiving a procedure response

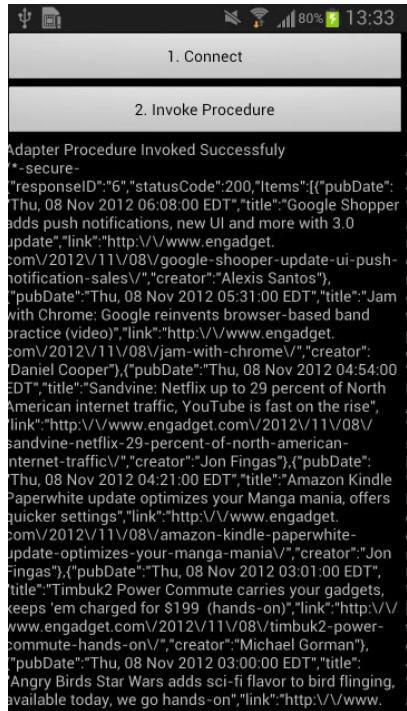
- If the procedure invocation is successful, the **onSuccess** method of **MyInvokeListener** is invoked.
 - Use it to get data that are retrieved from the adapter.

```
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

- The sample for this training module can be found in the Getting Started page of the IBM® Worklight® documentation website at <http://www.ibm.com/mobile-docs>.
- The Sample contains two projects:
 - The **module_09_2_NativeAPIForAndroid.zip** contains a Worklight Native API to be deployed to your Worklight server.
 - The **module_09_2_AndroidNativeApp.zip** contains a native Android application that uses a Worklight native API library to communicate with a Worklight server.
- Make sure to update the **wlclient.properties** file in the AndroidNativeApp with the relevant server settings.



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