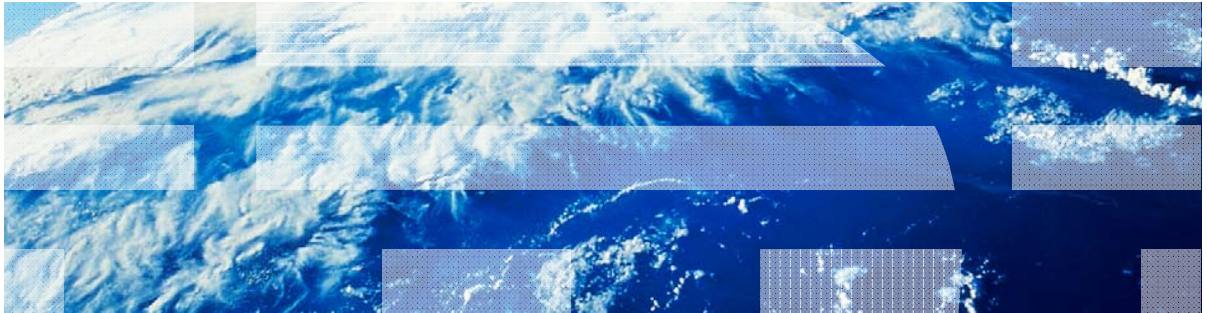


IBM Worklight V6.0.0 Getting Started

Using Worklight API for push notifications in native Android applications



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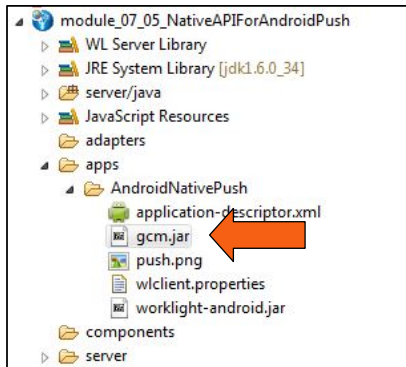
- See <http://www.ibm.com/ibm/us/en/>

Agenda

- Setting up your Worklight project
- Setting up your native app for Push notifications
- The Native Push Notification API
- Subscribing and unsubscribing to Push notifications
- Running your Android project
- Sending and receiving Push notifications

Setting up your Worklight project (1 of 3)

- IBM Worklight® provides the ability for native Android applications to subscribe, unsubscribe, and receive Push Notifications.
- Create a Worklight project and add a Native API for Android.
- The Native API has the following files:
 - The **gcm.jar** file contains classes that are necessary for the Android application to register with Google Cloud Messaging.
 - The **push.png** is an icon file that is displayed when a push notification arrives.
- For information about how to set up push notifications, see the IBM Worklight Information Center.



Setting up your Worklight project (2 of 3)

- Edit the **application-descriptor.xml** file and add your Google API server key and project ID to the **<pushSender>** tag.

```
<?xml version="1.0" encoding="UTF-8" ?>
<nativeAndroidApp id="AndroidNativePush" platformVersion="5.0.6"
  version="1.0" xmlns="http://www.worklight.com/native-android-descriptor">

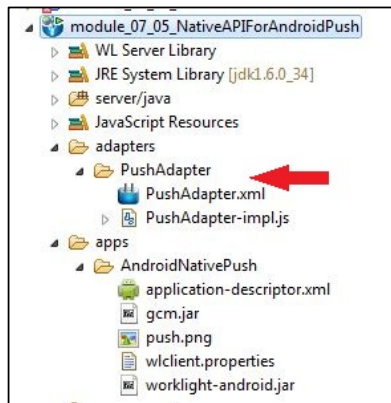
  <displayName>AndroidNativePush</displayName>
  <description>AndroidNativePush</description>
  <publicSigningKey>Replace this text with the public key of the certificate with which you sign the application</publicSigningKey>
  <pushSender key="Enter your Google API key" senderId="Enter your Google API project number"/>

</nativeAndroidApp>
```

- If you do not have an API key, get one from the following URL:
<https://code.google.com/apis/console>

Setting up your Worklight project (3 of 3)

- Next, add an adapter with an eventSource in it.



```
WL.Server.createEventSource({
  name: 'PushEventSource',
  onDeviceSubscribe: 'deviceSubscribeFunc',
  onDeviceUnsubscribe: 'deviceUnsubscribeFunc'
});

function deviceSubscribeFunc(userSubscription, deviceSubscription){
  WL.Logger.debug(">> deviceSubscribeFunc");
}

function deviceUnsubscribeFunc(userSubscription, deviceSubscription){
  WL.Logger.debug(">> deviceUnsubscribeFunc");
}
```

- Deploy the Native API and the adapter.

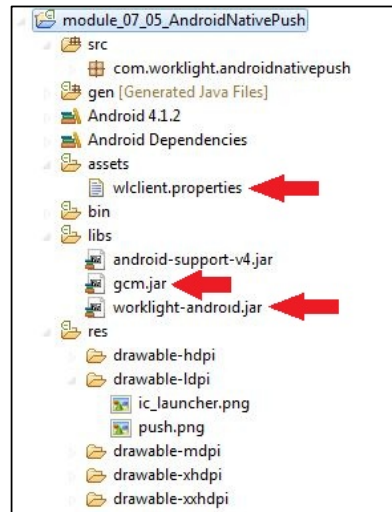
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Setting up your native app for Push notifications (1 of 4)

- Create an Android Activity Project, and copy the following files from the Worklight project to the Android project.

Worklight project	Android Activity Project
wlclient.properties	assets/wlclient.properties
gcm.jar	libs/gcm.jar
worklight-android.jar	libs/worklight-android.jar
push.png	drawable*/push.png



Setting up your native app for Push notifications (2 of 4)

- Edit the **wlclient.properties** file in your native Android project and enter appropriate values for the following fields:
 - **wlServerHost** – Hostname or IP address of the Worklight Server
 - **wlServerPort** – Port on which the Worklight Server is listening
 - **wlServerContext** – Context root of your Worklight Server
 - **GcmSenderId** – The project number of your project that you obtained through [Google API console](#)

```
wlServerProtocol = http
wlServerHost = 9.182.149.178
wlServerPort = 8080
wlServerContext = /
wlAppId = AndroidNativePush
wlAppVersion = 1.0
wlEnvironment = AndroidNative
#For Push Notifications, uncomment below line and assign value to it
#GcmSenderId =
```

Setting up your native app for Push notifications (3 of 4)

- Add the following permissions to the **AndroidManifest.xml** of your Android project:

```
<permission android:name="com.worklight.androidnativepush.permission.C2D_MESSAGE" android:protectionLevel="signature" />

<uses-permission android:name="android.permission.INTERNET" />
<uses-permission android:name="com.worklight.androidnativepush.permission.C2D_MESSAGE" />
<uses-permission android:name="com.google.android.c2dm.permission.RECEIVE" />
<uses-permission android:name="android.permission.WAKE_LOCK" />
<uses-permission android:name="android.permission.GET_ACCOUNTS" />
<uses-permission android:name="android.permission.USE_CREDENTIALS" />
<uses-permission android:name="android.permission.WRITE_EXTERNAL_STORAGE" />
<uses-permission android:name="android.permission.ACCESS_WIFI_STATE"/>
```

- Add an intent-filter to the main AndroidNativePush activity for notifications.

```
<intent-filter>
  <action android:name="com.worklight.androidnativepush.AndroidNativePush.NOTIFICATION" />
  <category android:name="android.intent.category.DEFAULT" />
</intent-filter>
```

Setting up your native app for Push notifications (4 of 4)

- Add the GCMIntentService and add intent-filters for RECEIVE and REGISTRATION of notifications.

```
<service android:name="com.worklight.wlclient.push.GCMIntentService" />

<receiver android:name="com.worklight.wlclient.push.WLBroadcastReceiver" android:permission="com.google.android.c2dm.permission.SEND">
  <intent-filter>
    <action android:name="com.google.android.c2dm.intent.RECEIVE" />
    <category android:name="com.worklight.androidnativepush" />
  </intent-filter>

  <intent-filter>
    <action android:name="com.google.android.c2dm.intent.REGISTRATION" />
    <category android:name="com.worklight.androidnativepush" />
  </intent-filter>
</receiver>
```

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The Native Push notification API

- The first step is to create an instance of WLCClient class:

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

- You do all Push Notification operations from the **WLPush** class. With **getPush()**, get an instance of the WLPush class from the WLCClient instance:
 - WLPush push = WLCClient.getPush();

- WLOnReadyToSubscribeListener – While connecting to a Worklight Server, the app attempts to register itself with the GCM server to receive Push notifications.

```
client.getPush().setOnReadyToSubscribeListener(listener);  
client.connect(listener);
```

- The **onReadyToSubscribe()** method of WLOnReadyToSubscribeListener is called when the registration is complete.

```
@Override  
public void onReadyToSubscribe() {  
    WLCClient.getInstance().getPush().registerEventSourceCallback("myAndroid", "PushAdapter", "PushEventSource", this );  
}
```

WLPush.registerEventSourceCallback()

- Use the method **WLPush.registerEventSourceCallback** to register an alias on a particular event source.

```
WLCClient.getInstance().getPush().registerEventSourceCallback("myAndroid", "PushAdapter", "PushEventSource", this );
```

- This method is typically called in the **onReadyToSubscribe()** callback function.
- The preceding statement registers an alias of **myAndroid** on an event source that is called **PushEventSource** and that is defined in an adapter that is called **PushAdapter**.

Other WLPush methods

- **isPushSupported():**

- Indicates whether Push notifications are supported by the device

```
WLClient client = WLClient.getInstance();  
boolean supported = client.getPush().isPushSupported();
```

- **isSubscribed():**

- Indicates whether the device is subscribed to push notifications.

```
WLClient client = WLClient.getInstance();  
boolean bisSubscribed = client.getPush().isSubscribed("myAndroid");
```

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Subscribing to Push notifications

- **WLPush.subscribe(alias, pushOptions, responseListener)**
 - **alias** – Alias to which the device must subscribe to
 - **pushOptions** – An object of type WLPushOptions
 - **responseListener** – An object of type WLResponseListener that is invoked when **subscribe** completes

```
WLClient client = WLClient.getInstance();  
client.getPush().subscribe("myAndroid", new WLPushOptions(), new MyListener(MyListener.MODE_SUBSCRIBE));
```

- **MyListener.java**
 - implements WLResponseListener
 - **onSuccess** – called when **subscribe** succeeds
 - **onFailure** – called when **subscribe** fails

Unsubscribing from Push notifications

- **WLPush.unsubscribe(alias, responseListener)**
 - **alias** – Alias to which the device must subscribe to
 - **responseListener** – An object of type **WLResponseListener** that is invoked when **subscribe** completes

```
WLClient client = WLClient.getInstance();  
client.getPush().unsubscribe("myAndroid", new MyListener(MyListener.MODE_UNSUBSCRIBE));
```

- **MyListener.java**
 - implements **WLResponseListener**
 - **onSuccess** – called when **unsubscribe** succeeds
 - **onFailure** – called when **unsubscribe** fails

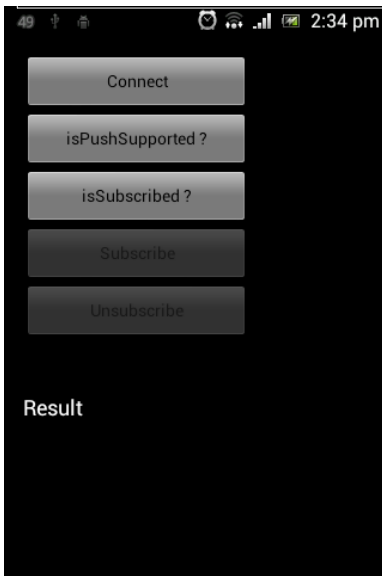
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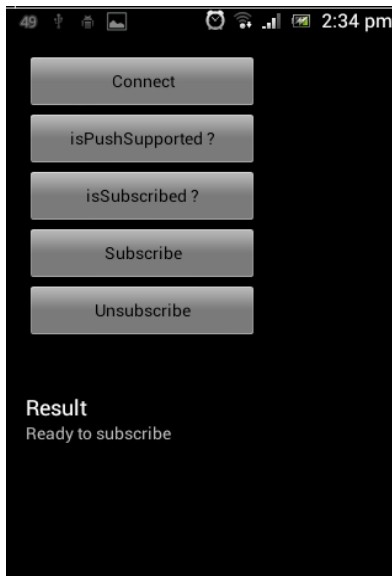
Running your Android project

- Right-click your Android project and choose **Run As > Android Application**.

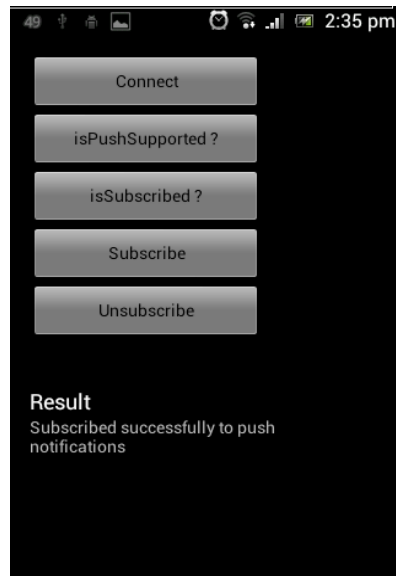
Tap on Connect



Wait until onReadyToSubscribe listener is called



Then tap on Subscribe



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Sending a Push notification (1 of 2)

- The PushAdapter has a **submitNotification()** procedure

```
function submitNotification(userId, notificationText){  
    var userSubscription =  
        WL.Server.getUserNotificationSubscription('PushAdapter.PushEventSource', userId);  
  
    if (userSubscription==null){  
        return { result: "No subscription found for user :: " + userId };  
    }  
  
    WL.Logger.debug("submitNotification >> userId :: " + userId + ", text :: " + notificationText);  
  
    WL.Server.notifyAllDevices(userSubscription, {  
        badge: 1,  
        sound: "sound.mp3",  
        activateButtonLabel: "ClickMe",  
        alert: notificationText,  
        payload: {  
            foo : 'bar'  
        }  
    });  
  
    return { result: "Notification sent to user :: " + userId };  
}
```

- Right-click your adapter and select **Run As > Invoke Worklight Procedure**.

Sending a Push notification (2 of 2)

- Invoke **submitNotification()** to send a Push Notification.

Edit Configuration

Edit configuration and launch.

Name: Invoke Procedure module_07_05_NativeAPIForAndroidPush - PushAdapter

Invoke Procedure Data

Project name: module_07_05_NativeAPIForAndroidPush

Adapter name: PushAdapter

Procedure name: submitNotification

Signature:
submitNotification (userId, notificationText)

Parameters (comma-separated):
"worklight", "Worklight is cool"

Apply Revert

Run Close

Receiving a Push notification (1 of 3)

- When a Push notification is received, the **onReceive()** method of an EventSourceListener is called.

```
public class MyListener implements WLOnReadyToSubscribeListener, WLResponseListener, WLEventSourceListener{
```

- The EventSourceListener is registered during **registerEventSourceCallback()**.

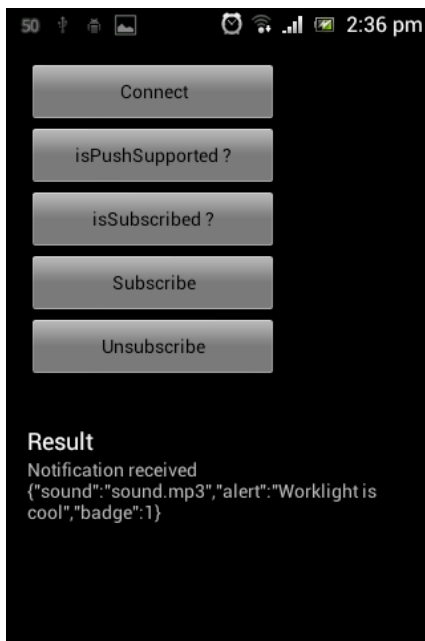
```
WLClient.getInstance().getPush().registerEventSourceCallback("myAndroid", "PushAdapter", "PushEventSource", this );
```

- The **onReceive()** method of EventSourceListener is called when a notification is received.

```
@Override  
public void onReceive(String arg0, String arg1) {  
    AndroidNativePush.updateTextView("Notification received " + arg0);  
}
```

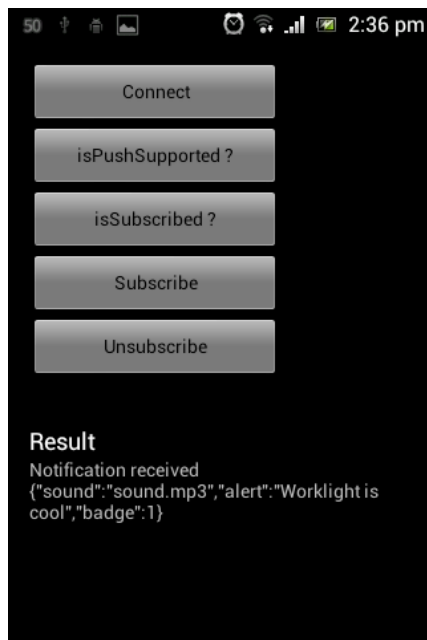

Receiving a Push notification (2 of 3)

- The **onReceive()** method displays the received notification on the screen.
- If the app is not running, the notification icon appears on the notification bar at the top of the screen.



Receiving a Push notification (3 of 3)

- 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_07_05_NativeAPIForAndroidPush.zip` contains a Worklight native API to be deployed to your Worklight Server.
 - The `module_07_05_AndroidNativePush.zip` contains a native Android application that uses a Worklight native API library to communicate with the Worklight Server.



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