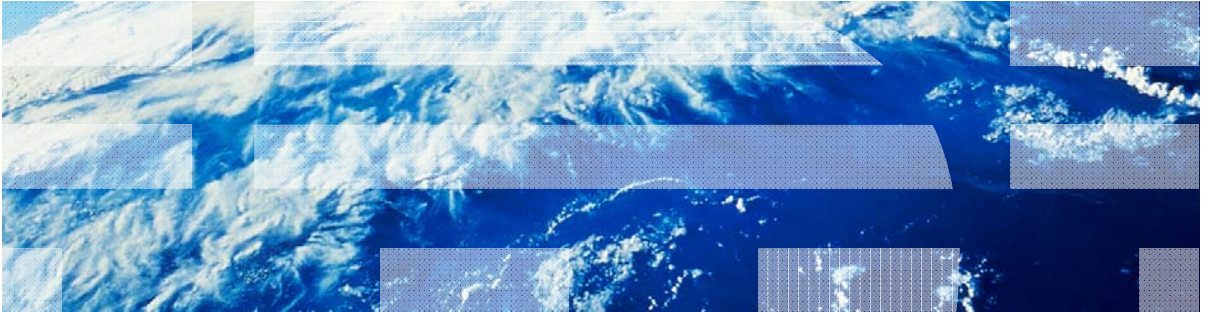


# ***IBM Worklight V5.0.6 Getting Started***

## **Using Worklight API for push notifications in native Android applications**



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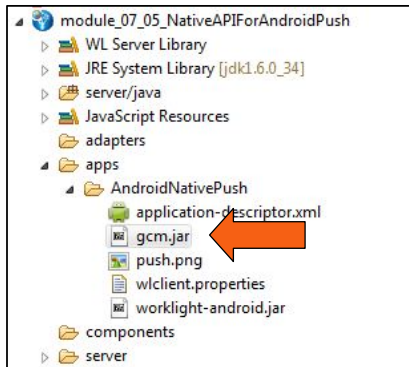
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# Agenda

- 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

- 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 user documentation.



## Setting up your Worklight project

- 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">

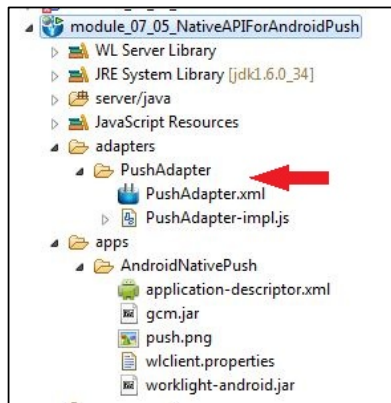
  <displayName>AndroidNativePush</displayName>
  <description>AndroidNativePush</description>
  <publicSigningKey>Replace this text with the public key of the certificate with which you sign the application.</publicSigningKey>
  <pushSender key="Enter your Google API key" senderId="Enter your Google API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

- 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.

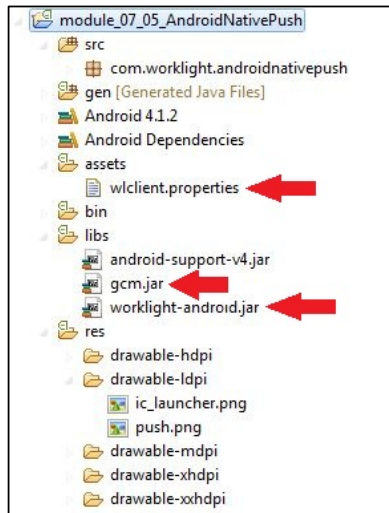
## Agenda

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## Setting up your native app for Push notifications

- 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

- 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

- 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" />
```

- 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

- 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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- Setting up your Worklight project
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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.

```
WLPush.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

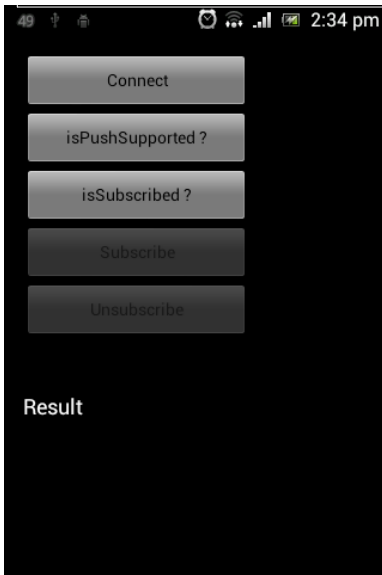
## Agenda

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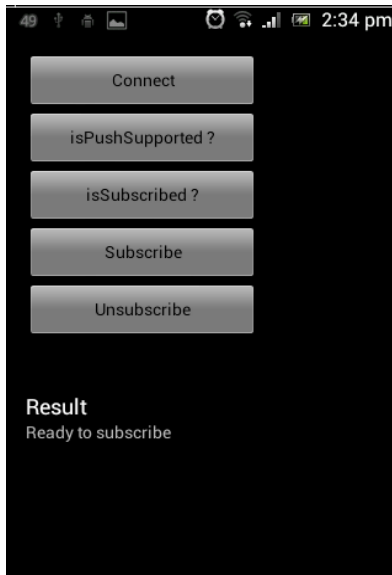
## Running your Android project

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

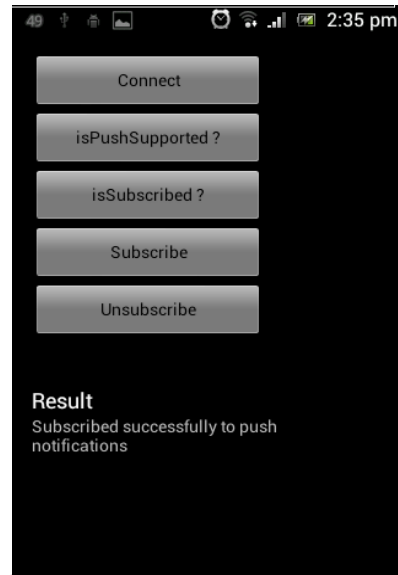
Tap on Connect



Wait until onReadyToSubscribe listener is called



Then tap on Subscribe



## Agenda

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- **Sending and receiving Push notifications**

## *Sending a push notification*

- 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

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

The screenshot shows a dialog box titled "Edit Configuration" with the subtitle "Edit configuration and launch." The main content area is titled "Invoke Procedure Data" and contains the following fields:

- Name: Invoke Procedure module\_07\_05\_NativeAPIForAndroidPush - PushAdapter
- Project name: module\_07\_05\_NativeAPIForAndroidPush
- Adapter name: PushAdapter
- Procedure name: submitNotification
- Signature: submitNotification (userId, notificationText)
- Parameters (comma-separated): "worklight", "Worklight is cool"

At the bottom of the dialog, there are four buttons: "Apply", "Revert", "Run", and "Close". A help icon (?) is located in the bottom-left corner.

## Receiving a Push Notification

- 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()**.

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

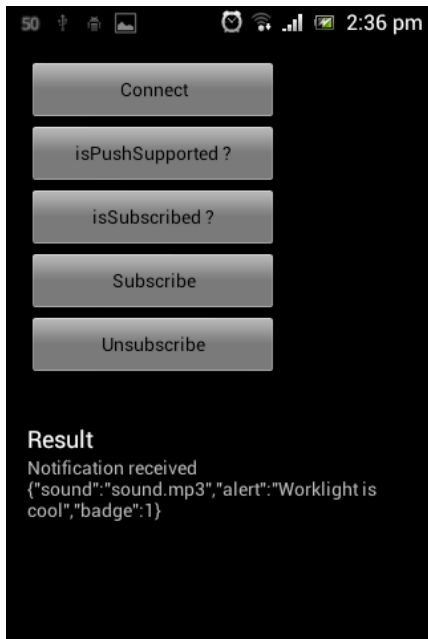
- The **onReceive()** method of EventSourceListener is called when a notification is received.

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



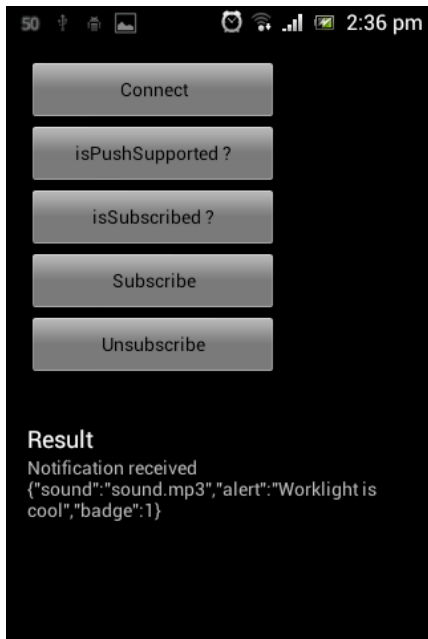
## Receiving a Push Notification

- 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

- 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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