

# Event source-based notifications in native Android applications

## Overview

Event source notifications are notification messages that are targeted to devices with a user subscription. To learn more about the architecture and terminology of push notifications in MobileFirst Platform, refer to the “Event source-based notifications in hybrid applications (../push-notifications-hybrid-applications/event-source-based-notifications/)” tutorial. Go to:

- Notification API - Server-side
- Notification API - Client-side
- Sample application

## Notification API: Server-side

### Creating an event source

Create a notification event source in the adapter JavaScript™ code at a global level (outside any JavaScript function).

```
WL.Server.createEventSource({
  name: 'PushEventSource',
  onDeviceSubscribe: 'deviceSubscribeFunc',
  onDeviceUnsubscribe: 'deviceUnsubscribeFunc',
  securityTest: 'PushApplication-strong-mobile-securityTest'
});
```

- `name` – A name by which the event source is referenced.
- `onDeviceSubscribe` – An adapter function that is called when the request for user subscription is received.
- `onDeviceUnsubscribe` – An adapter function that is called when the request for user unsubscription is received.
- `securityTest` – A security test from the `authenticationConfig.xml` file that is used to protect the event source.

### Sending a notification

Notifications can be either pulled from, or pushed by, the back-end system. In this example, a `submitNotifications()` adapter function is invoked by a back-end system as an external API to send notifications.

```

function submitNotification(userId, notificationText) {
    var userSubscription = WL.Server.getUserNotificationSubscription('PushAdapter.PushEventSource', userId);

    if (userSubscription === null) {
        return { result: "No subscription found for user :: " + userId };
    }

    var badgeDigit = 1;
    var notification = WL.Server.createDefaultNotification(notificationText, badgeDigit, {custom:"data"});

    WL.Server.notifyAllDevices(userSubscription, notification);

    return {
        result: "Notification sent to user :: " + userId
    };
}

```

## Notification API - Client-side

The first step is to create an instance of the `WLClient` class:

```

final WLClient client = WLClient.createInstance(this);

```

You derive all push notification operations from the `WLPush` class.

`getPush` – Use this method to retrieve an instance of the `WLPush` class from the `WLClient` instance.

```

WLPush push = client.getPush();

```

`WLOnReadyToSubscribeListener` – When connecting to MobileFirst Server, the application 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() {.....}

```

### `WLPush.registerEventSourceCallback`

To register an alias on a particular event source, use the `WLPush.registerEventSourceCallback` method. The API takes the following arguments:

`alias` - An alias name. `Adaptername` - Adapter in which the event source is defined.  
`EventSourceName` - The event source on which the alias is called.

Example:

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

Typically, this method is called in the `onReadyToSubscribe` callback function.

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

In the Android activity class, override the methods that define the Android activity life cycle as follows:

`onPause()` must call the `setForeground(false)` method of the `WLPush` instance to receive the notification in the notification bar when the application is paused.

```
@Override
protected void onPause() {
    super.onPause();
    if (push != null)
        push.setForeground(false);
    ;
}
```

`onResume()` must call the `setForeground(true)` method of the `WLPush` instance to receive the notification in the callback of the application.

```
@Override
protected void onResume() {
    super.onResume();
    if (push != null)
        push.setForeground(true);
}
```

`onDestroy()` must call the `unregisterReceivers` method of the `WLPush` instance to avoid leak exceptions from the receiver when the application exits.

```
@Override
protected void onDestroy() {
    super.onDestroy();
    if (push != null)
        push.unregisterReceivers();
    ;
}
```

## Subscribing to push notifications

To set up subscription to push notifications, use the `WLPush.subscribe(alias, pushOptions, responseListener)` API. The API takes the following arguments:

`alias` – The alias to which the device must subscribe. `pushOptions` – An object of type `WLPushOptions`. `responseListener` – An object of type `WLResponseListener`, which is called when subscription completes.

Example:

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

`MyListener` Implements `WLResponseListener` and provides the following callback functions:

`onSuccess` – Called when subscription succeeds. `onFailure` – Called when subscription fails.

## Unsubscribing from push notifications

To set up unsubscription from push notifications, use the `WLPush.unsubscribe(alias, responseListener)` API. The API takes the following arguments:

`alias` – The alias to which the device has subscribed. `responseListener` – An object of type `WLResponseListener`, which is called when unsubscription completes.

Example:

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

`MyListener` Implements `WLResponseListener` and provides the following callback functions:

`onSuccess` – Called when unsubscription succeeds. `onFailure` – Called when unsubscription fails.

## Additional client-side API 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 blsSubscribed = client.getPush().isSubscribed("myAndroid");
```

## Receiving a push notification

When a push notification is received, the `onReceive` method is called on an `WLEventSourceListener` instance.

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

The `WLEventSourceListener` instance is registered during the `registerEventSourceCallback` callback.

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

The `onReceive` method displays the received notification on the screen.

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

If the application is not running, the notification icon appears on the notification bar at the top of the screen.

## Sample application

Click to download

(<http://public.dhe.ibm.com/software/products/en/MobileFirstPlatform/docs/v700/PushNotificationsNativeProject.zip>)

the Studio project. Click to download

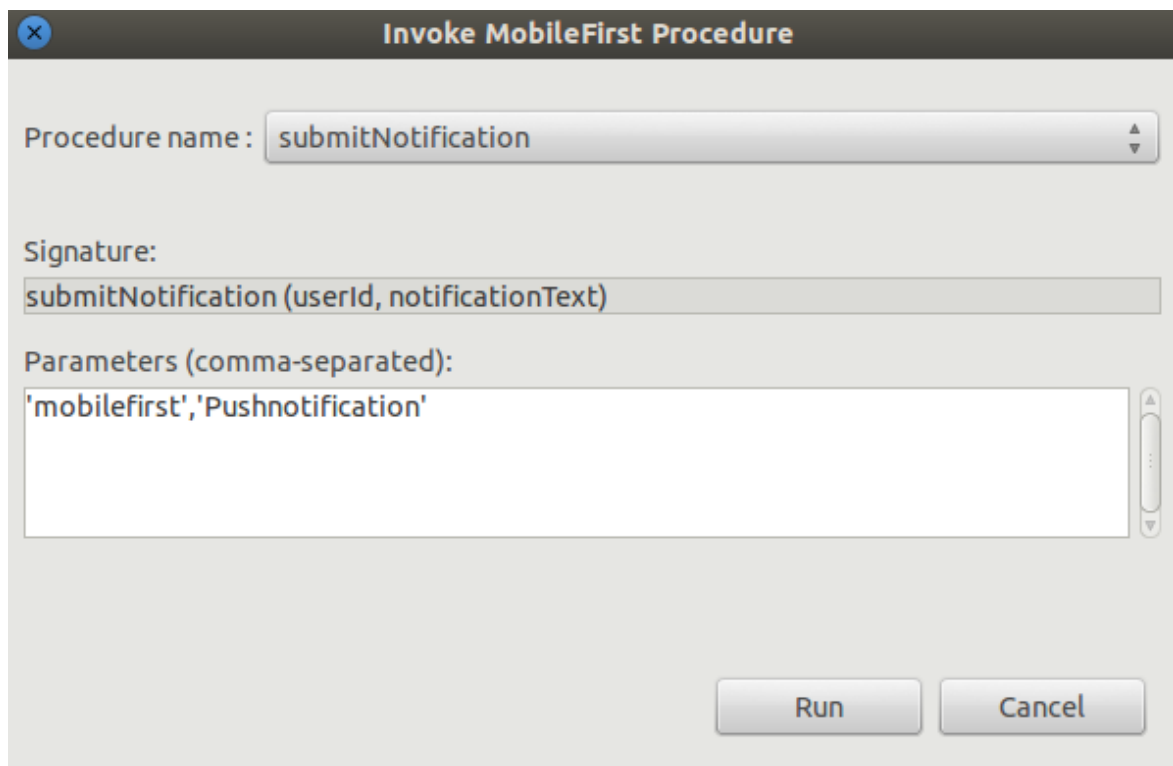
(<http://public.dhe.ibm.com/software/products/en/MobileFirstPlatform/docs/v700/AndroidNativePushProject.zip>)

the Native project. The sample contains two projects:

- The **PushNotificationsNativeProject.zip** file contains a MobileFirst native API that you can deploy to your MobileFirst Server instance.
- The **AndroidNativePushProject.zip** file contains a native iOS application that uses a MobileFirst native API library to subscribe to push notifications and receive notifications from GCM. Make sure to update the `wlclient.properties` file in AndroidNativePushProject with the relevant server settings.



In MobileFirst Studio, right-click **Push Adapter** and select **Run As > Invoke MobileFirst Procedure**. Call `submitNotification` to send a push notification.



*Push notification received - application in background*



*Push notification received - application in foreground*

