

# Lab - Adding push notification to your application

In this lab we are going to take existing Cordova/Ionic application which was instrumented for MobileFirst and add push notification support using the MobileFirst push notification SDK.

We are going to add the mfp-push-notification plugin and then modify the client side app to be able to register in order to receive push notifications from the server.

Note: For this lab there are snippets files included in the `/snippets` folder of your workspace which can be used to quickly copy/paste the large source code changes in the lab steps below.

## Source code for labs

In order to get the latest code for the ionic application, run the following git command:

```
git clone https://github.com/eliranbi/MFPushNotificationLab.git
```

The command above will download the latest documentation and code snippets.

**This lab will use the Cordova CLI to add the MobileFirst Cordova plugin. These are the standard steps required to add plugins to an application. Adding the MobileFirst plugin allows the application to use the MobileFirst platform features.**

### General Steps:

1. Within the IBM Employee application directory, run Cordova CLI command to add a plugin.
2. Add one or more device platforms.
3. Use the MobileFirst CLI to preview the application to ensure the plugin was successfully added.

## Steps:

1. Change context into the MobileFirst project.

```
cd IBMEmployeeApp
```

## 2. Add the Android platform, run the following command cordova platform add android

```
cordova platform add android
```

```
[Elirans-MacBook-Pro:IBMEmployeeApp eliran_pro$ cordova platform add android
Adding android project...
Creating Cordova project for the Android platform:
  Path: platforms/android
  Package: com.ionicframework.ibmemployeeapp420875
  Name: Employee
  Activity: MainActivity
  Android target: android-23
Android project created with cordova-android@5.1.1
Running command: /Users/eliran_pro/Documents/projects/NATechnicalAcademy2016/MFPushNotificationLab/IBMEmployeeApp/hooks/after_prepare/010_add_platform_class.js /Users/eliran_pro/Documents/projects/NATechnicalAcademy2016/MFPushNotificationLab/IBMEmployeeApp
add to body class: platform-android
Elirans-MacBook-Pro:IBMEmployeeApp eliran_pro$ ]
```

## 3. Run the cordova plugin add cordova-plugin-mfp

```
cordova plugin add cordova-plugin-mfp
```

```
[mongod           node          bash          node          bash          bash
Elirans-MacBook-Pro:IBMEmployeeApp eliran_pro$ cordova plugin add cordova-plugin-mfp
Fetching plugin "cordova-plugin-mfp" via npm
Installing "cordova-plugin-mfp" for ios
Dependent plugin "cordova-plugin-device" already installed on ios.
Fetching plugin "cordova-plugin-dialogs" via npm
Installing "cordova-plugin-dialogs" for ios
Fetching plugin "cordova-plugin-globalization" via npm
Installing "cordova-plugin-globalization" for ios
cp: no such file or directory: /Users/eliran_pro/Documents/projects/Madrid2016/IBMEmployeeApp/platforms/ios/Employee/main.m
If you made changes to your main.m file, manually merge main.m.bak with the main.m file that is provided with IBM MobileFirst Platform Foundation.
Elirans-MacBook-Pro:IBMEmployeeApp eliran_pro$ ]
```

## 4. Run the cordova plugin add cordova-plugin-mfp-push

```
cordova plugin add cordova-plugin-mfp-push
```

```
[roycecpp:platforms/android:/src/com/ibm/employeeapp420875] directory.
[Elirans-MacBook-Pro:IBMEmployeeApp eliran_pro$ cordova plugin add cordova-plugin-mfp-push
Fetching plugin "cordova-plugin-mfp-push" via npm
Installing "cordova-plugin-mfp-push" for android
Dependent plugin "cordova-plugin-mfp" already installed on android.
Elirans-MacBook-Pro:IBMEmployeeApp eliran_pro$ ]
```

Note: To be able to easily debug your application and view your application console log, run the following command to add the cordova console plugin

```
cordova plugin add cordova-plugin-console
```

**Note:** Running the add plugin command above will add all the required MFP plugin files from npm.

This requires a network connection. For more information on the MFP Cordova Plugin, visit:

<https://www.npmjs.com/package/cordova-plugin-mfp>

5. Start the mobile first server, navigate to the mobile first server installation folder and run the following commands:

*For Mac*

- Open a new terminal session

```
cd ~/MobileFirst-8.0.0.0
```

```
./run.sh
```

```
Elirans-MacBook-Pro:mfp-server-all-in-one eliran_pro$ ./run.sh
Picked up JAVA_TOOL_OPTIONS: -DwlDevEnv=true
objc[25473]: Class JavaLaunchHelper is implemented in both /Library/Java/JavaVirtualMachines/jdk1.7.0_80.jdk/Contents/Home/jre/bin/java and /Library/Java/JavaVirtualMachines/jdk1.7.0_80.jdk/Contents/Home/jre/lib/libinstrument.dylib. One of the two will be used. Which one is undefined.
Listening for transport dt_socket at address: 10777
Launching mfp (WebSphere Application Server 8.5.5.8/wlp-1.0.11.cl50820151201-1942) on Java HotSpot(TM) 64-Bit Server VM, version 1.7.0_80-b15 (en_US)
[AUDIT    ] CWWKE0001I: The server mfp has been launched.
```

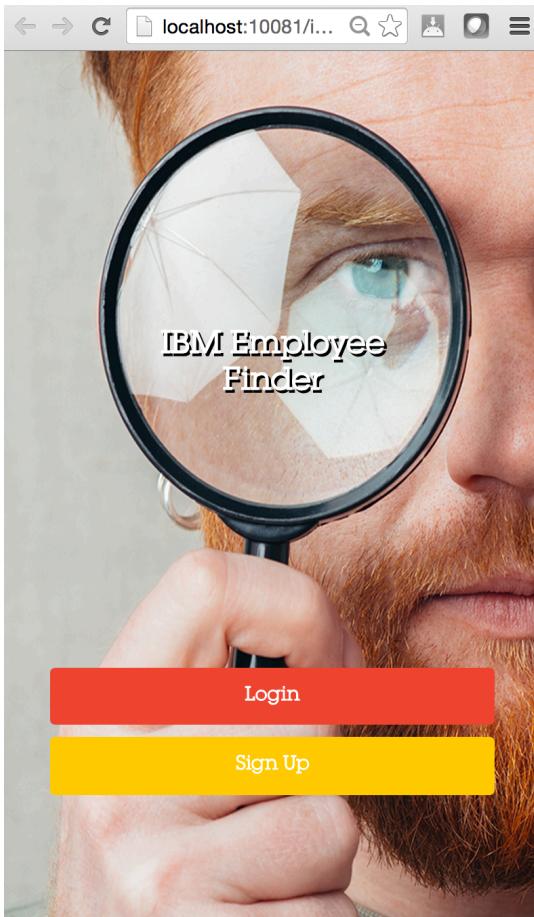
6. Run the mfpdev app preview

```
mfpdev app preview
```

```
Elirans-MacBook-Pro:IBMEmployeeApp eliran_pro$ mfpdev app preview
Verifying server configuration...
? Select how to preview your app: browser: Simple browser rendering
The CLI preview will remove the Content-Security-Policy meta tag during preview to allow the live reload to function in a browser. Please ignore the 'No Content-Security-Policy' error messages from whitelist.js in a browser's debugger console.
[BS] Access URLs:
-----
      Local: http://localhost:10081
      External: http://10.0.1.5:10081
-----
      UI: http://localhost:3001
      UI External: http://10.0.1.5:3001
[BS] Serving files from: ./platforms
Launching browser.
```

7. The preview will prompt for using either the simple browser or the mobile browser simulator. Select the simple browser. This will launch the application using the default browser.

```
Verifying server configuration...
? Select how to preview your app: (Use arrow keys)
❯ browser: Simple browser rendering
mbs: Mobile Browser Simulator
```



**Tip:** To change the default browser use the `mfpdev config` command.

## Summary

So far we took basic Cordova/Ionic application and add the MobileFirst Plugins, we add to go through the process since its not a good practice to add plugins and environments to git repositories.

## Next

---

Now that we add the necessary plugins and environments we can start edit the code and the push support.

**Before we can start we need to follow the steps below to add the mfp plugins and OS environment.**

1. Open the `app.js` file and search for the `wlCommonInit()` method and add the `MFPPush.initialize` block inside

```

//Adding push notification support
MFPPush.initialize(
    function(successResponse) {
        console.log(">> in MFPPush.initialize - successResponse ...");
        WL.Logger.debug("Successfully initialized");
        MFPPush.registerNotificationsCallback(notificationReceived);
    }, function(failureResponse) {
        console.log(">> in MFPPush.initialize - failureResponse ...:" + failureResponse);
        alert("Failed to initialize");
    });

```

## Before

```

75  function wlCommonInit() {
76      console.log(">> wlCommonInit() ...");
77      var serverUrl = WL.App.getServerUrl(function(success){
78          console.log(">> wlCommonInit() - success: " + success);
79      }, function(fail){
80          console.log(">> wlCommonInit() - failed: " + fail);
81      });
82
83      //Calling to the MobileFirst Server
84      WLAuthorizationManager.obtainAccessToken().then(
85          function (accessToken) {
86              console.log(">> Success - Connected to MobileFirst Server");
87          },
88          function (error) {
89              console.log(">> Failed to connect to MobileFirst Server");
90          }
91      );
92  };

```

## After

```

75 function wlCommonInit() {
76     console.log(">> wlCommonInit() ...");
77     var serverUrl = WL.App.getServerUrl(function(success){
78         console.log(">> wlCommonInit() - success: " + success);
79     }, function(fail){
80         console.log(">> wlCommonInit() - failed: " + fail);
81 });
82
83 //Calling to the MobileFirst Server
84 WLAuthorizationManager.obtainAccessToken().then(
85     function (accessToken) {
86         console.log(">> Success - Connected to MobileFirst Server");
87     },
88     function (error) {
89         console.log(">> Failed to connect to MobileFirst Server");
90     }
91 );
92
93 //Adding push notification support
94 MFPPush.initialize(
95     function(successResponse) {
96         console.log(">> in MFPPush.initialize - successResponse ...");
97         WL.Logger.debug("Successfully initialized");
98         MFPPush.registerNotificationsCallback(notificationReceived);
99     }, function(failureResponse) {
100         console.log(">> in MFPPush.initialize - failureResponse ...:" + failureResponse);
101         alert("Failed to initialize");
102     });
103 };

```

2. Next we are going to add the **notificationReceived** callback method to the bottom of the file.

```

// Adding push notification callback method
var notificationReceived = function(message) {
    alert (JSON.stringify(message));
};

```

```

75 function wlCommonInit() {
76     console.log(">> wlCommonInit() ...");
77     var serverUrl = WL.App.getServerUrl(function(success){
78         console.log(">> wlCommonInit() - success: " + success);
79     }, function(fail){
80         console.log(">> wlCommonInit() - failed: " + fail);
81     });
82
83     //Calling to the MobileFirst Server
84     WLAuthorizationManager.obtainAccessToken().then(
85         function (accessToken) {
86             console.log(">> Success - Connected to MobileFirst Server");
87         },
88         function (error) {
89             console.log(">> Failed to connect to MobileFirst Server");
90         }
91     );
92
93     //Adding push notification support
94     MFPPush.initialize(
95         function(successResponse) {
96             console.log(">> in MFPPush.initialize - successResponse ...");
97             WL.Logger.debug("Successfully initialized");
98             MFPPush.registerNotificationsCallback(notificationReceived);
99         }, function(failureResponse) {
100             console.log(">> in MFPPush.initialize - failureResponse ...:" + failureResponse);
101             alert("Failed to initialize");
102         });
103     );
104
105     // Adding push notification callback method
106     var notificationReceived = function(message) {
107         alert (JSON.stringify(message));
108     };

```

3. Lets save the changes and test our application on the simulator.
4. Before we can test the application on the simulator, lets register the application with the MobileFirst server, run the following command within the IBMEmployeeApp folder to register the application:

```
$ mfpdev app register
```

```

Elirans-MacBook-Pro:IBMEmployeeApp eliran_pro$ mfpdev app register
Verifying server configuration...
Registering to server:'http://172.31.99.103:9080' runtime:'mfp'
Updated config.xml file located at: /Users/eliran_pro/Documents/projects/NATechnicalAcademy2016/MFPPushNotificationL
ab/IBMEmployeeApp/config.xml
Run 'cordova prepare' to propagate changes.
Registered app for platform: android
Registered app for platform: ios
Elirans-MacBook-Pro:IBMEmployeeApp eliran_pro$
```

- Run the cordova prepare command to propagate the changes to the application project.

```
$ cordova prepare
```

```
[Eliran-MacBook-Pro:IBMEmployeeApp eliran_pro$ cordova prepare
Running command: /Users/eliran_pro/Documents/projects/NATechnicalAcademy2016/MFPushNotificationLab/IBMEmployeeApp/hooks/after_prepare/010_add_platform_class.js /Users/eliran_pro/Documents/projects/NATechnicalAcademy2016/MFPushNotificationLab/IBMEmployeeApp
add to body class: platform-android
add to body class: platform-ios
Eliran-MacBook-Pro:IBMEmployeeApp eliran_pro$]
```

- To test the application on the emulator run the following command

```
$ cordova run android
```

- To test the application on a real device run the following command where 'TA0050AUKC' is the id of the connected device.

```
$ cordova run android --target=TA0050AUKC
```

Note: To get a list of the available devices you can run the following command : `$ ./adb devices` adb should be found under `/Users/YOUR_NAME/Library/Android/sdk/platform-tools`

- If you are looking at the console logs, you can look at the console logs by running and see the successResponse of the MFPPush.initialize call.

```
$ cordova run android --target=TA0050AUKC
```

```
I/chromium(24082): [INFO:CONSOLE(82)] ">> wlCommonInit() ...", source: file:///android_asset/www/js/app.js (82)
I/chromium(24082): [INFO:CONSOLE(84)] ">> wlCommonInit() - success: http://172.31.99.103:9080/mfp/api", source: file:///android_asset/www/js/app.js (84)
W/PluginManager(24082): THREAD WARNING: exec() call to WLAuthorizationManagerPlugin.getClientIdOrInvokeRegistration blocked the main thread for 70ms. Plugin should use CordovaInterface.getThreadPool().
I/chromium(24082): [INFO:CONSOLE(102)] ">> in MFPPush.initialize - successResponse ...", source: file:///android_asset/www/js/app.js (102)
D/audio_hw_primary( 290): out_standby: enter: stream (0xb08ca7d40) usecase(1: low-latency-playback)
D/hardware_info( 290): hw_info_append_hw_type : device_name = speaker
I/MotoNetwCtrlr.MotoWifiHndlr( 1137): handleMessage: Entered msg.what=1
I/MotoNetwCtrlr.MotorolaWifiSignalController( 1137): isDirty: returns true
I/MotoNetwCtrlr.MotorolaWifiSignalController( 1137): notifyListeners: calling SB [0] setWifiIndicators (Motorola api): UseMotoUI=true Vis=true SBSig=0x7f02014c=stat_sys_wifi_signal_4_fully SBAct=0x7f020507=zz_moto_stat_sys_wifi_out_fully_wide DescSig="Wifi signal full." DescAct="Wifi out" NetName="" Eliran's Wi-Fi Network"
I/MotoNetwCtrlr.MotorolaWifiSignalController( 1137): notifyListeners: calling SB [1] setWifiIndicators (Motorola api): UseMotoUI=true Vis=true SBSig=0x7f02014c=stat_sys_wifi_signal_4_fully SBAct=0x7f020507=zz_moto_stat_sys_wifi_out_fully_wide DescSig="Wifi signal full." DescAct="Wifi out" NetName="" Eliran's Wi-Fi Network"
I/MotoNetwCtrlr.MotorolaWifiSignalController( 1137): notifyListeners: calling SB [2] setWifiIndicators (Motorola api): UseMotoUI=true Vis=true SBSig=0x7f02014c=stat_sys_wifi_signal_4_fully SBAct=0x7f020507=zz_moto_stat_sys_wifi_out_fully_wide DescSig="Wifi signal full." DescAct="Wifi out" NetName="" Eliran's Wi-Fi Network"
I/MotoNetwCtrlr.MotoWifiHndlr( 1137): handleMessage: Completed
E/NEW_BHD ( 3098): Battery Power Supply logging Daemon start!!!!!
```

- Next we are going to implement the the **isPushSupported** method and **registerDevice** method, Open the **controllers.js** and find the **settingsCtrl** add modify the code to implement the **isPushSupported** and **registerDevice** methods

```

//MFPPush.isPushSupported method
MFPPush.isPushSupported(
    function(successResponse) {
        alert("Push Supported: " + successResponse);
    }, function(failureResponse) {
        alert("Failed to get push support status");
});

//MFPPush.registerDevice method
var options = {"phoneNumber":""};
MFPPush.registerDevice(options,
    function(successResponse) {
        console.log(">>> registerDevice - successResponse :" + successResponse);
        alert("Successfully registered");
    }, function(failureResponse) {
        console.log(">>> registerDevice - failureResponse :" + failureResponse);
        alert("Failed to register");
});

```

## Before

```

20 ibmApp.controller('settingsCtrl', ['$scope', function ($scope) {
21     console.log(">> in settingsCtrl ... ");
22
23     $scope.isPushSupported = function(){
24         console.log(">> in isPushSupported ... ");
25     };
26
27     $scope.registerDevice = function(){
28         console.log(">> in registerDevice ... ");
29     }
30
31 }]);

```

## After

```

20 ibmApp.controller('settingsCtrl', ['$scope', function ($scope) {
21     console.log(">> in settingsCtrl ... ");
22
23     $scope.isPushSupported = function(){
24         console.log(">> in isPushSupported ... ");
25         //MFPPush.isPushSupported method
26         MFPPush.isPushSupported(
27             function(successResponse) {
28                 alert("Push Supported: " + successResponse);
29             }, function(failureResponse) {
30                 alert("Failed to get push support status");
31             });
32     };
33
34     $scope.registerDevice = function(){
35         console.log(">> in registerDevice ... ");
36         //MFPPush.registerDevice method
37         var options = {"phoneNumber":""};
38         MFPPush.registerDevice(options,
39             function(successResponse) {
40                 console.log(">>> registerDevice - successResponse :" + successResponse);
41                 alert("Successfully registered");
42             }, function(failureResponse) {
43                 console.log(">>> registerDevice - failureResponse :" + failureResponse);
44                 alert("Failed to register");
45             });
46     }
47
48 }]);

```

## Next we will need to configure the MFF server for push and we will need to create GCM server API Key and sender id

1. Open new browser window and navigate to: <https://developers.google.com/mobile/add?platform=android&cntapi=gcm&cnturl=https%3F%2Fdevelopers.google.com%2Fcloud-messaging%2Fandroid%2Fclient&cntlbl=Continue%20Adding%20GCM%20Support&%3Fconfigured%3Dtrue>
2. You will need to have a gmail account, go ahead and login with your email and password.
3. In the project name enter: **IBMEmployeeApp**
4. In the android package name enter : **com.ionicframework.ibmemployeeapp420875**
5. Press on the "**CONTINUE TO Choose and configure service**" button

eliranbi@gmail.com  
[Sign in as another user](#)

✓ Android  
[Create or choose app](#)  
[Choose services](#)  
[Download config files](#)

**Firebase**  
Powerful new tools from Google for mobile developers.  
[LEARN MORE →](#)

Create or choose an app

App name: **IBMEmployeeApp** ✓ A new project with Android support will be created for you in the [Google Developers Console](#).

Android package name: **com.ionicframework.ibmemployeeapp** ▾

Share your [Google Mobile Developer Services](#) data with Google to help improve Google's products and services. This includes sharing with Google technical support, account specialists, and anonymous data for benchmarking. If you disable this option, data can still flow to other Google products that are explicitly added.

Your country/region: **United States** ▾

**CONTINUE TO**  
[Choose and configure services →](#)

## 6. Press on the “Enable Google Cloud Messaging” button

eliranbi@gmail.com  
[Sign in as another user](#)

✓ Android  
✓ IBMEmployeeApp  
[Choose services](#)  
[Download config files](#)

**Firebase**  
Powerful new tools from Google for mobile developers.  
[LEARN MORE →](#)

Choose and configure services

✓ You are configuring the IBMEmployeeApp app with package name **com.ionicframework.ibmemployeeapp420875**. X

Select which Google services you'd like to add to your app below.

 + Google Sign-In

 + Analytics

 + Cloud Messaging

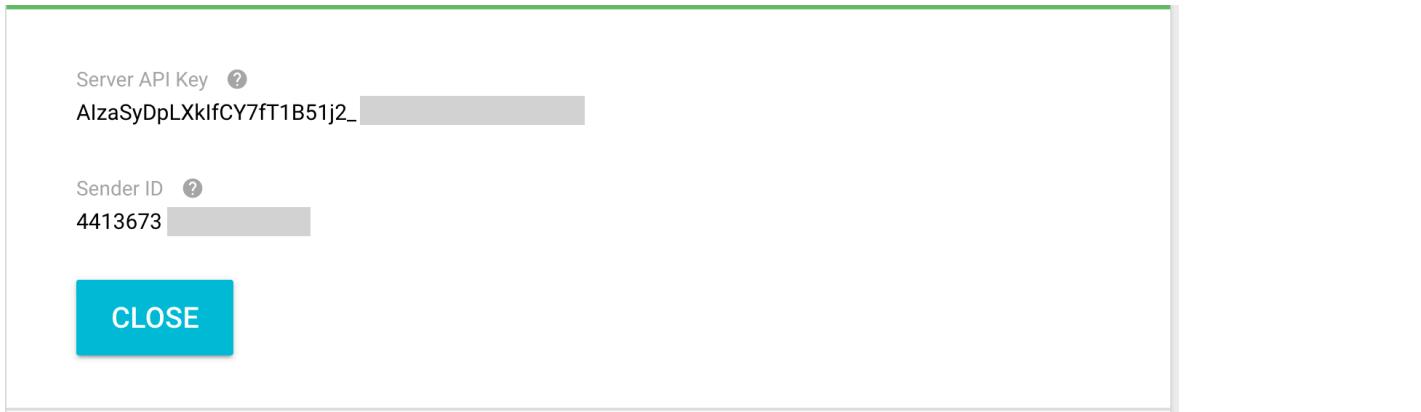
**Cloud Messaging** X

Google Cloud Messaging lets you send messages between your server and your users' devices

[LEARN MORE](#)

**ENABLE GOOGLE CLOUD MESSAGING**

## 7. Copy your application Server API Key and Sender ID



- Now that we have the GCM Server API key and Sender ID, lets launch the MFF web console, run the following command:

```
$ mfpdev server console
```

- Select the **Employee** application in the left side menu and press the **Push**

A screenshot of the MFP web console showing the 'Push' settings for the 'Employee' application. The left sidebar shows 'Applications (2)' with 'Employee' selected. The main page title is 'Home &gt; mfp &gt; com.ionicframework.libmemployeeapp420875 &gt; Push'. The 'Push Settings' tab is active. A red box highlights the 'Push' section in the sidebar. The 'GCM Push Credentials' section contains fields for 'Server API Key' and 'Sender ID', both of which are currently empty. A 'Save' button is at the bottom.

- Enter the server API key and Sender ID and press the 'Save' button.

A screenshot of the 'GCM Push Credentials' configuration page. It shows the 'Server API Key' field containing 'AlzaSyDpLXkIfCY7fT1B51j2...' and the 'Sender ID' field containing '4413673'. A blue 'Delete' button is at the bottom.

- Next we need to set application security.

12. Under Applications select the **Employee -> Android -> Security** and press the 'New' button.

The screenshot shows the 'Scope-Elements Mapping' section of the 'Security' tab for the 'Employee' application. The left sidebar lists 'Applications (2)', with 'Employee' selected. The main area shows a message: 'No scope-element mappings currently exist for this application. Get started by clicking New.' A red box highlights the 'New' button at the top right of the content area.

13. In the Scope element text input field enter **push.mobileclient** and press the 'Add' button.

The dialog box has the title 'Add New Scope-Element Mapping'. It contains a text input field labeled 'Scope element \*' with the value 'push.mobileclient' highlighted in yellow. Below it is a label 'Name of the scope element'. There are sections for 'Security Checks' and 'Predefined MobileFirst Security Checks' with checkboxes for 'LtpaBasedSSO' and 'appAuthenticity'. A section for 'Custom Security Checks' contains a checkbox for 'UserLogin'. At the bottom are 'Add' and 'Cancel' buttons.

14. Your application scope-elements mapping should look like this:

 The application descriptor was saved successfully. 

Management    Authenticity    **Security**    Log Filters    Configuration Files

#### Scope-Elements Mapping

Map custom scope elements to security checks to define application-specific security logic for accessing protected resources.

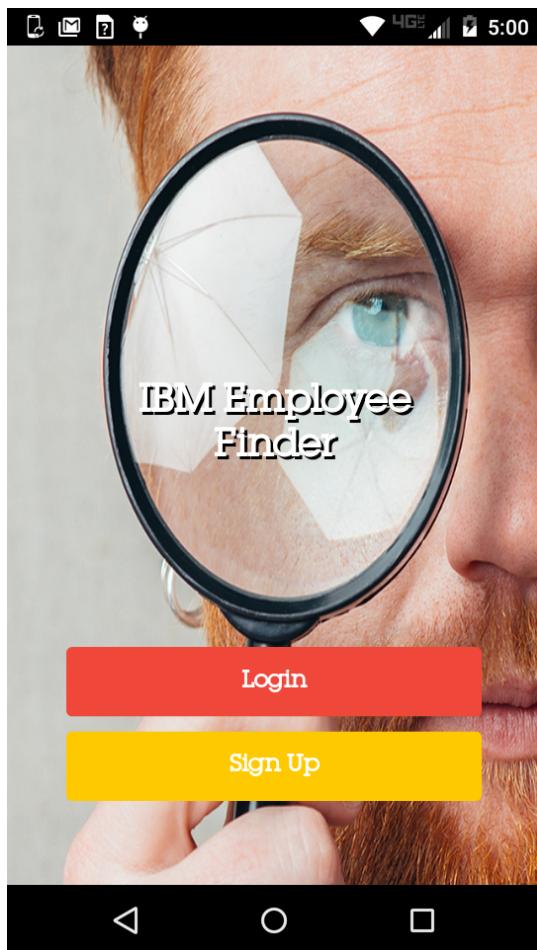
New

Scope Element	Security Checks	Actions
push.mobileclient		 

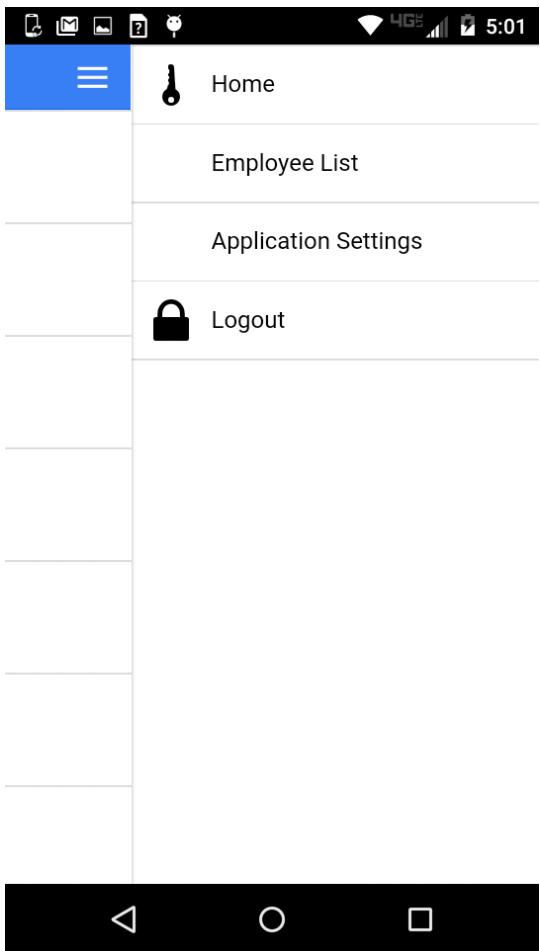
- Run the application again on your device by running the following command:

```
$ cordova run android --target=TA0050AUKC
```

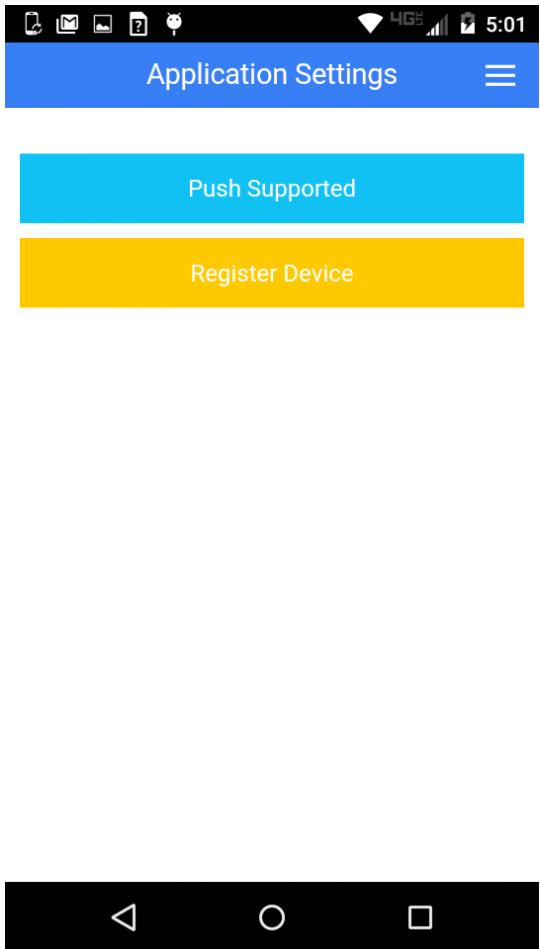
- Login to the application using demo/demo as the username and password.



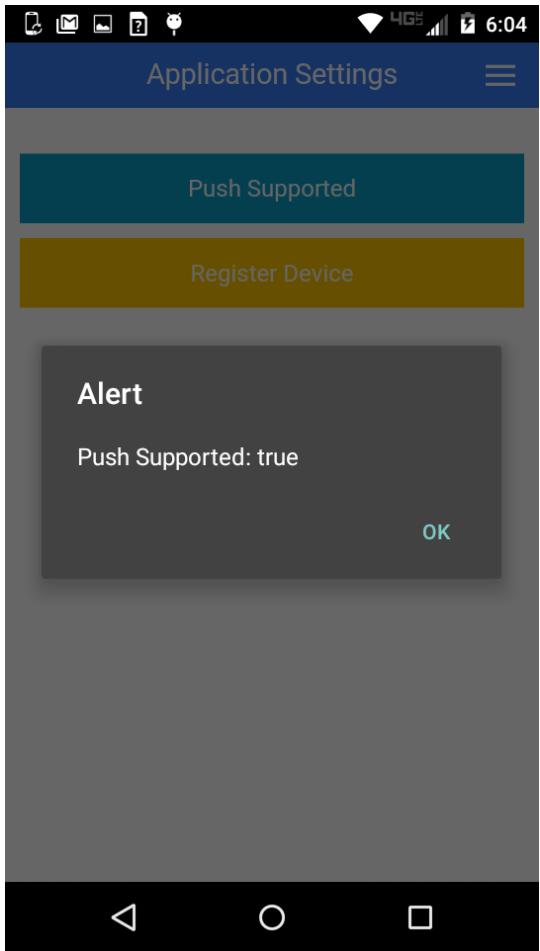
- Press the Menu top right button.



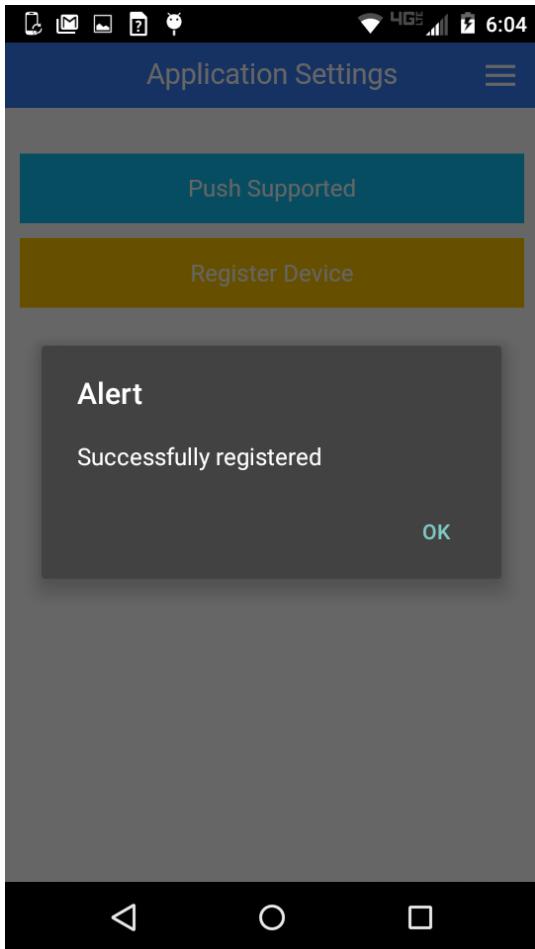
18. Press the Application Settings option.



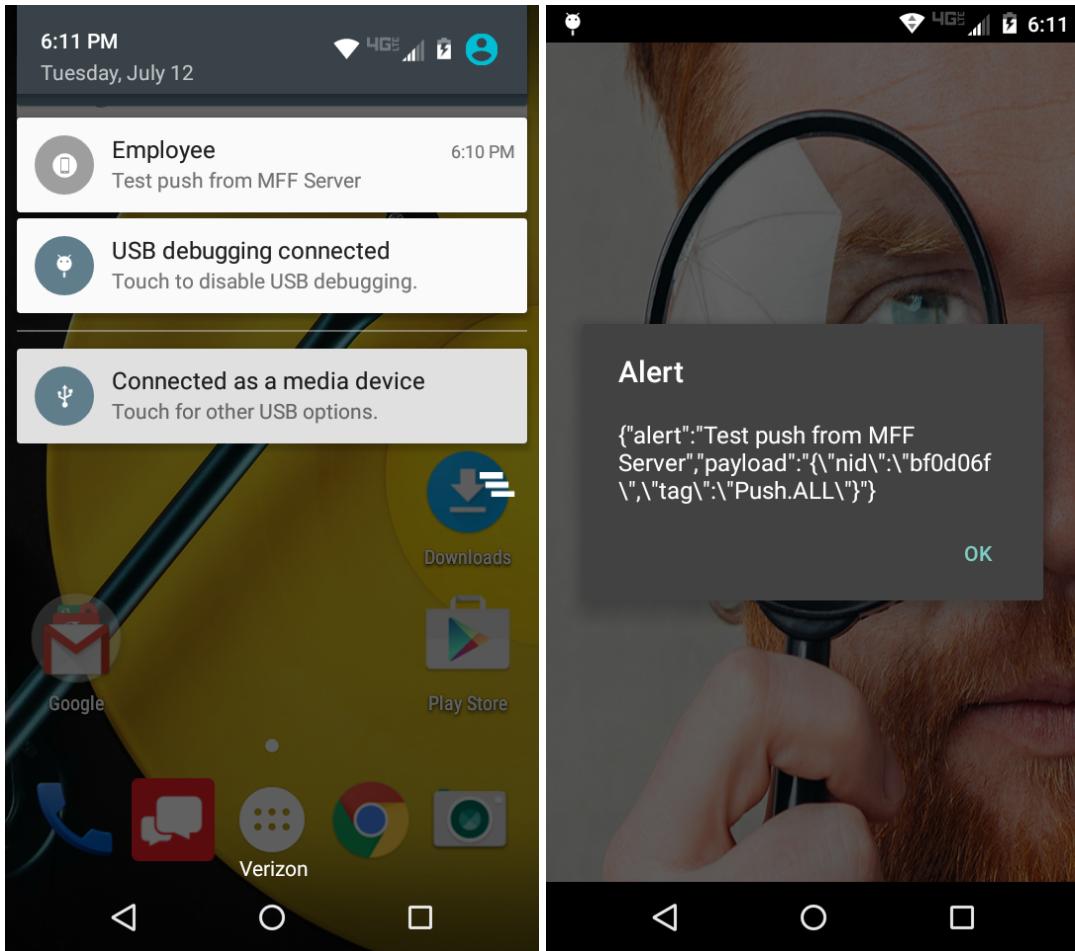
19. Press the "Push Supported" button you should see the following alert



20. Press the "Register Device" button you should see the following alert.



21. Now lets use the MobileFirst console to send a push notification to the device.
22. Select the Application **Employee -> Push -> Send Notification** tab.
23. In the **SendTo** select box choose **All**
24. Enter any notification Text that you want "Test push from MFF Server"
25. Press the "Send" Button
26. Look at your device and you should see the push notification message coming:



## Summary

In this lab, you used the MFF push notification SDK, and easily add support for push notification in your application.