Lab 1.1 - Instrument an Ionic application for custom analytics & Bluemix Analytics Service

IBM MobileFirst Foundation 8.0 capabilities are now available on Bluemix as a service called Mobile Foundation. Mobile Foundation service provides you with all the capabilities that you need to build secure mobile apps using any technology of your choice for all the popular mobile OSs.

A new experimental Bluemix service was launched in April, called Mobile Analytics. Mobile Analytics provides the developer valuable insights into the runtime of the app. It also provides you with app analytics, such as how many devices have connected, what is the OS breakdown, crash reports etc. etc. My personal favorite - client side developer logs.

In this lab we are going learn how you can configure a MobileFirst foundation service to send nalytics data to the Bluemix Mobile Analytics service.

> 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/MFAnalyticsBMXLab
```

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

General Steps:

1. Adds a new remote bluemix server definition to your local CLI.
2. Deploy the IBMEmployeeApp to the remote MFF server on blueMix.
3. Create new Analytics Service on bluemix.
4. Configure a MobileFirst foundation service to send nalytics data to the Bluemix Mobile Analytics service.
5. Instrument your application to send analytics to MFF.

Steps:

1. Change context into the MobileFirst project.

```
$ cd IBMEmployeeApp
```

2. Add one or more device platforms.

3. Use the MobileFirst CLI to preview the application to ensure the plugin was successfully added.

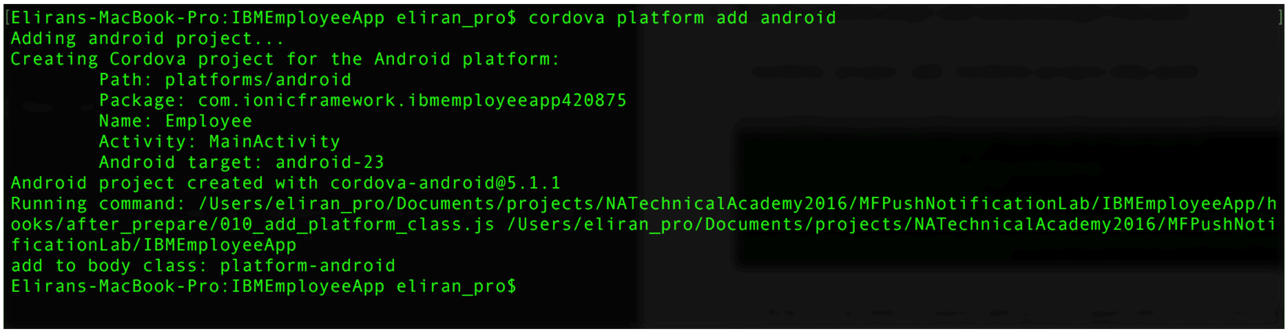
Steps:

1. Change context into the MobileFirst project.

```
cd IBMEmployeeApp
```

2. **Add** the Android or iOS platform, run the following command cordova platform add android

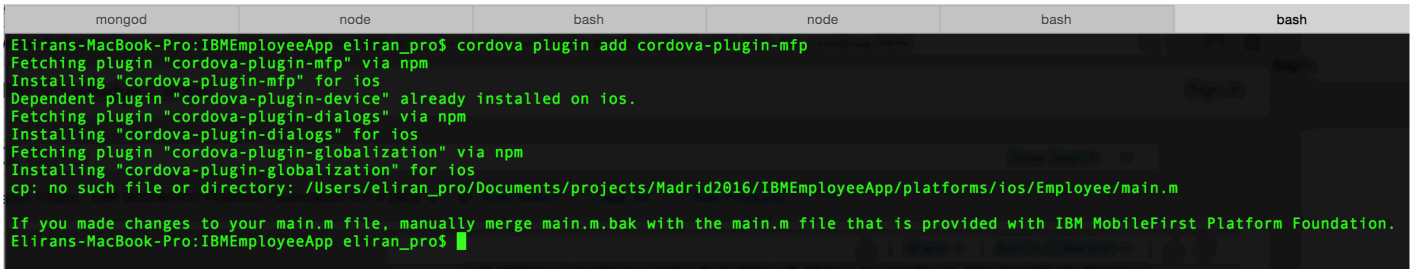
```
cordova platform add android
```



```
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/h
ooks/after_prepare/010_add_platform_class.js /Users/eliran_pro/Documents/projects/NATechnicalAcademy2016/MFPushNoti
ficationLab/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
```



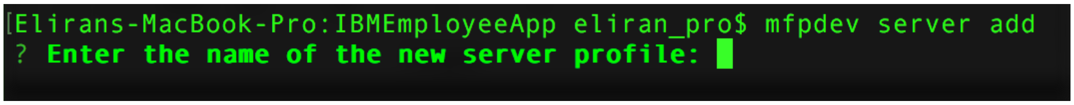
```
Elirans-MacBook-Pro:IBMEmployeeApp eliran_pro$ cordova plugin add cordova-plugin-mfp
Fetching plugin "cordova-plugin-mfp" via npm
Installing "cordova-plugin-mfp" for ios
Dependent plugin "cordova-plugin-device" already installed on ios.
Fetching plugin "cordova-plugin-dialogs" via npm
Installing "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$
```

> 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
```

4. **Add** new server definition to the CLI , run the following command cordova platform add android

```
$ mfpdev server add
```



```
[Elirans-MacBook-Pro:IBMEmployeeApp eliran_pro$ mfpdev server add
? Enter the name of the new server profile: 
```

5. **Enter** the following settings:

   - Enter the name of the new server profile: **MFF8ServiceBMX**
   - Enter the fully qualified URL of this server: **https://SERVER_DOMAIN:443**

     > Note: should be in the following format : **https://mffibmemployee-server.mybluemix.net:443**

   - Enter the MobileFirst Server administrator login ID: **admin**

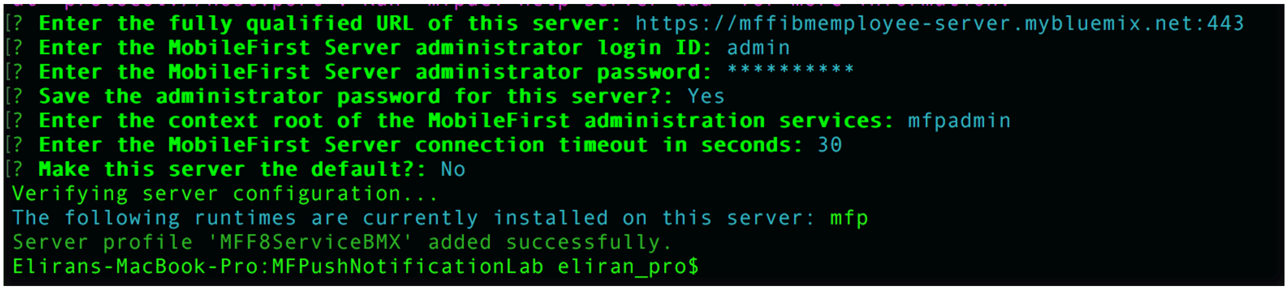
   - Enter the MobileFirst Server administrator password: **ADMIN_PASSWORD**

   - Save the administrator password for this server?: **Yes**

   - Enter the context root of the MobileFirst administration services: **mfpadmin**

   - Enter the MobileFirst Server connection timeout in seconds: **30**

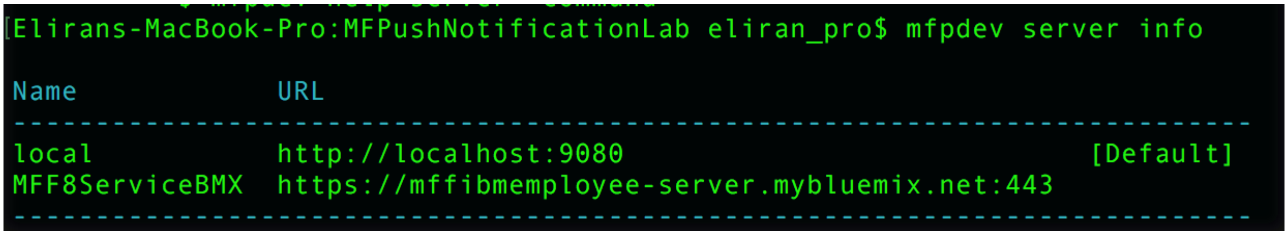
   - Make this server the default?: **No**



```
[? Enter the fully qualified URL of this server: https://mffibmemployee-server.mybluemix.net:443
[? Enter the MobileFirst Server administrator login ID: admin
[? Enter the MobileFirst Server administrator password: **********
[? Save the administrator password for this server?: Yes
[? Enter the context root of the MobileFirst administration services: mfpadmin
[? Enter the MobileFirst Server connection timeout in seconds: 30
[? Make this server the default?: No
Verifying server configuration...
The following runtimes are currently installed on this server: mfp
Server profile 'MFF8ServiceBMX' added successfully.
Elirans-MacBook-Pro:MFPushNotificationLab eliran_pro$
```

6. **Run** the following command to view the server information:

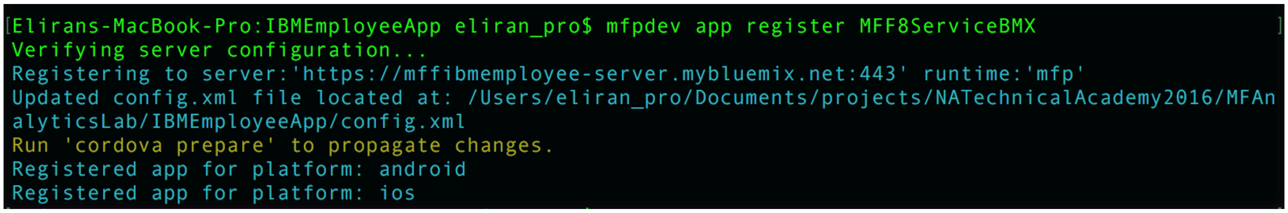
```
$ mfpdev server info
```



```
[Elirans-MacBook-Pro:MFPushNotificationLab eliran_pro$ mfpdev server info

Name             URL
--------------------------------------------------------------------------------
local            http://localhost:9080                               [Default]
MFF8ServiceBMX   https://mffibmemployee-server.mybluemix.net:443
--------------------------------------------------------------------------------
```

7. **Register** the IBMEmployeeApp with the remote server, run the following command:

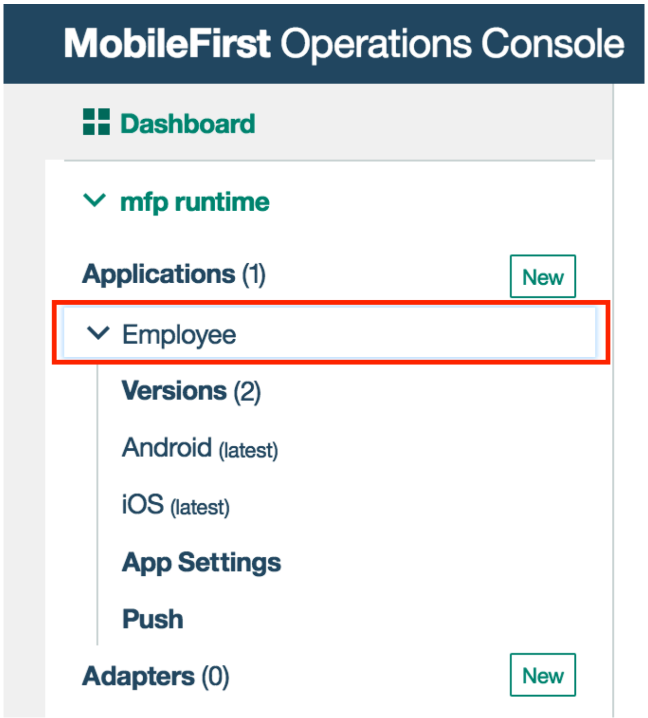
```
$ mfpdev app register MFF8ServicesBMX
```



```
[Elirans-MacBook-Pro:IBMEmployeeApp eliran_pro$ mfpdev app register MFF8ServiceBMX                    ]
Verifying server configuration...
Registering to server:'https://mffibmemployee-server.mybluemix.net:443' runtime:'mfp'
Updated config.xml file located at: /Users/eliran_pro/Documents/projects/NATechnicalAcademy2016/MFAn
alyticsLab/IBMEmployeeApp/config.xml
Run 'cordova prepare' to propagate changes.
Registered app for platform: android
Registered app for platform: ios
```

> **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

8. Let's make sure that the application registered with the MFF services on bluemix, refresh the web console you should be able to see your application under the Application

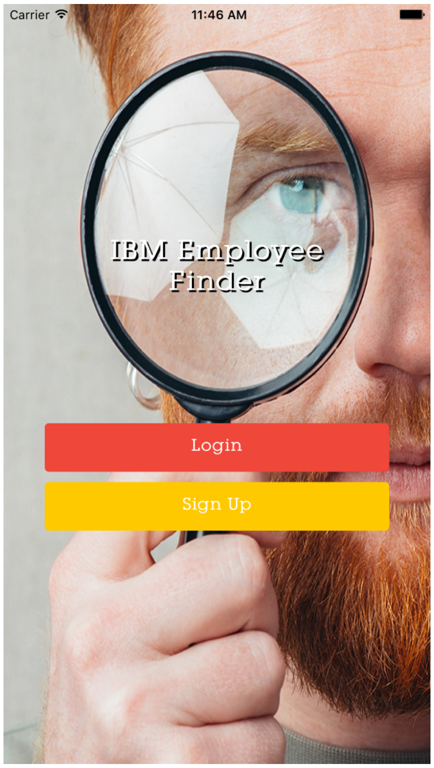


9. Next lets prepare the applictin by running the follwing command :

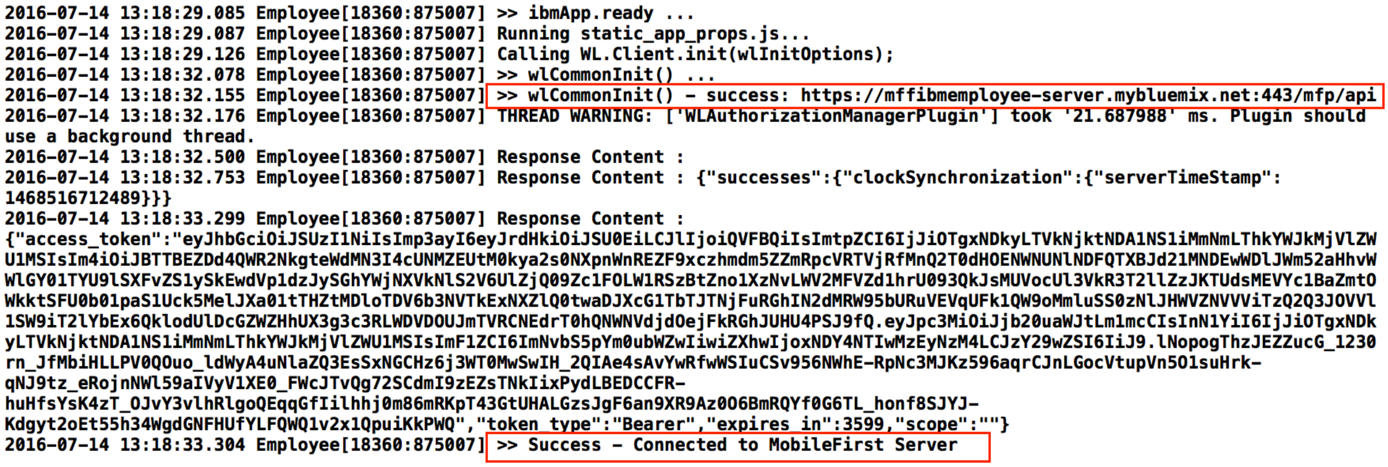
```
$ cordova prepare
```

10. Let's run the application on the iOS simulator by running the following command:

```
$ cordova run ios
```



> **Note:** You can also run the application using XCode and look at the console logs



```
2016-07-14 13:18:29.085 Employee[18360:875007] >> ibmApp.ready ...
2016-07-14 13:18:29.087 Employee[18360:875007] Running static_app_props.js...
2016-07-14 13:18:29.126 Employee[18360:875007] Calling WL.Client.init(wlInitOptions);
2016-07-14 13:18:32.078 Employee[18360:875007] >> wlCommonInit() ...
2016-07-14 13:18:32.155 Employee[18360:875007] >> wlCommonInit() - success: https://mffibmemployee-server.mybluemix.net:443/mfp/api
2016-07-14 13:18:32.176 Employee[18360:875007] THREAD WARNING: ['WLAuthorizationManagerPlugin'] took '21.687988' ms. Plugin should
use a background thread.
2016-07-14 13:18:32.500 Employee[18360:875007] Response Content :
2016-07-14 13:18:32.753 Employee[18360:875007] Response Content : {"successes":{"clockSynchronization":{"serverTimeStamp":
1468516712489}}}
2016-07-14 13:18:33.299 Employee[18360:875007] Response Content :
{"access_token":"eyJhbGciOiJSUzI1NiIsImp3ayI6eyJrdHkiOiJSU0EiLCJlIjoiQVFBQiIsImtpZCI6IjJiOTgxNDkyLTVkNjktNDA1NS1iMmNmLThkYWJkMjVlZW
U1MSIsIm4iOiJBTTBEZDd4QWR2NkgteWdMN3I4cUNMZEUtM0kya2s0NXpnWnREZF9xczhmdm5ZZmRpcVRTVjRfMnQ2T0dHOENWNUNlNDFQTXBJd21MNDEwWDlJWm52aHhvW
WlGY01TYU9lSXFvZS1ySkEwdVp1dzJySGhYWjNXVkNlS2V6UlZjQ09Zc1FOLW1RSzBtZno1XzNvLWV2MFVZd1hrU093QkJsMUVocUl3VkR3T2llZzJKTUdsMEVYc1BaZmtO
WkktSFU0b01paS1Uck5MelJXa01tTHZtMDloTDV6b3NVTkExNXZlQ0twaDJXcG1TbTJTNjFuRGhIN2dMRW95bURuVEVqUFk1QW9oMmluSS0zNlJHWVZNVVViTzQ2Q3JOVVl
1SW9iT2lYbEx6QklodUlDcGZWZHhUX3g3c3RLWDVDOUJmTVRCNEdrT0hQNWNVdjdOejFkRGhJUHU4PSJ9fQ.eyJpc3MiOiJjb20uaWJtLm1mcCIsInN1YiI6IjJiOTgxNDk
yLTVkNjktNDA1NS1iMmNmLThkYWJkMjVlZWU1MSIsImF1ZCI6ImNvbS5pYm0ubWZwIiwiZXhwIjoxNDY4NTIwMzEyNzM4LCJzY29wZSI6IiJ9.lNopogThzJEZZucG_1230
rn_JfMbiHLLPV0QOuo_ldWyA4uNlaZQ3EsSxNGCHz6j3WT0MwSwIH_2QIAe4sAvYwRfwWSIuCSv956NWhE-RpNc3MJKz596aqrCJnLGocVtupVn5O1suHrk-
qNJ9tz_eRojnNWl59aIVyV1XE0_FWcJTvQg72SCdmI9zEZsTNkIixPydLBEDCCFR-
huHfsYsK4zT_OJvY3vlhRlgoQEqqGfIilhhj0m86mRKpT43GtUHALGzsJgF6an9XR9Az0O6BmRQYf0G6TL_honf8SJYJ-
Kdgyt2oEt55h34WgdGNFHUfYLFQWQ1v2x1QpuiKkPWQ","token_type":"Bearer","expires_in":3599,"scope":""}
2016-07-14 13:18:33.304 Employee[18360:875007] >> Success - Connected to MobileFirst Server
```

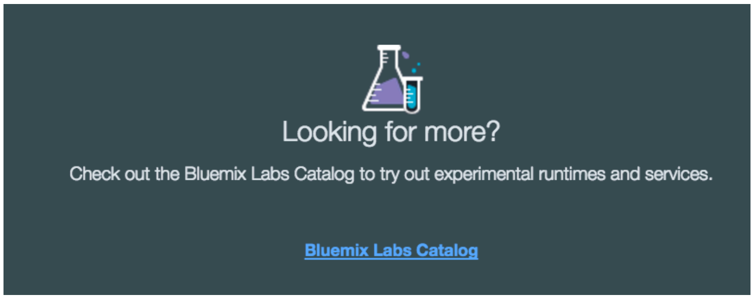
Summary

So far we created new remote server definition and have our application connected to the remote server.

Next

Now we are going to create an Analytics service and configure the MFF server to send analytics data.

1. Login to your Bluemix account with your bluemix username and password.
2. Press on the "Catalog" tab and scroll all the way down.
3. Click on the "Bluemix Labs Catalog" link in the bottom.

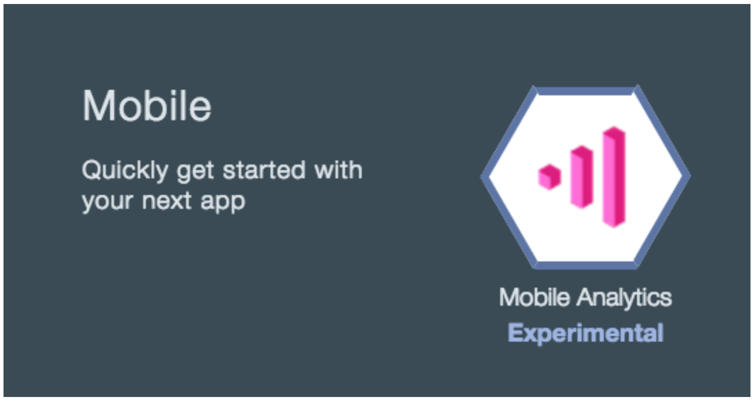


Looking for more?

Check out the Bluemix Labs Catalog to try out experimental runtimes and services.

Bluemix Labs Catalog

4. Select the Mobile Analytics service.



Mobile

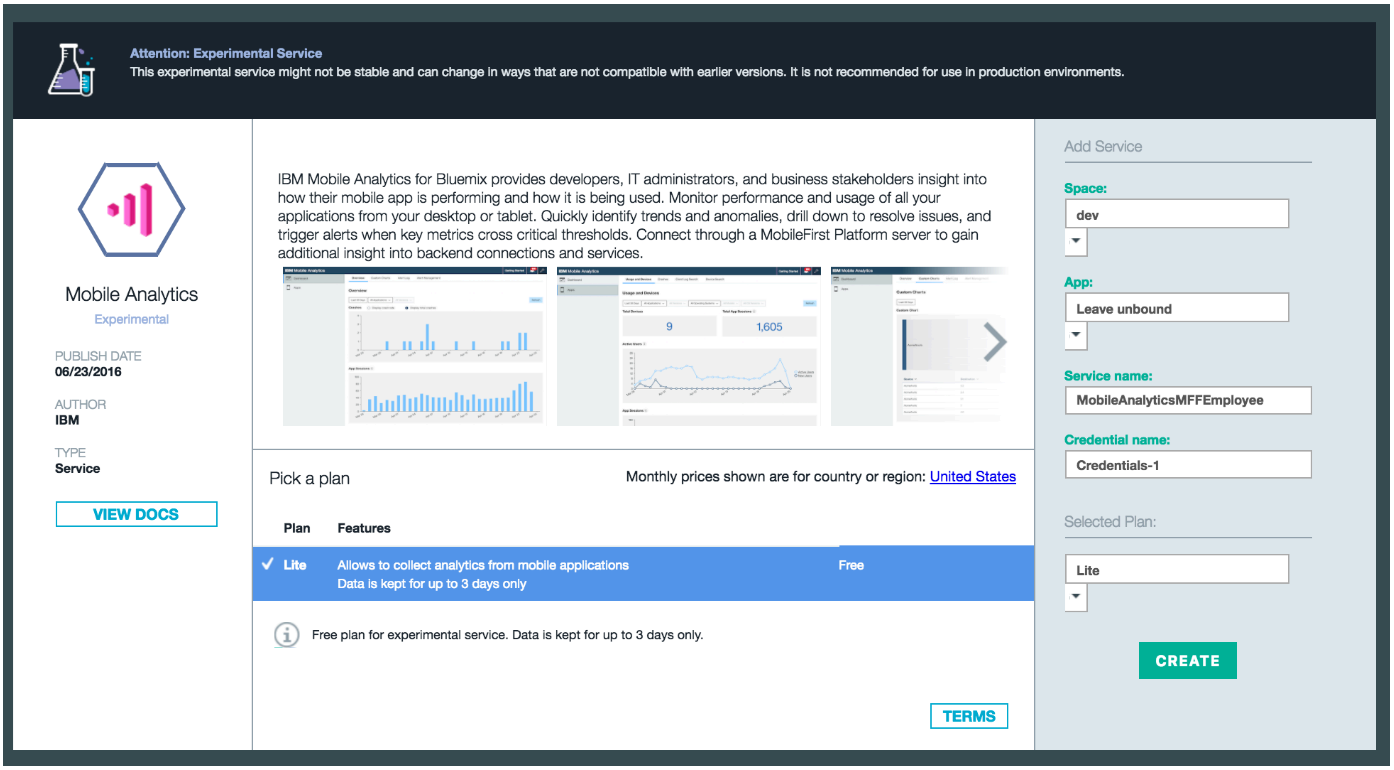
Quickly get started with your next app

Mobile Analytics

Experimental

5. Enter the following settings:

   - Space (leave deafult) : **dev**
   - App : **Leave unbound**
   - Service name : **MobileAnalyticsMFFEmployee**
   - Credential name : **Credentials-1**
   - Selected Plane : **Lite**



Attention: Experimental Service

This experimental service might not be stable and can change in ways that are not compatible with earlier versions. It is not recommended for use in production environments.

Mobile Analytics

Experimental

PUBLISH DATE
06/23/2016

AUTHOR
IBM

TYPE
Service

VIEW DOCS

IBM Mobile Analytics for Bluemix provides developers, IT administrators, and business stakeholders insight into how their mobile app is performing and how it is being used. Monitor performance and usage of all your applications from your desktop or tablet. Quickly identify trends and anomalies, drill down to resolve issues, and trigger alerts when key metrics cross critical thresholds. Connect through a MobileFirst Platform server to gain additional insight into backend connections and services.

Pick a plan

Monthly prices shown are for country or region: United States

Plan	Features	
✓ Lite	Allows to collect analytics from mobile applications Data is kept for up to 3 days only	Free

ⓘ Free plan for experimental service. Data is kept for up to 3 days only.

TERMS

Add Service

Space: dev

App: Leave unbound

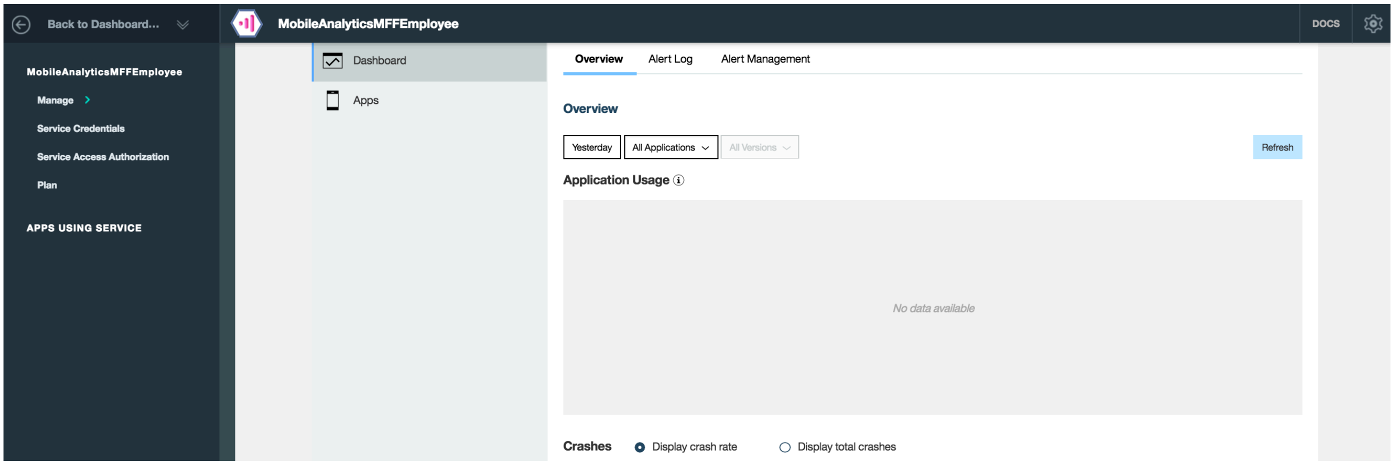
Service name: MobileAnalyticsMFFEmployee

Credential name: Credentials-1

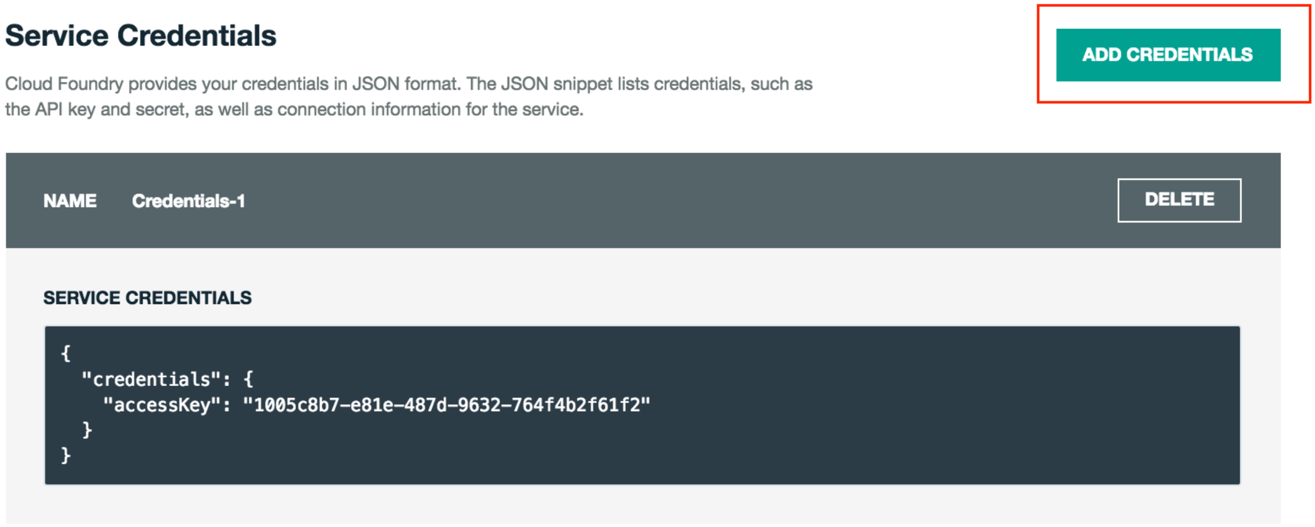
Selected Plan: Lite

CREATE

6. Your analytics dashboard should look like this:



7. Lets create new Service Credentials for the MFF server instance, press on the **Service Credentials** link on the left side menu.



Service Credentials

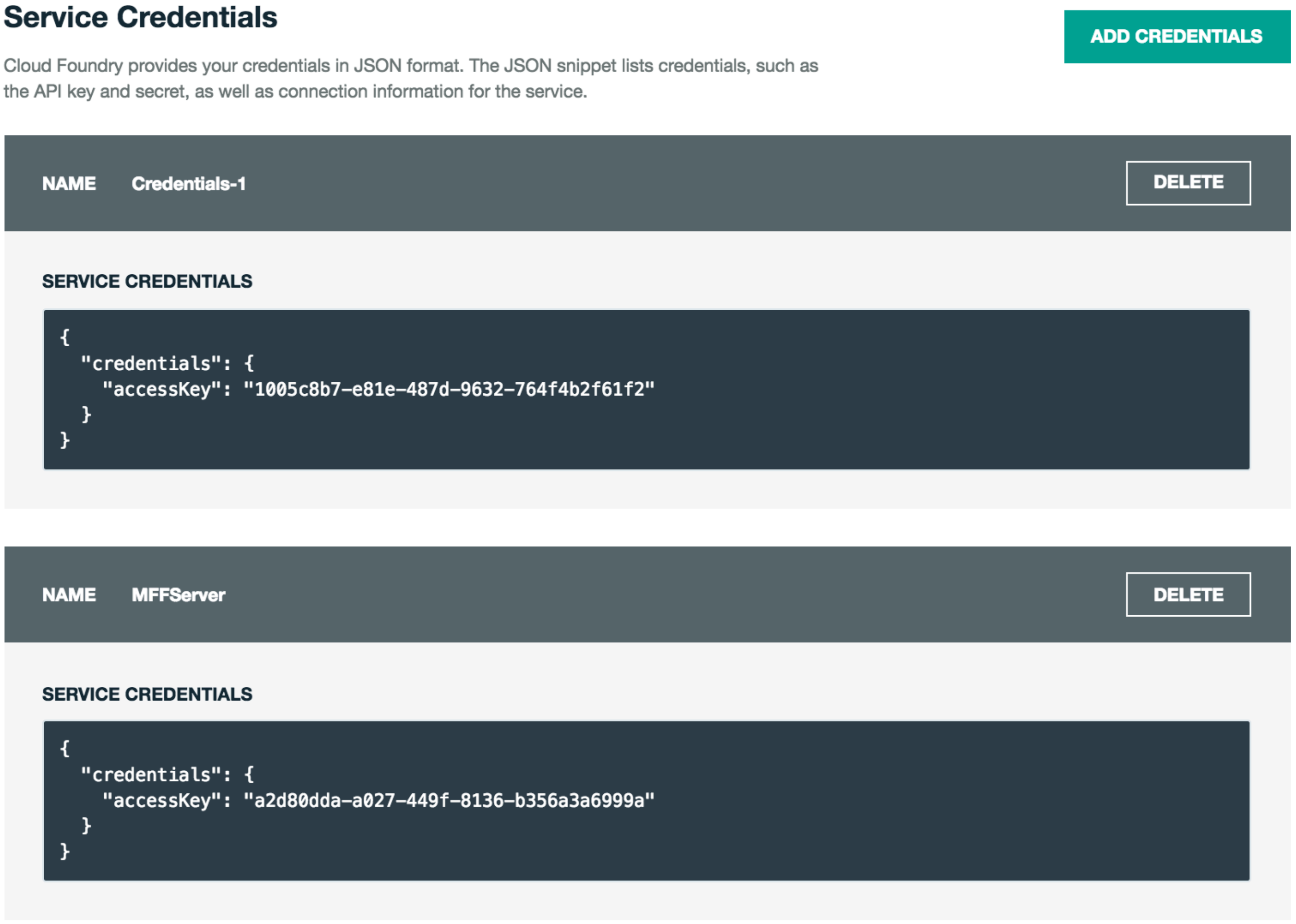
Cloud Foundry provides your credentials in JSON format. The JSON snippet lists credentials, such as the API key and secret, as well as connection information for the service.

NAME Credentials-1

SERVICE CREDENTIALS

```
{
  "credentials": {
    "accessKey": "1005c8b7-e81e-487d-9632-764f4b2f61f2"
  }
}
```

8. Name the Credentials "MFFServer" and press the "Add" button.



Service Credentials

Cloud Foundry provides your credentials in JSON format. The JSON snippet lists credentials, such as the API key and secret, as well as connection information for the service.

NAME Credentials-1

SERVICE CREDENTIALS

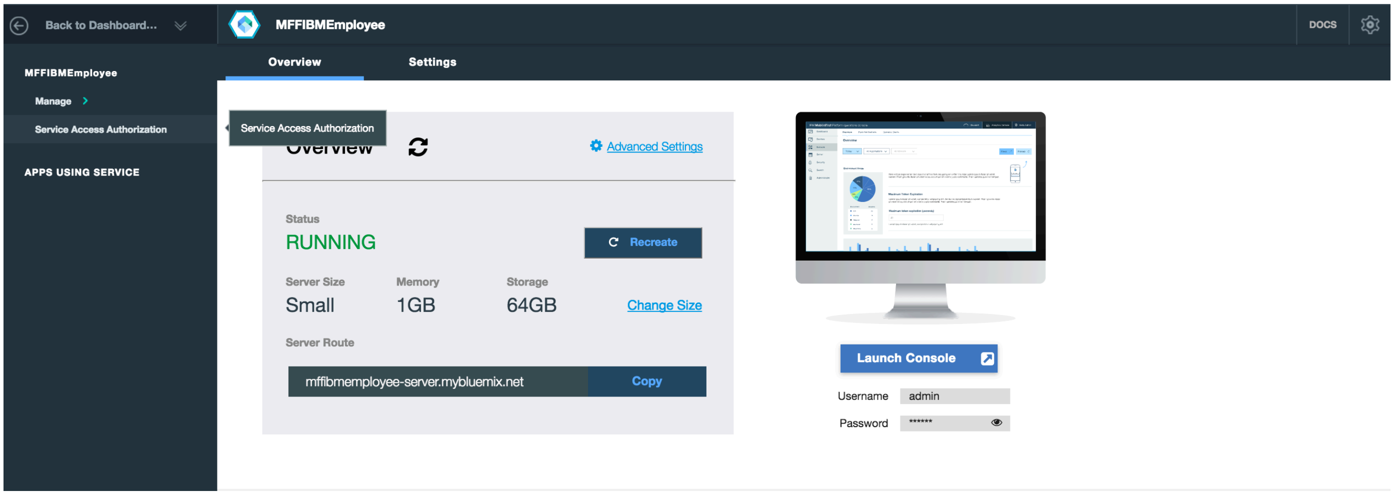
```
{
  "credentials": {
    "accessKey": "1005c8b7-e81e-487d-9632-764f4b2f61f2"
  }
}
```

NAME MFFServer

SERVICE CREDENTIALS

```
{
  "credentials": {
    "accessKey": "a2d80dda-a027-449f-8136-b356a3a6999a"
  }
}
```

9. Now lets configure the MobileFirst server, go back to the bluemix dashboard and press on the MobileFirst service.



Status
RUNNING

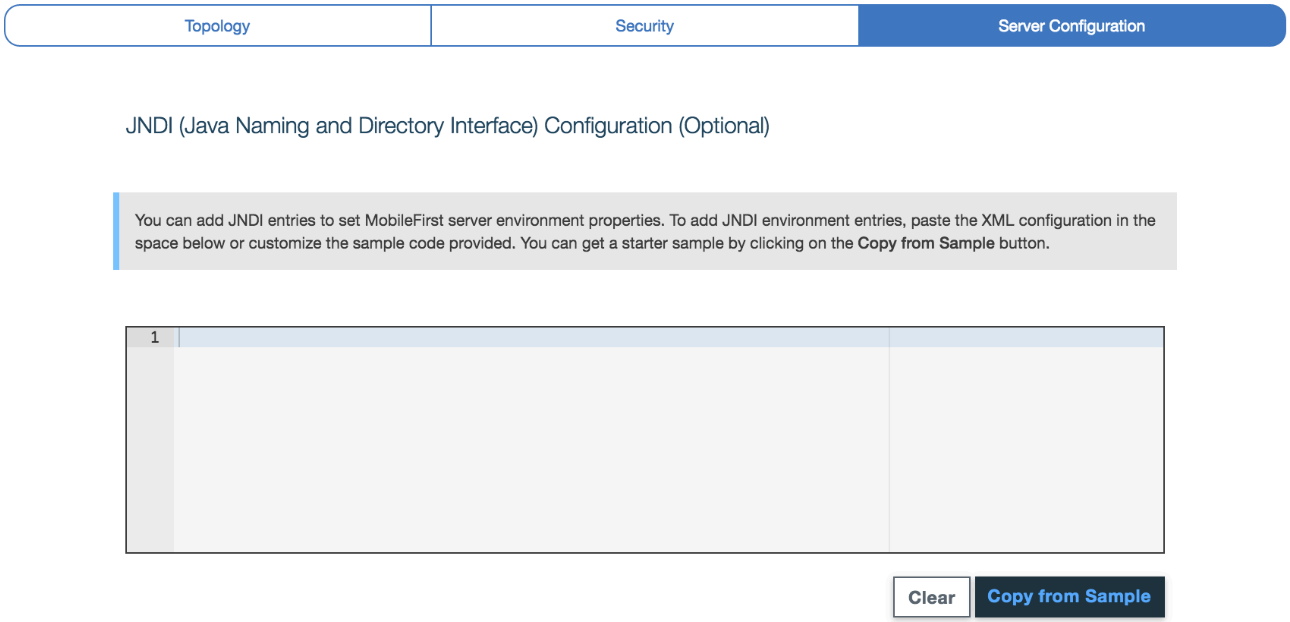
Server Size: Small
Memory: 1GB
Storage: 64GB

Server Route: mffibmemployee-server.mybluemix.net

Username: admin
Password: ******

10. Press on the **Settings** tab.

11. Press on the **Server Configuration** tab



JNDI (Java Naming and Directory Interface) Configuration (Optional)

You can add JNDI entries to set MobileFirst server environment properties. To add JNDI environment entries, paste the XML configuration in the space below or customize the sample code provided. You can get a starter sample by clicking on the **Copy from Sample** button.

12. Press on the **Copy from sample** button

13. Uncomment and modify the JNDI properties for the MobileFirst Analytics server.

14. You can also copy the settings from below :

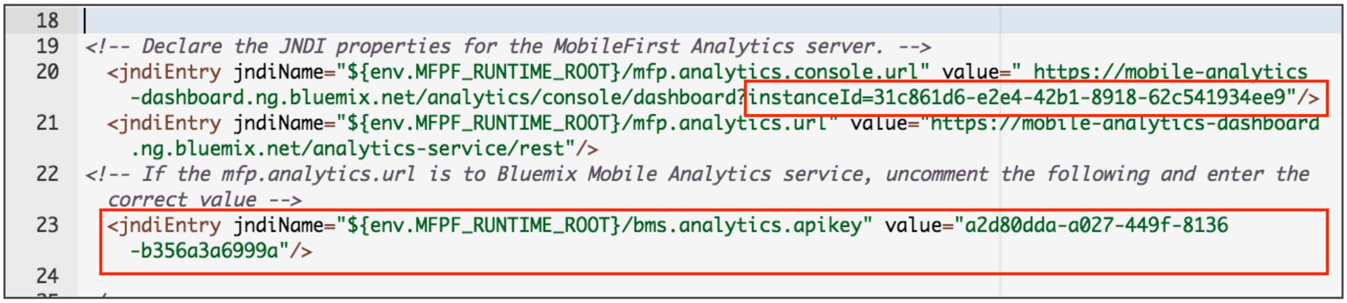
```
<!-- Declare the JNDI properties for the MobileFirst Analytics server. -->

<jndiEntryjndiName="${env.MFPF_RUNTIME_ROOT}/mfp.analytics.console.url"value=" https://mobile-analytics-dashboard.ng.bluemix.net/analytics/console/dashboard?instanceId=<your instance id>"/>

<jndiEntryjndiName="${env.MFPF_RUNTIME_ROOT}/mfp.analytics.url"value="https://mobile-analytics-dashboard.ng.bluemix.net/analytics-service/rest"/>

<!-- If the mfp.analytics.url is to Bluemix Mobile Analytics service, uncomment the following and enter the correct value -->

<jndiEntryjndiName="${env.MFPF_RUNTIME_ROOT}/bms.analytics.apikey"value="your analytics access key"/>
```

15. Replace the following atrributes:

    - **your instance id** - can be found as part of your url, replace with the uid value (see below) The Instance id can be found in the analytics dashboard url : https://console.ng.bluemix.net/?direct=classic/#/resources/**serviceGuid=542c136d-c35d-4ee1-a96d-84c52885ff41**&orgGuid=aab98f18-fa5d-4348-8247-16f25ae2d8c2&spaceGuid=b1577619-d0ec-44b5-aa07-d4a9f8e56814&paneId=0

    - **your analytics access key** - is the MFFServer credential we created

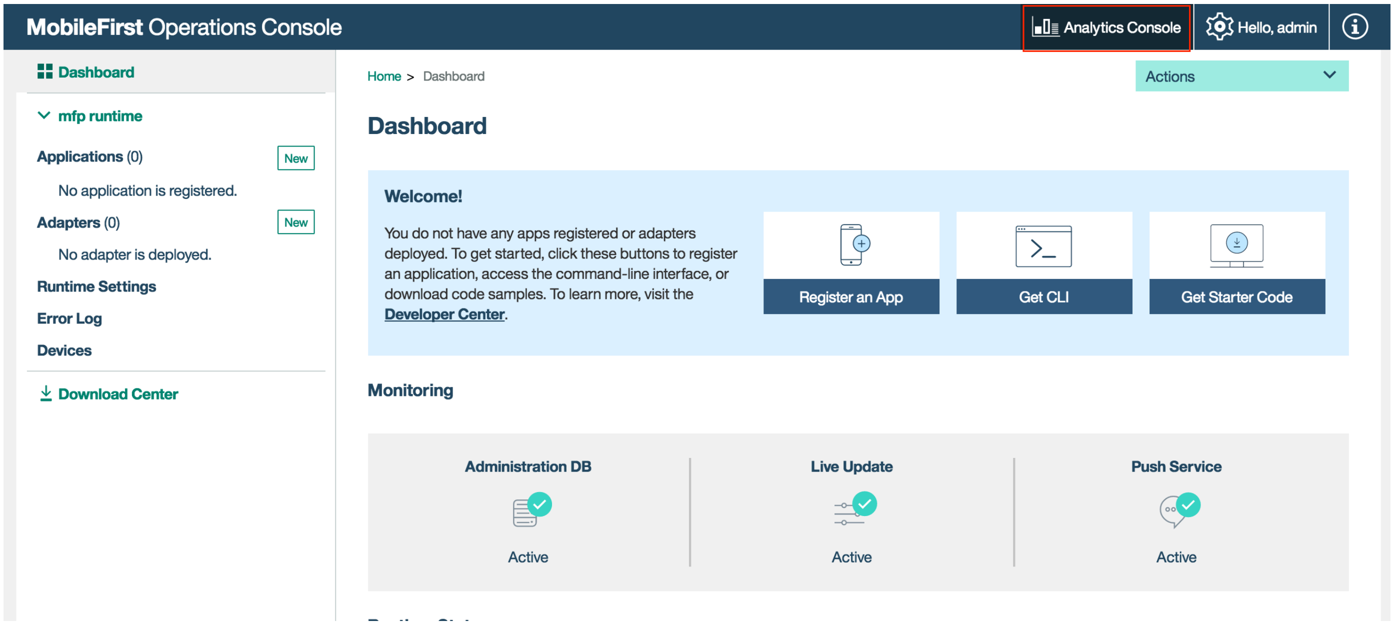
16. Your code should look like this:



```

<!-- Declare the JNDI properties for the MobileFirst Analytics server. -->
  <jndiEntry jndiName="${env.MFPF_RUNTIME_ROOT}/mfp.analytics.console.url" value=" https://mobile-analytics-dashboard.ng.bluemix.net/analytics/console/dashboard?instanceId=31c861d6-e2e4-42b1-8918-62c541934ee9"/>
  <jndiEntry jndiName="${env.MFPF_RUNTIME_ROOT}/mfp.analytics.url" value="https://mobile-analytics-dashboard.ng.bluemix.net/analytics-service/rest"/>
<!-- If the mfp.analytics.url is to Bluemix Mobile Analytics service, uncomment the following and enter the correct value -->
  <jndiEntry jndiName="${env.MFPF_RUNTIME_ROOT}/bms.analytics.apikey" value="a2d80dda-a027-449f-8136-b356a3a6999a"/>

```

17. Scroll down and press the "Update server" button.

18. The server should start again with new configuration, it will take few long minutes but when the server re-start press "Launch Console" button, you should be able to see the "Analytics Console" link on the top right nave bar.



No application is registered.

No adapter is deployed.

Welcome!

You do not have any apps registered or adapters deployed. To get started, click these buttons to register an application, access the command-line interface, or download code samples. To learn more, visit the Developer Center.

19. Click on the "Analytics Console" you should see the analytics dashboard.

Summary

In this lab, you learned how to configure the MobileFirst Foundation service to send analytics to the Mobile Analytics on Bluemix, next we going to instrument our client application to send analytics to the server and create a custom reports.