

Bluemix Hackers handout

Index:

1) Bluemix Registration	-- 02
2) Part I - Cloud foundry way of managing the application(s)	-- 02
3) Part II - How to push the application onto Bluemix	-- 04
4) Part III - Application & Cloud service Integration (VCAP_SERVICES)	-- 06
5) Part IV - Bluemix Mobility	--08
6) Part V - Bluemix Bigdata	--08
7) Part VI - Internet of Things	--08
8) Part VII - Bluemix L1 Help	-- 09
9) Part VIII - Reference to Bluemix demo assets:	-- 10

Prepared by Rajesh Jeyapaul, (jrkumar@in.ibm.com)
Cloud Architect, IBM

Target audience : Bluemix Hackers
Ver: 2.0
Oct 15, 2015

Bluemix Registration

Bluemix.net

Part I Cloudfoundry command line utility to manage the application

1) cloudfoundry commandline "cf" download

<https://github.com/cloudfoundry/cli>

2) download the stable binaries relevant to your operating system

3) Do the path setting

Windows

```
Set PATH=<path where cf.exe is available>;%PATH%  
set PATH=C:\myfolder\;%PATH%
```

Linux

```
export PATH=<path where cf is available>:$PATH  
export PATH=/home/myfolder:$PATH
```

Note: the same can be set in the .profile file as well which will be available in the login home directory

4) validate

```
cf -v
```

```
cf version 6.9.0-620f841-2015-01-20T18:01:40+00:00
```

5) Bluemix Login using cf command line

```
C:\>myfolder/cf login
```

```
API endpoint> https://api.ng.bluemix.net
```

OR (see the Note below)

```
https://api.eu-gb.bluemix.net
```

```
Email> xyz@abc.com      (Bluemix id and password)
```

```
Password>
```

```
Authenticating...
```

```
OK
```

Targeted org jrkumar@in.ibm.com

Select a space (or press enter to skip):

1. dev
2. test
3. prod

Space> 1

Targeted space dev

API endpoint: <https://api.ng.bluemix.net> (API version: 2.19.

User: xyz@in.ibm.com

Org: xyz@in.ibm.com

Space: dev

Note: If the region is US South use the api: <https://api.ng.bluemix.net>

Cloudfoundry plugin option:

Eclipse IDE plugin to push your application onto Bluemix:

[https://www.ibm.com/developerworks/community/blogs/96960515-2ea1-4391-8170-](https://www.ibm.com/developerworks/community/blogs/96960515-2ea1-4391-8170-b0515d08e4da/entry/steps_to_configure_cloud_foundry_plugin_for_eclipse?lang=en)

[b0515d08e4da/entry/steps_to_configure_cloud_foundry_plugin_for_eclipse?lang=en](https://www.ibm.com/developerworks/community/blogs/96960515-2ea1-4391-8170-b0515d08e4da/entry/steps_to_configure_cloud_foundry_plugin_for_eclipse?lang=en)

Github and Bluemix Jazzhub option:

You have the option of using your existing github repository and pushing the changes using git commands:

<https://hub.jazz.net/features/#gitrepo>

[https://hub.jazz.net/gitHook/jstart/MySQL%20Upload%20App%20\(Node\)](https://hub.jazz.net/gitHook/jstart/MySQL%20Upload%20App%20(Node))

Part II - How to push the application onto Bluemix - just "cf push"

Deploying application using manifest file, details in the link below:

<http://docs.cloudfoundry.org/devguide/deploy-apps/manifest.html>

<http://docs.pivotal.io/pivotalcf/devguide/deploy-apps/manifest.html>

some sample files below..

(i) Nodejs (manifest.yml)

```
---
declared-services:
  tradeoff-analytics-service:
    label: tradeoff_analytics
    plan: free
applications:
- services:
  - tradeoff-analytics-rajesh
  name: yourappnametradeoff
  command: node app.js
  path: .
  memory: 128M
```

Note : Place the manifest file in the source path and use "cf push" command to move the source code

(ii) php (manifest.yml)

```
---
applications:
- name: hello-world-php
  memory: 256M
  instances: 1
  host: hello-world-php-81924
  buildpack: https://github.com/zendtech/zend-server-php-buildpack.git
```

Note : have the manifest file and use "cf push" command to move the source code

Alternate options..

(iii) Java (manifest file or just using the command line option)

cf push <name of app> -p app.war

(iv) Python

cf push <name of app> -c "python mycode.py"

(vi) Buildpack approach

Any non available services on Bluemix can be consumed using buildpack.

(i) Search in <https://github.com/cloudfoundry-community/cf-docs-contrib/wiki/Buildpacks>

(ii) OR search in google for relevant buildpack

(iii) use the following command to push your code

a. `cf push < app name > -p < path to war file > -b <buildpack url>`
b. `cf push myapptest -p test.war -b https://github.com/cloudfoundry-community/jboss-buildpack.git`

Part III - Application & Cloud service Integration (VCAP_SERVICES)

VCAP_SERVICES:

The credentials required to connect to Bluemix services, like database , is been exported as VCAP_SERVICES.

Either manually specify the credentials or the recommended option is to export VCAP_SERVICES , as shown below

Database integration:

Stitch the following piece of code :

```
if (env.containsKey("VCAP_SERVICES")) {
    // we are running on cloud foundry, let's grab the
    service details from vcap_services
    JSONParser parser = new JSONParser();
    JSONObject vcap = (JSONObject)
    parser.parse(env.get("VCAP_SERVICES"));
    JSONObject service = null;

    // We don't know exactly what the service is called, but
    it will contain "postgresql"
    for (Object key : vcap.keySet()) {
        String keyStr = (String) key;
        if (keyStr.toLowerCase().contains("ElephantSQL"))
        {
            service = (JSONObject) ((JSONArray)
vcap.get(keyStr)).get(0);
            break;
        }
    }

    if (service != null) {
        JSONObject creds = (JSONObject)
service.get("credentials");
        String name = (String) creds.get("name");
        String host = (String) creds.get("host");
        Long port = (Long) creds.get("port");
        String user = (String) creds.get("user");
        String password = (String) creds.get("password");

        String url = "jdbc:postgresql://" + host + ":" +
port + "/" + name;

        return DriverManager.getConnection(url, user,
password);
    }
}
```

Similarly all other VCAP_SERVICE details can be understood from the Bluemix service documentation ("VIEW DOCS") which is available while adding the service

Other sample VCAP_SERVICES available for mySql:

<https://www.ng.bluemix.net/docs/#services/MySQL/index.html#MySQL>

Sample for Watson:

Watson Tradeoff Analytics VCAP_SERVICES

```
// if bluemix credentials exists, then override local
var credentials = extend({
  url: '<url>',
  username: '<username>',
  password: '<password>'
}, bluemix.getServiceCreds('tradeoff_analytics')); // VCAP_SERVICES

// Create the service wrapper
var tradeoffAnalytics = new TradeoffAnalytics(credentials);
Postgres database:

if (env.containsKey("VCAP_SERVICES")) {
    // we are running on cloud foundry, let's grab the
    service details from vcap_services
    JSONParser parser = new JSONParser();
    JSONObject vcap = (JSONObject)
    parser.parse(env.get("VCAP_SERVICES"));
    JSONObject service = null;

    // We don't know exactly what the service is called, but
    it will contain "postgresql"
    for (Object key : vcap.keySet()) {
        String keyStr = (String) key;
        if (keyStr.toLowerCase().contains("ElephantSQL"))
        {
            service = (JSONObject) ((JSONArray)
vcap.get(keyStr)).get(0);
            break;
        }
    }
}
```

Part IV - Bluemix Mobility

Come with your client code and consume Bluemix services using the SDK offered by Bluemix..

Bluemix offers Android and iOS SDK which can be used in your code to use the Bluemix services like push notification , Presence Insights and others.

SDK Doc Link: <http://mbaas-gettingstarted.ng.bluemix.net/android>

Bluemix Sample Demo: <http://www.ibm.com/developerworks/library/mo-android-mobiledata-app/>

How it works ?

1. Consume the Bluemix service - Mobile cloud Boiler plate
2. Notedown the application ID , App key and application route returned by Bluemix for further usage in the application
3. Download the Bluemix SDK like ibmbluemix.jar , ibmdata.jar and ibmfilesync.jar and include it in your build path
4. Initialize your android application with Bluemix using the id and key
5. Further build and deploy the application using other Bluemix SDK's like Presence Insights

Mobile Demo Video:

<https://www.youtube.com/watch?v=Gn03yIZiCAc>

Part V - Bluemix Big Data

Bluemix offers various options for BigData like Predictive Analytics , Apache Spark engine , Hadoop cluster environment (BigInsights)

Further reading -

<https://www.ng.bluemix.net/docs/#!services/BigInsights/index.html#biginsightsoncloud>

Part VI - Internet of Things

Bluemix offers IoT support interms of register, connect , collect and Analyze.

Quick start link - <https://quickstart.internetofthings.ibmcloud.com/#/>

Receipes

Bluemix offers support to various gateway architecture.Supported architecture (receipes) available in the link -

<https://developer.ibm.com/recipes/>

Register , Connect and Collect

https://www.ibm.com/developerworks/community/blogs/96960515-2ea1-4391-8170-b0515d08e4da/entry/Bluemix_IOT_baby_steps_with_Raspberry_pi?lang=en

Demo Video:

<https://www.youtube.com/watch?v=YihgwVT6UKo>

Part VII - Bluemix L1 Help

(i) Existing Documents available within Bluemix
<https://www.ng.bluemix.net/docs/#>

(ii) Using the forum: developer.ibm.com/answers/
Spaces: Bluemix

(iii) Stackoverflow: <http://stackoverflow.com/questions/tagged/bluemix>

Part VIII - Reference to Bluemix demo asset:

Following github link can be used to get the list of most of the Bluemix demos

<https://github.com/IBM-Bluemix>

and some more links below...

Watson

<http://vishalaksh.blogspot.in/2015/03/personality-insights-api-bluemix.html>

<http://vishalaksh.blogspot.in/2015/03/relationship-extraction-api-bluemix.html>

Datamanagement:

Mysql: <https://www.ng.bluemix.net/docs/#services/MySQL/index.html#MySQL>
Php/sqlldb/dashdb: <https://developer.ibm.com/answers/questions/20036/how-to-compile-php-with-db2-support-in-bluemix.html>

Php-mysql : <http://www.ibm.com/developerworks/library/wa-deployrest-app/index.html>

mysql console :

https://www.ibm.com/developerworks/community/blogs/96960515-2ea1-4391-8170-b0515d08e4da/entry/bluemix_clearadb_meow_it_is_easy_to_bell_this_navicat_db_client_console?lang=en

Mobile:

<http://www.ibm.com/developerworks/library/mo-bluemix-cordova-plugin/index.html>

<http://www.ibm.com/developerworks/library/mo-android-push-app/>

<http://mbaas-gettingstarted.ng.bluemix.net/android>

Onpremise- cloud integration:

https://www.ibm.com/developerworks/community/blogs/96960515-2ea1-4391-8170-b0515d08e4da/entry/cloud_to_on_premise_web_services_bluemix_cloud_integrators?lang=en