Cloud Developers Certification Training

Section 4.1 - Build an Application Using Bluemix Cache Services

Lab Exercise

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Exercise 4.1.0 – Lab Prerequisites

- Have a IBM Bluemix account
  - Sing up for Bluemix http://bluemix.net

- A Web Browser supported by Bluemix
  - Chrome, latest version for your OS
  - Firefox, latest version for your OS and ESR 31 or ESR 38
  - Internet Explorer, version 10 and 11
  - Safari, latest version for Mac
- Cloud Foundry command line interface, Version 6.5.1 or later (Recommend using latest release)

- Have Git Bash installed (Recommended)
  - Download and Install Git Bash: https://git-scm.com/downloads

- Have a DevOps account (for sample code download)
  - Sin up for DevOps https://hub.jazz.net/
  - Recommend use same credentials as Bluemix account

- Download the AirportSample/deploy/**airportSample.war** (https://ibm.biz/BdXgCE)
  - Use your Bluemix/DevOps ID/password if prompted

Exercise 4.1.1 – Install Cloud Foundry Command Line Interface (Optional)

Skip this part if you already have Cloud Foundry V6.5.1+ installed

- CF-CLI download: https://github.com/cloudfoundry/cli/releases

- Windows Installation
  - Unpack the zip file.
  - Double click the cf executable.
  - When prompted, click Install, and then Close.

- MAC OSX and Linux Installation
  - Open the .pkg file.
  - In the installer wizard, click Continue.
  - Select an install destination and click Continue.
  - When prompted, click Install.

Exercise 4.1.2 –Using Data Cache and Session Cache services for your application

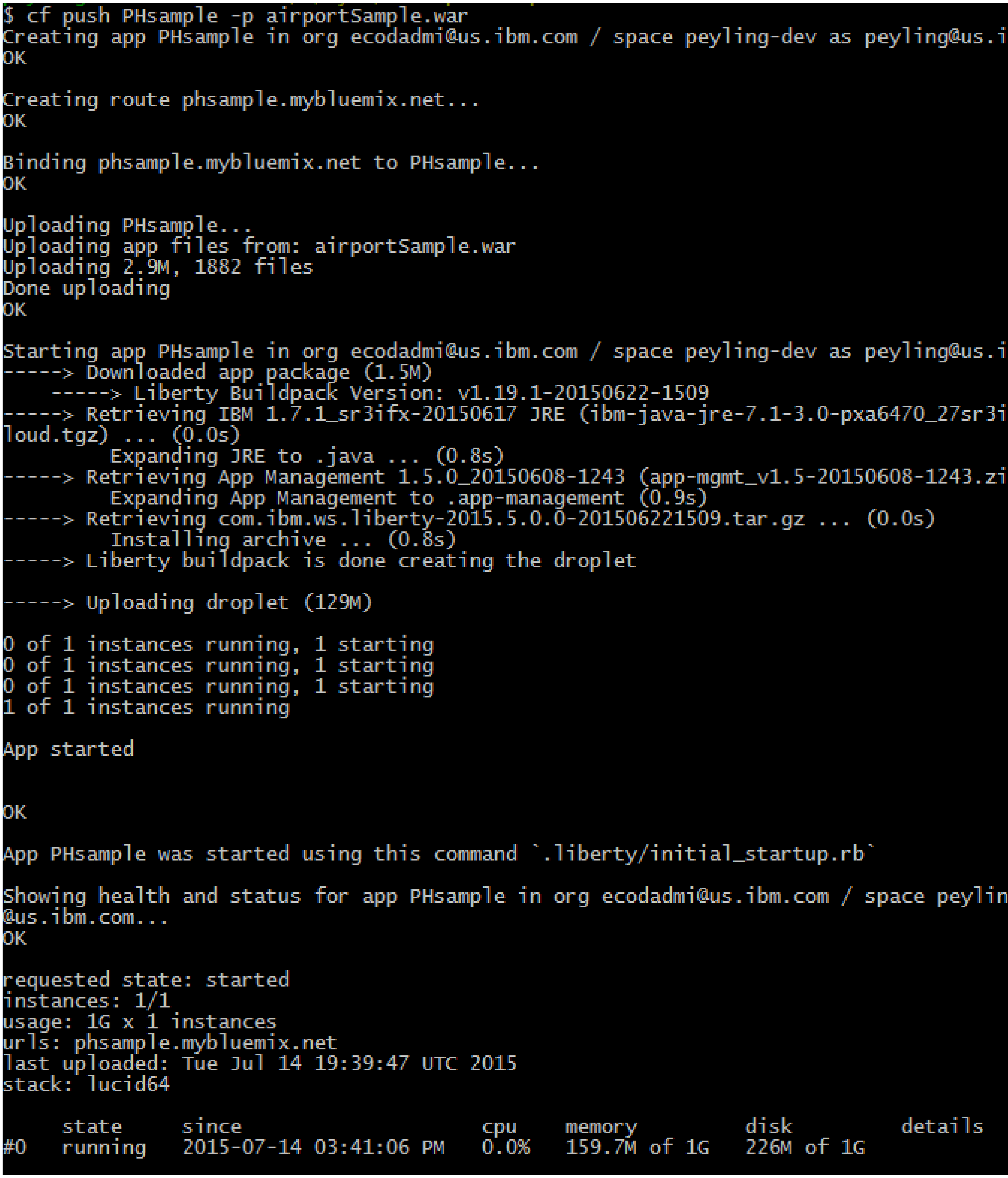
We will use the *airportSample.war* file you downloaded as sample application for this exercise.

1. Open a command windows or Git Bash shell window. Create a working directory for this lab, i.e. Sample, and change to the working directory then copy airportSample.war file to your working directory.

2. Log in to Bluemix and specify which Bluemix region you want to work with by using **api endpoint –a** option with region URL. so issue one of the following commands, choose region you have been using in Bluemix UI:
   cf l -a https://api.ng.bluemix.net ***(for Region: US South)***
   cf l -a https://api.eu-gb.bluemix.net ***(for Region: United Kingdom)***
   Then enter your email and password that you use to sign in to the Bluemix Web UI. Select the organization and space you want to work in if prompted.

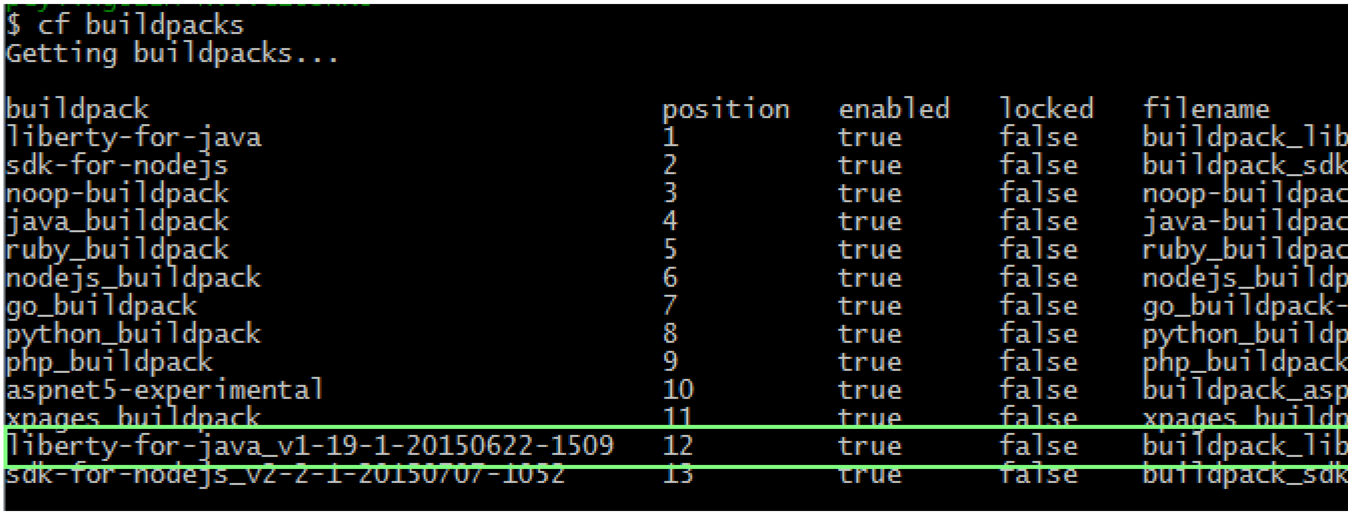
3. Deploy the application on Bluemix using **cf push** ***yourAppName*** command. For example:
   cf push PHSample -p airportSample.war –b liberty-for-java_v1-19-1-20150622-1590

   Where
   -b is used to specify buildpack release for the application.
   The example uses **liberty-for-java_v1-19-1-20150622-1590** buildpack on Bluemix and not to use latest default liberty buildpack.



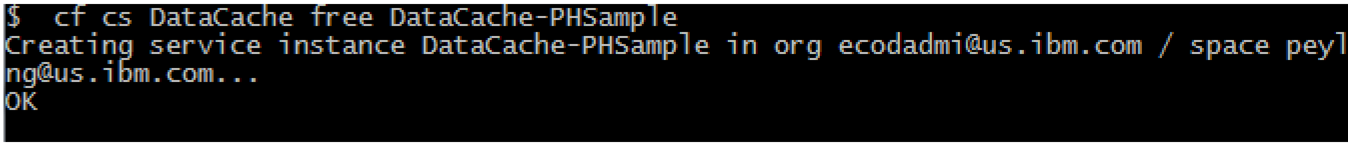
```
$ cf push PHsample -p airportSample.war
Creating app PHsample in org ecodadmi@us.ibm.com / space peyling-dev as peyling@us.i
OK

Creating route phsample.mybluemix.net...
OK

Binding phsample.mybluemix.net to PHsample...
OK

Uploading PHsample...
Uploading app files from: airportSample.war
Uploading 2.9M, 1882 files
Done uploading
OK

Starting app PHsample in org ecodadmi@us.ibm.com / space peyling-dev as peyling@us.i
-----> Downloaded app package (1.5M)
    -----> Liberty Buildpack Version: v1.19.1-20150622-1509
-----> Retrieving IBM 1.7.1_sr3ifx-20150617 JRE (ibm-java-jre-7.1-3.0-pxa6470_27sr3i
loud.tgz) ... (0.0s)
         Expanding JRE to .java ... (0.8s)
-----> Retrieving App Management 1.5.0_20150608-1243 (app-mgmt_v1.5-20150608-1243.zi
         Expanding App Management to .app-management (0.9s)
-----> Retrieving com.ibm.ws.liberty-2015.5.0.0-201506221509.tar.gz ... (0.0s)
         Installing archive ... (0.8s)
-----> Liberty buildpack is done creating the droplet

-----> Uploading droplet (129M)

0 of 1 instances running, 1 starting
0 of 1 instances running, 1 starting
0 of 1 instances running, 1 starting
1 of 1 instances running

App started


OK

App PHsample was started using this command `.liberty/initial_startup.rb`

Showing health and status for app PHsample in org ecodadmi@us.ibm.com / space peylin
@us.ibm.com...
OK

requested state: started
instances: 1/1
usage: 1G x 1 instances
urls: phsample.mybluemix.net
last uploaded: Tue Jul 14 19:39:47 UTC 2015
stack: lucid64

     state     since                    cpu    memory         disk         details
#0   running   2015-07-14 03:41:06 PM   0.0%   159.7M of 1G   226M of 1G
```

You can use **cf buildpacks** command to find a list of buildpacks available on Bluemix.



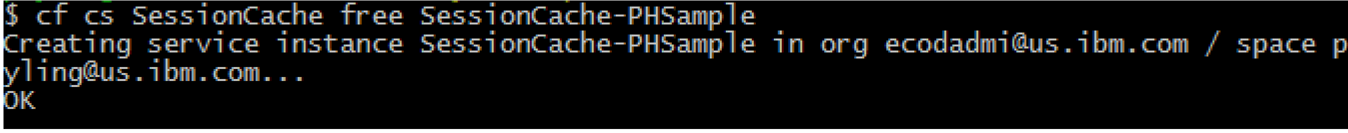
```
$ cf buildpacks
Getting buildpacks...

buildpack                              position   enabled   locked   filename
liberty-for-java                       1          true      false    buildpack_lib
sdk-for-nodejs                         2          true      false    buildpack_sdk
noop-buildpack                         3          true      false    noop-buildpac
java_buildpack                         4          true      false    java-buildpac
ruby_buildpack                         5          true      false    ruby_buildpac
nodejs_buildpack                       6          true      false    nodejs_buildp
go_buildpack                           7          true      false    go_buildpack-
python_buildpack                       8          true      false    python_buildp
php_buildpack                          9          true      false    php_buildpack
aspnet5-experimental                   10         true      false    buildpack_asp
xpages_buildpack                       11         true      false    xpages_buildp
liberty-for-java_v1-19-1-20150622-1509 12         true      false    buildpack_lib
sdk-for-nodejs_v2-2-1-20150707-1052    13         true      false    buildpack_sdk
```

4. Create a DataCache service instance for the application. Use: **cf cs DataCache free** ***yourServiceInstName*** command to create the service instance, where free is the service plan name, and ***yourServiceInstName*** is a unique name for the service instance. It should start with DataCache as a prefix. For example:
   cf cs DataCache free DataCache-PHSample



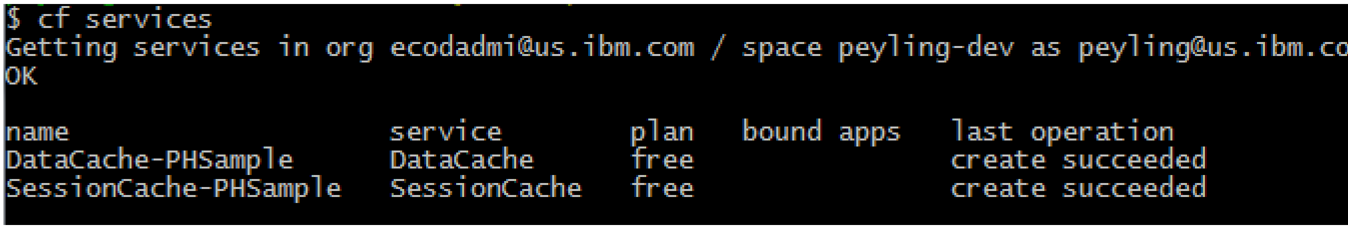
```
$  cf cs DataCache free DataCache-PHSample
Creating service instance DataCache-PHSample in org ecodadmi@us.ibm.com / space peyl
ng@us.ibm.com...
OK
```

5. Create a SessionCache service instance for the application. Use: **cf cs SessionCache free** ***yourServiceInstName*** command to create a service instance, where ***yourServiceInstName*** is a unique name for the service instance. For example:
   cf cs SessionCache free SessionCache-PHSample



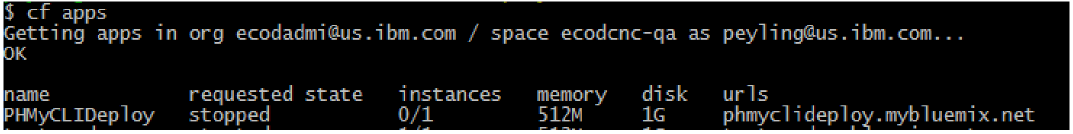
```
$ cf cs SessionCache free SessionCache-PHSample
Creating service instance SessionCache-PHSample in org ecodadmi@us.ibm.com / space p
yling@us.ibm.com...
OK
```

6. To verify creation of the Cache services by using **cf services** command to see a list of service instances you created. The service instances remain unbounded to the application. You will bound the services to application later.



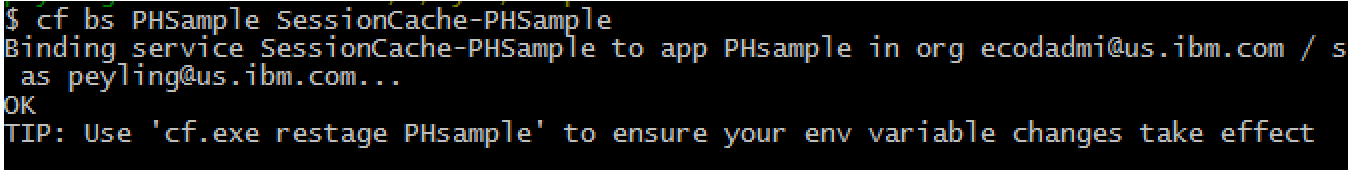
```
$ cf services
Getting services in org ecodadmi@us.ibm.com / space peyling-dev as peyling@us.ibm.co
OK

name                    service        plan   bound apps   last operation
DataCache-PHSample      DataCache      free                create succeeded
SessionCache-PHSample   SessionCache   free                create succeeded
```

7. We have deployed the application in Step3. The application is available for binding the Cache service instances. You can use **cf apps** command to list and verify your applications.



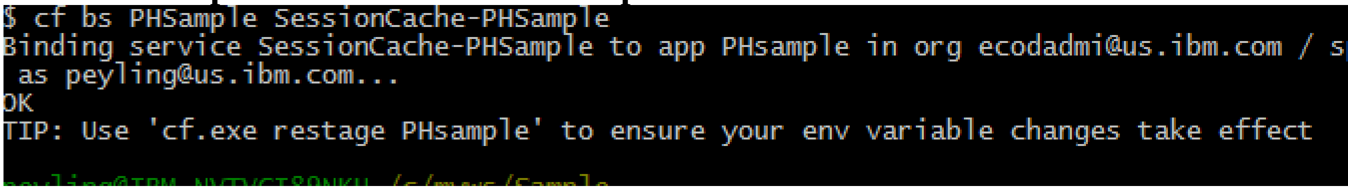
```
$ cf apps
Getting apps in org ecodadmi@us.ibm.com / space ecodcnc-qa as peyling@us.ibm.com...
OK

name            requested state   instances   memory   disk   urls
PHMyCLIDeploy   stopped           0/1         512M     1G     phmyclideploy.mybluemix.net
```

8. To bind the DataCache and SessionCache service instances to application, use: ***cf bs yourAppName yourServiceInstName*** command. For example:
   cf bs PHSample DataCache-PHSample



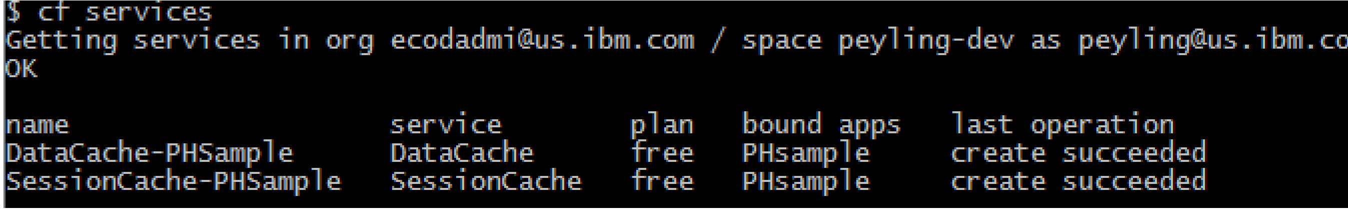
```
$ cf bs PHSample SessionCache-PHSample
Binding service SessionCache-PHSample to app PHsample in org ecodadmi@us.ibm.com / s
 as peyling@us.ibm.com...
OK
TIP: Use 'cf.exe restage PHsample' to ensure your env variable changes take effect
```

   cf bs PHSample SessionCache-PHSample



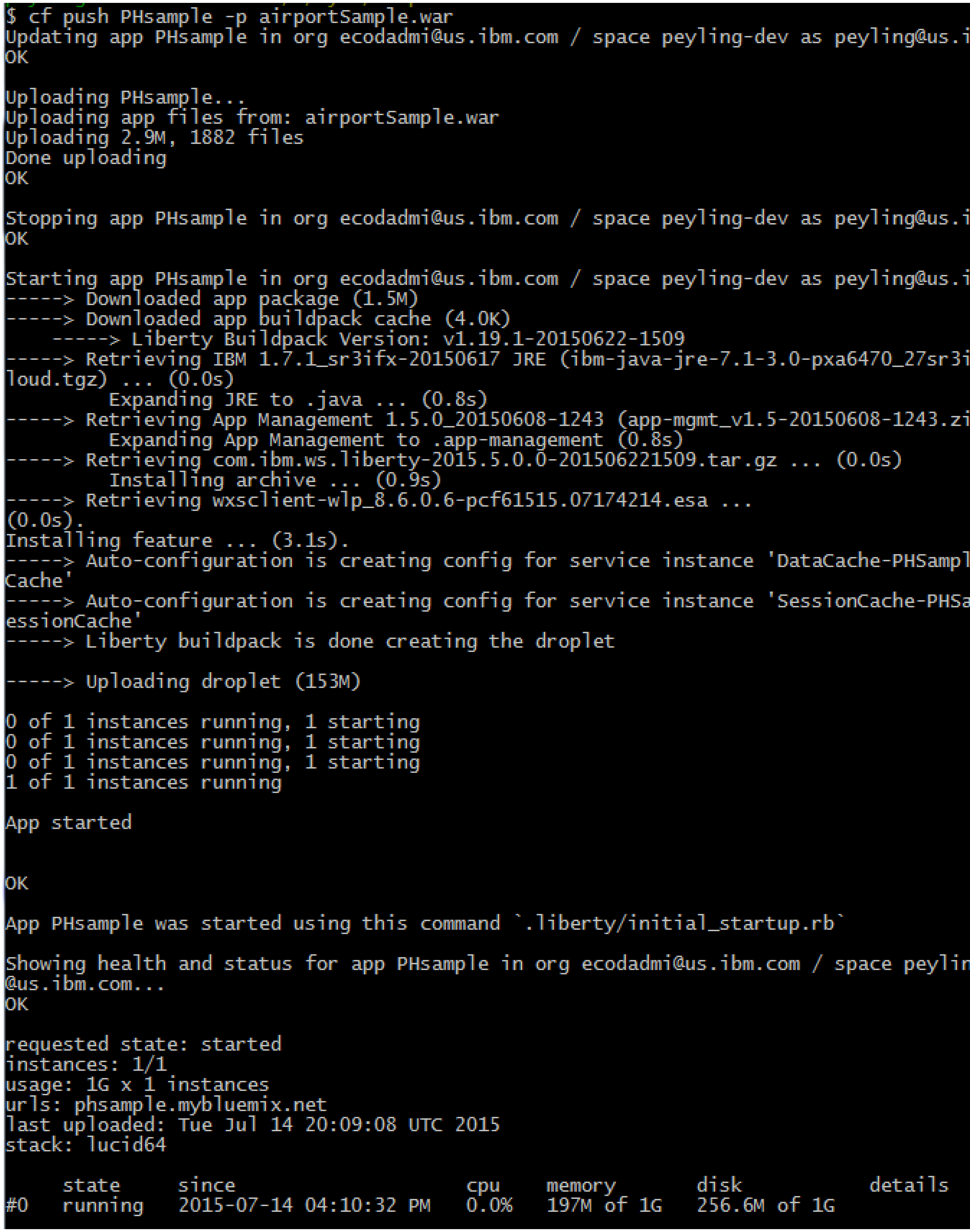
```
$ cf bs PHSample SessionCache-PHSample
Binding service SessionCache-PHSample to app PHsample in org ecodadmi@us.ibm.com / s
 as peyling@us.ibm.com...
OK
TIP: Use 'cf.exe restage PHsample' to ensure your env variable changes take effect
```

9. Type: **cf services** command to verify bind-service result. You should see the application and service now linked, but the application is still stopped.



```
$ cf services
Getting services in org ecodadmi@us.ibm.com / space peyling-dev as peyling@us.ibm.co
OK

name                    service        plan   bound apps   last operation
DataCache-PHSample      DataCache      free   PHsample     create succeeded
SessionCache-PHSample   SessionCache   free   PHsample     create succeeded
```

10. To repush the application to take binding service effect by running: **cf push yourAppName –p airportSample.war.** For example:
   cf push PHSample -p airportSample.war

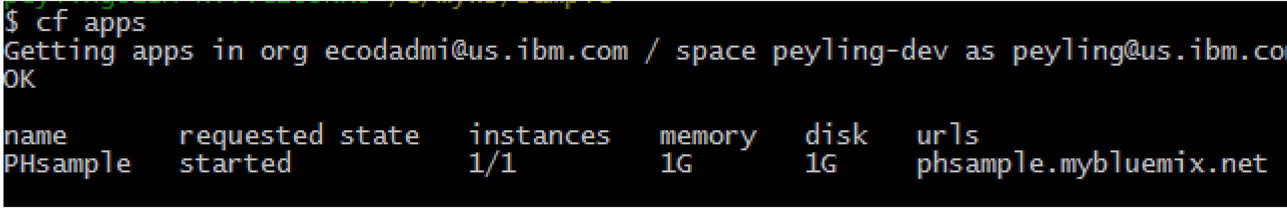


```
$ cf push PHsample -p airportSample.war
Updating app PHsample in org ecodadmi@us.ibm.com / space peyling-dev as peyling@us.i
OK

Uploading PHsample...
Uploading app files from: airportSample.war
Uploading 2.9M, 1882 files
Done uploading
OK

Stopping app PHsample in org ecodadmi@us.ibm.com / space peyling-dev as peyling@us.i
OK

Starting app PHsample in org ecodadmi@us.ibm.com / space peyling-dev as peyling@us.i
-----> Downloaded app package (1.5M)
-----> Downloaded app buildpack cache (4.0K)
    -----> Liberty Buildpack Version: v1.19.1-20150622-1509
-----> Retrieving IBM 1.7.1_sr3ifx-20150617 JRE (ibm-java-jre-7.1-3.0-pxa6470_27sr3i
loud.tgz) ... (0.0s)
         Expanding JRE to .java ... (0.8s)
-----> Retrieving App Management 1.5.0_20150608-1243 (app-mgmt_v1.5-20150608-1243.zi
         Expanding App Management to .app-management (0.8s)
-----> Retrieving com.ibm.ws.liberty-2015.5.0.0-201506221509.tar.gz ... (0.0s)
         Installing archive ... (0.9s)
-----> Retrieving wxsclient-wlp_8.6.0.6-pcf61515.07174214.esa ...
(0.0s).
Installing feature ... (3.1s).
-----> Auto-configuration is creating config for service instance 'DataCache-PHSampl
Cache'
-----> Auto-configuration is creating config for service instance 'SessionCache-PHSa
essionCache'
-----> Liberty buildpack is done creating the droplet

-----> Uploading droplet (153M)

0 of 1 instances running, 1 starting
0 of 1 instances running, 1 starting
0 of 1 instances running, 1 starting
1 of 1 instances running

App started


OK

App PHsample was started using this command `.liberty/initial_startup.rb`

Showing health and status for app PHsample in org ecodadmi@us.ibm.com / space peylin
@us.ibm.com...
OK

requested state: started
instances: 1/1
usage: 1G x 1 instances
urls: phsample.mybluemix.net
last uploaded: Tue Jul 14 20:09:08 UTC 2015
stack: lucid64

     state     since                    cpu    memory       disk            details
#0   running   2015-07-14 04:10:32 PM   0.0%   197M of 1G   256.6M of 1G
```

Or to start an application use: ***cf start YourAppName*** command. For example:

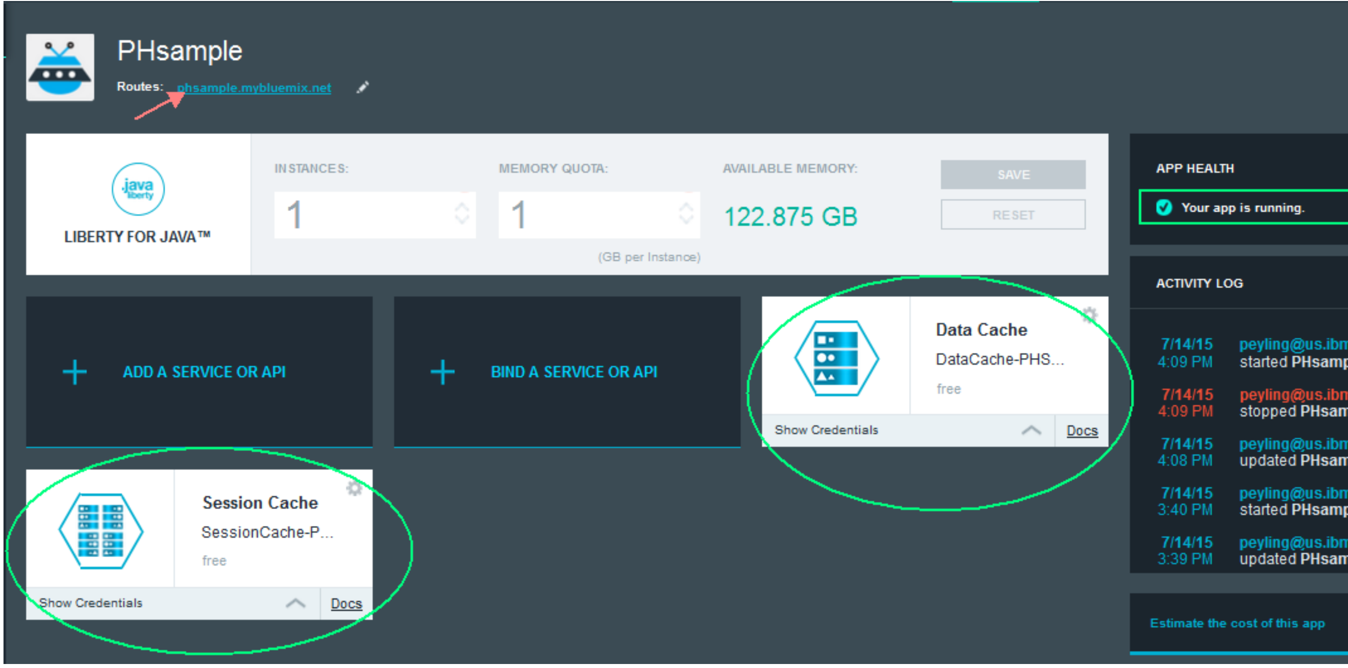
cf restart PHSample

11. Type: **cf apps** command to see the application status has changed from “*stopped* “to “*started*”.



```
$ cf apps
Getting apps in org ecodadmi@us.ibm.com / space peyling-dev as peyling@us.ibm.co
OK

name       requested state   instances   memory   disk   urls
PHsample   started           1/1         1G       1G     phsample.mybluemix.net
```

12. Login to Bluemix via http://bluemix.net . From Bluemix Web UI dashborad, Click on your application tile. You can see the application in details. Then click on the link of routes to access the application.



PHsample

Routes: phsample.mybluemix.net

LIBERTY FOR JAVA™

INSTANCES: 1

MEMORY QUOTA: 1 (GB per Instance)

AVAILABLE MEMORY: 122.875 GB

APP HEALTH

Your app is running.

ACTIVITY LOG

7/14/15 4:09 PM peyling@us.ibm started PHsamp

7/14/15 4:09 PM peyling@us.ibm stopped PHsam

7/14/15 4:08 PM peyling@us.ibm updated PHsam

7/14/15 3:40 PM peyling@us.ibm started PHsamp

7/14/15 3:39 PM peyling@us.ibm updated PHsam

Data Cache

DataCache-PHS...

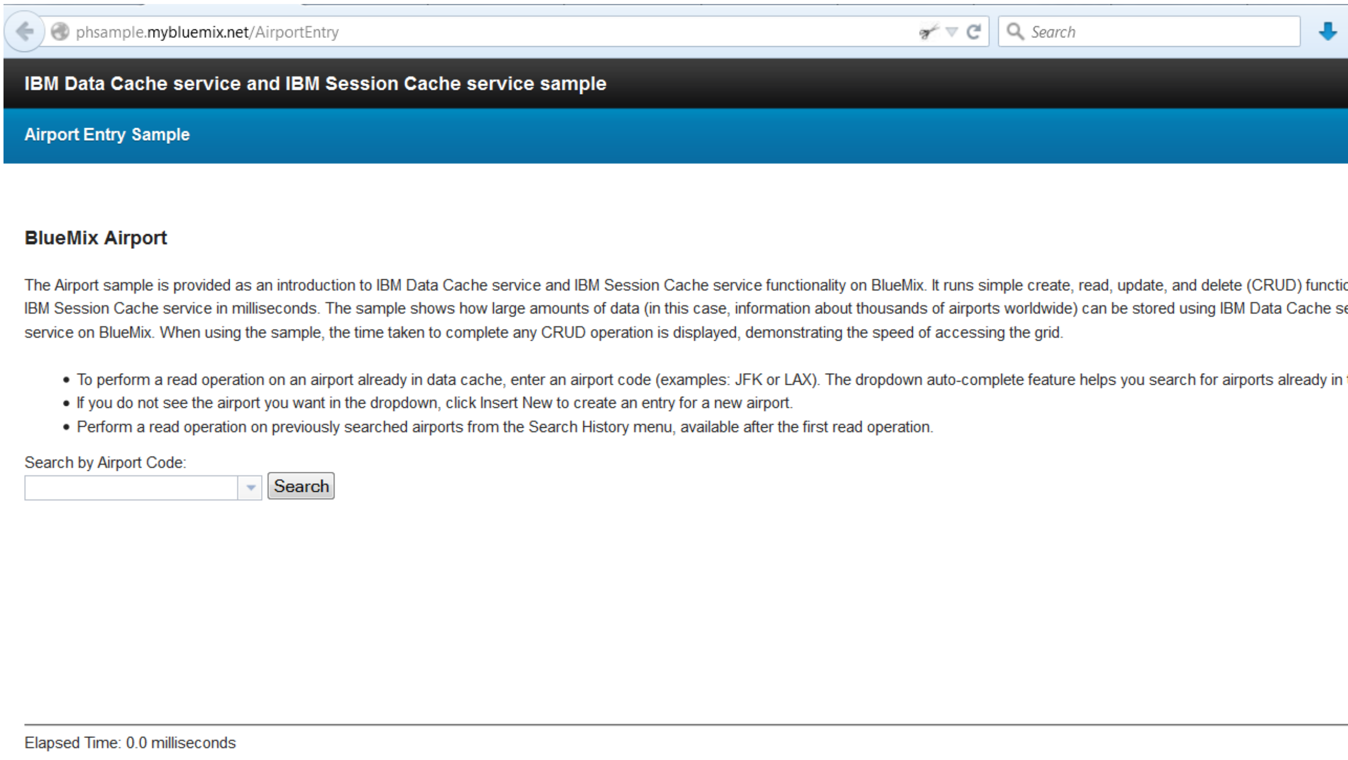
free

Session Cache

SessionCache-P...

free

13. The application can be accessed via browser by using the urls listed from the result. For example: http://phsample.mybluemix.net .



phsample.mybluemix.net/AirportEntry

IBM Data Cache service and IBM Session Cache service sample

Airport Entry Sample

BlueMix Airport

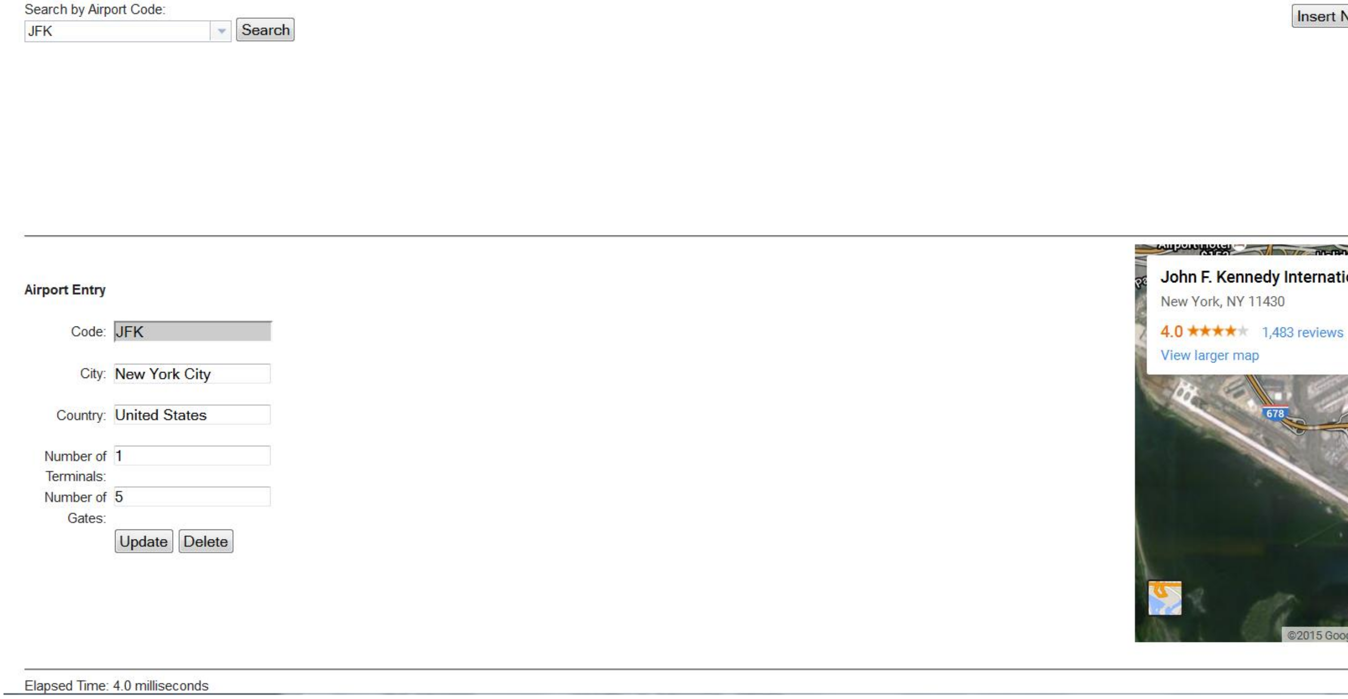
The Airport sample is provided as an introduction to IBM Data Cache service and IBM Session Cache service functionality on BlueMix. It runs simple create, read, update, and delete (CRUD) functic IBM Session Cache service in milliseconds. The sample shows how large amounts of data (in this case, information about thousands of airports worldwide) can be stored using IBM Data Cache se service on BlueMix. When using the sample, the time taken to complete any CRUD operation is displayed, demonstrating the speed of accessing the grid.

- To perform a read operation on an airport already in data cache, enter an airport code (examples: JFK or LAX). The dropdown auto-complete feature helps you search for airports already in
- If you do not see the airport you want in the dropdown, click Insert New to create an entry for a new airport.
- Perform a read operation on previously searched airports from the Search History menu, available after the first read operation.

Search by Airport Code:

Elapsed Time: 0.0 milliseconds

14. Enter “JFK” to *Search by Airport Code* field then click on Search. It will display the Airport entry info with google map and the Elapsed time at the button of the page.



Search by Airport Code: JFK

Airport Entry

Code: JFK

City: New York City

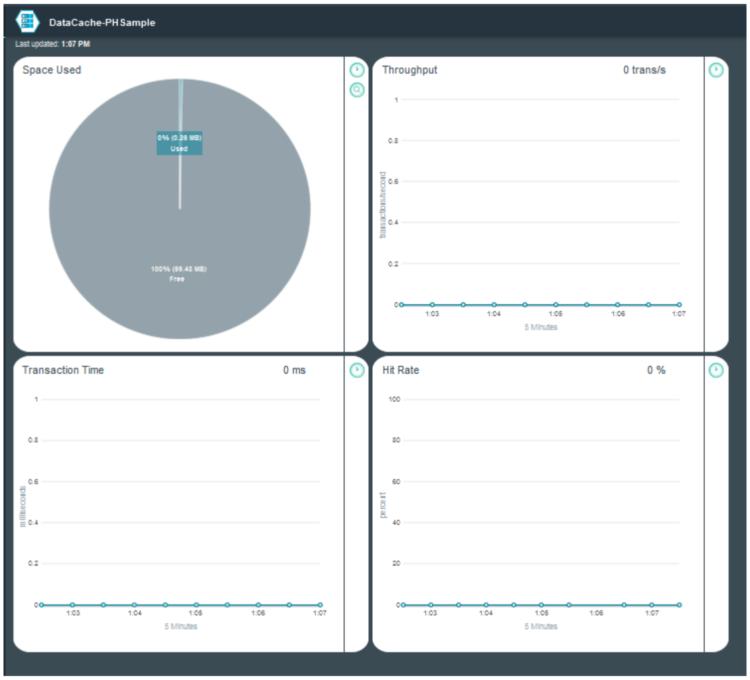
Country: United States

Number of Terminals: 1

Number of Gates: 5

Elapsed Time: 4.0 milliseconds

15. Click on DataCache or SessionCache services tile from the Step13 picture. You will see the Monitoring of the caching service. The more test/search you do, the more info will display on the monitoring space.



16. Congratulations! You have explored the application using Bluemix DataCache and SessionCache services and see the benefits of using caching services.