Bluemix Hands-On Workshop

Section3 - First Deploy Exercises

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Owner:	IBM Ecosystem Development

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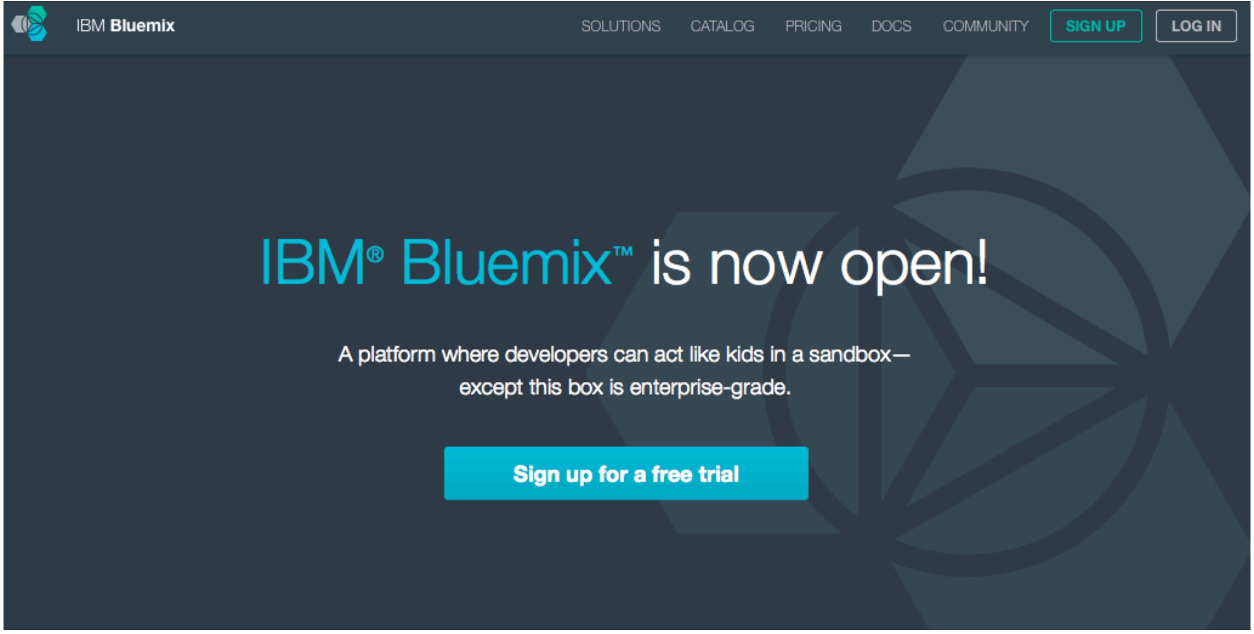
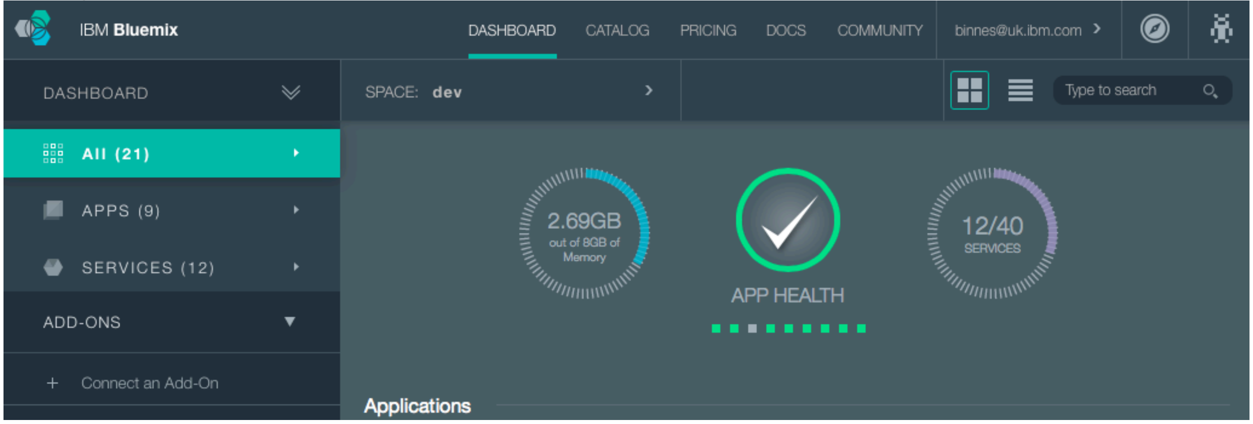
Exercise 3.a – Deploy your first application

This exercise will show you how to deploy an application from the IBM Bluemix Web User Interface.

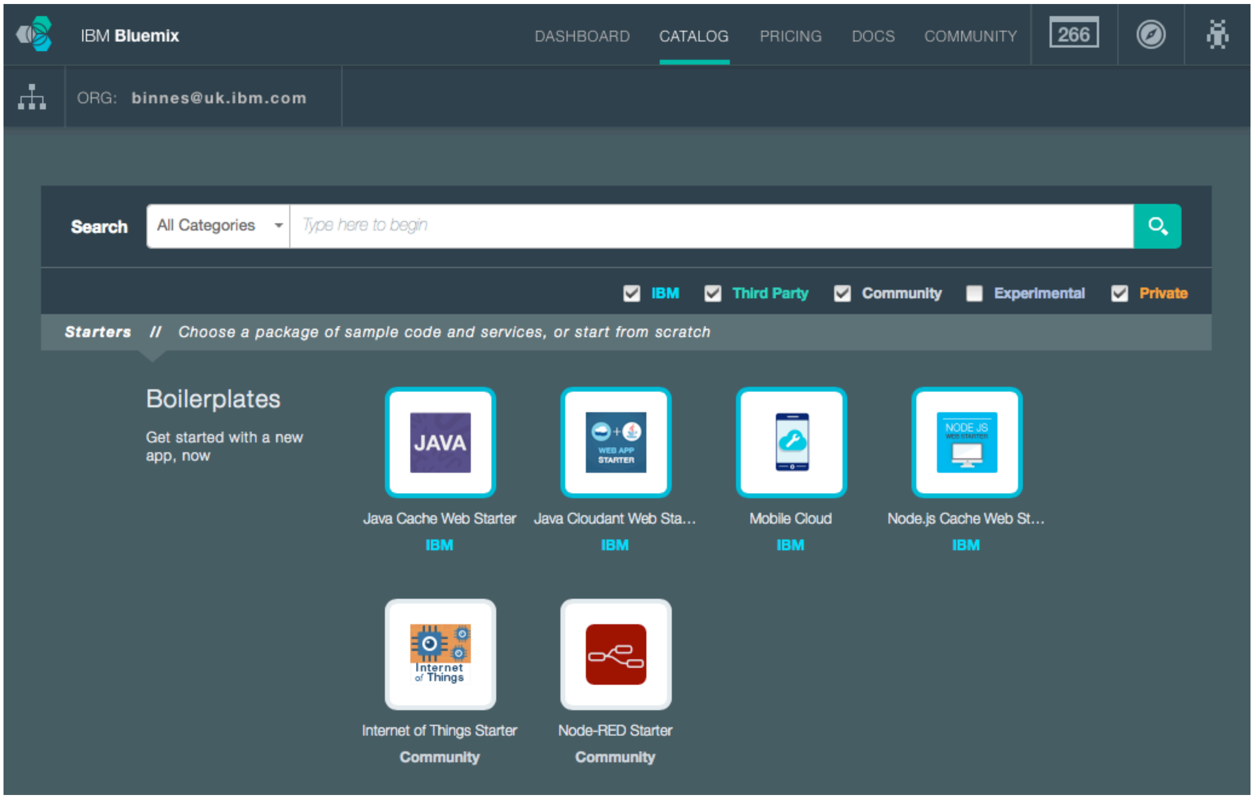
In a browser navigate to http://bluemix.net


IBM Bluemix
SOLUTIONS
CATALOG
PRICING
DOCS
COMMUNITY
SIGN UP
LOG IN
IBM® Bluemix™ is now open!
A platform where developers can act like kids in a sandbox—
except this box is enterprise-grade.
Sign up for a free trial

Select 'LOG IN' then enter your log in information and press 'Sign In'. You should be seeing your dashboard view:



Select the 'CATALOG' view :



ORG: binnes@uk.ibm.com

☑ IBM ☑ Third Party ☑ Community □ Experimental ☑ Private

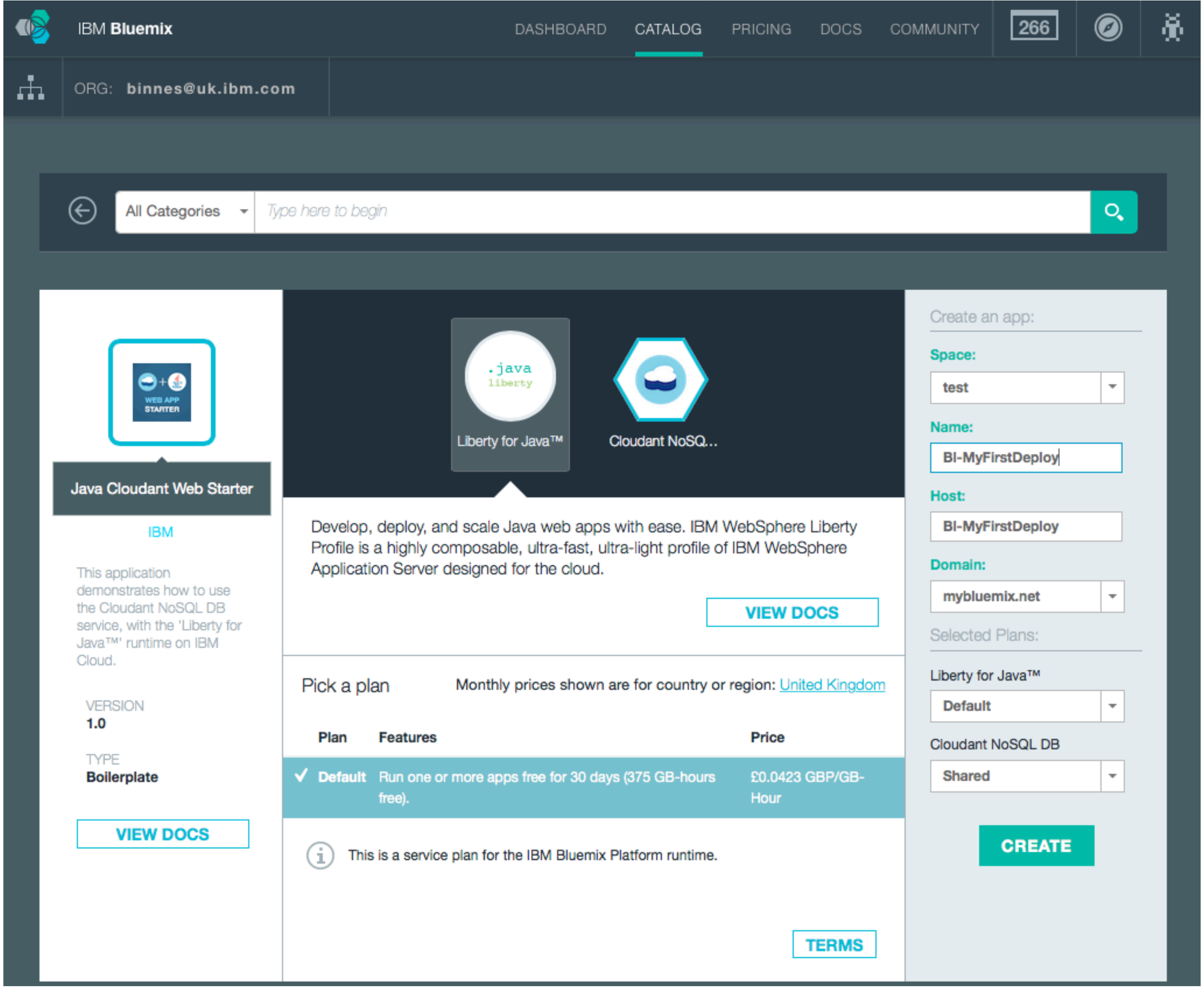
Starters // Choose a package of sample code and services, or start from scratch

Boilerplates

Get started with a new app, now

Java Cache Web Starter IBM	Java Cloudant Web Sta... IBM	Mobile Cloud IBM	Node.js Cache Web St... IBM
Internet of Things Starter Community	Node-RED Starter Community		

Select the Java Cloudant Web Starter from the Boilerplates section:



ORG: binnes@uk.ibm.com

Java Cloudant Web Starter

IBM

This application demonstrates how to use the Cloudant NoSQL DB service, with the 'Liberty for Java™' runtime on IBM Cloud.

VERSION
1.0

TYPE
Boilerplate

Develop, deploy, and scale Java web apps with ease. IBM WebSphere Liberty Profile is a highly composable, ultra-fast, ultra-light profile of IBM WebSphere Application Server designed for the cloud.

Pick a plan Monthly prices shown are for country or region: United Kingdom

	Plan	Features	Price
✓	Default	Run one or more apps free for 30 days (375 GB-hours free).	£0.0423 GBP/GB-Hour

This is a service plan for the IBM Bluemix Platform runtime.

Create an app:

Space: test

Name: BI-MyFirstDeploy

Host: BI-MyFirstDeploy

Domain: mybluemix.net

Selected Plans:

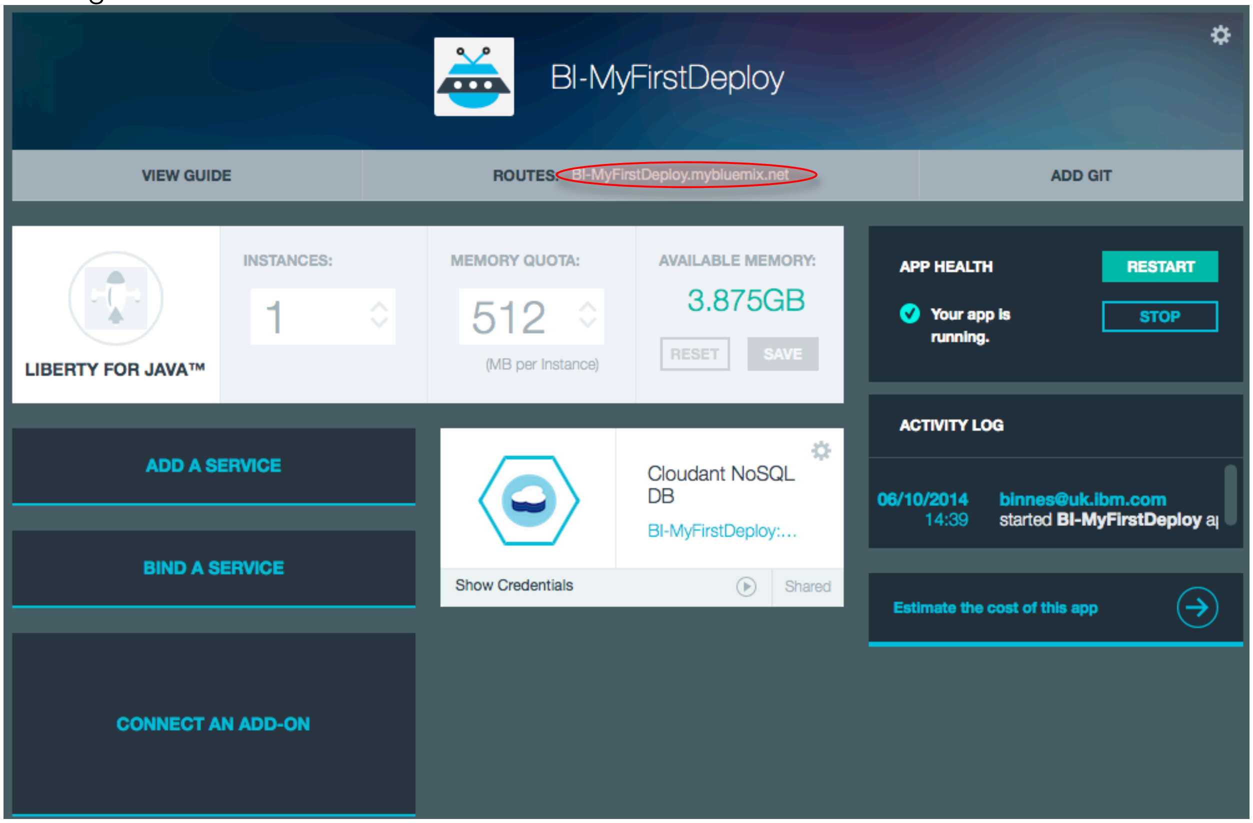
Liberty for Java™: Default

Cloudant NoSQL DB: Shared

Enter a name for your application, as shown above (host will automatically be completed). The host name must be unique on Bluemix, so please choose a name with your company name or initials to try to make a unique name.

Press 'CREATE'

After a short while your application should be running. You can launch the application by clicking on the route:



BI-MyFirstDeploy

ROUTES: BI-MyFirstDeploy.mybluemix.net

LIBERTY FOR JAVA™

INSTANCES: 1

MEMORY QUOTA: 512 (MB per Instance)

AVAILABLE MEMORY: 3.875GB

APP HEALTH

Your app is running.

ACTIVITY LOG

06/10/2014 14:39 binnes@uk.ibm.com started BI-MyFirstDeploy a|

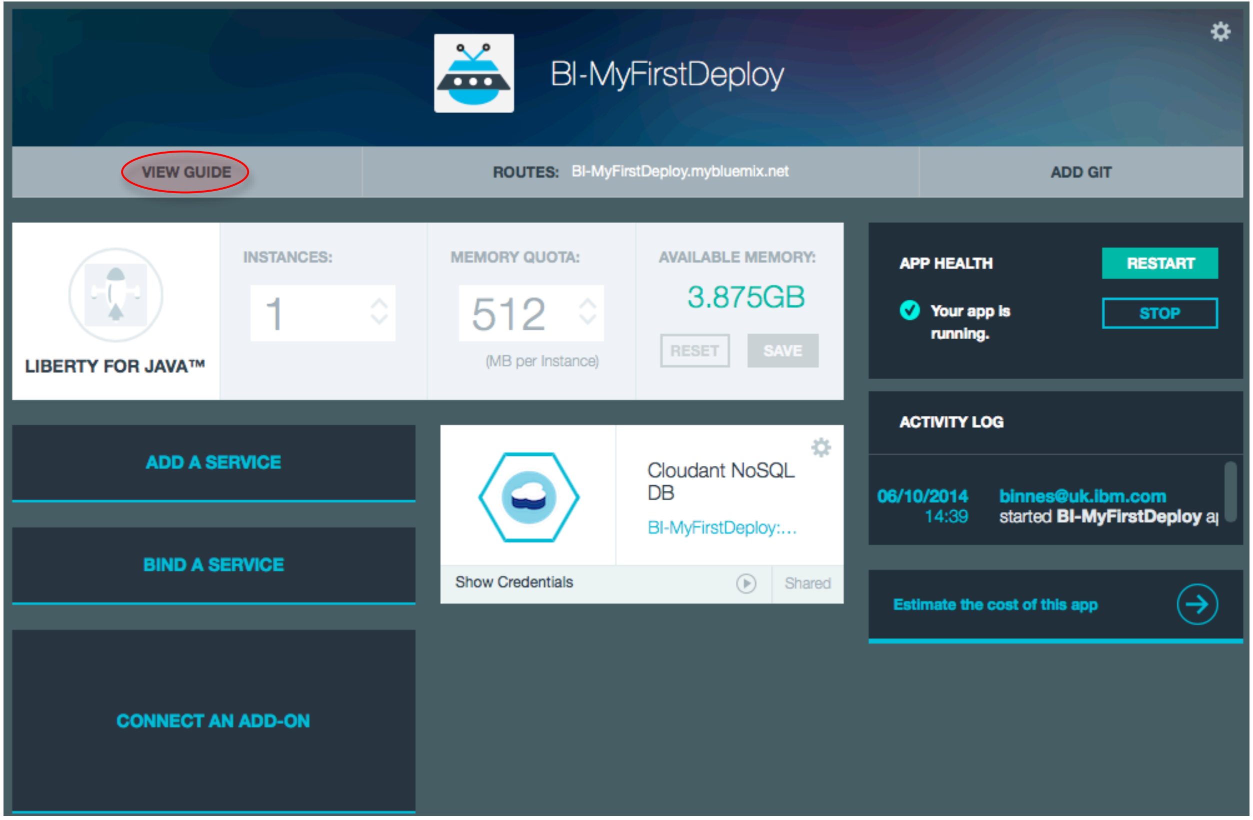
Cloudant NoSQL DB

BI-MyFirstDeploy:...

Exercise 3.b – Deploy then update an application using the CLI

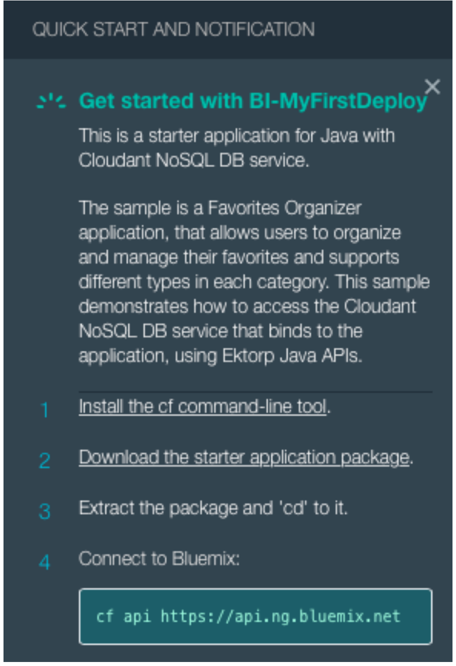
In this exercise you will use the Command Line Interface tool to work with Bluemix. You use this tool in a terminal or command window on your workstation.

We will work with the same sample application we used in exercise 3.a. From the dashboard view in Bluemix select the application to enter the application Overview



06/10/2014 14:39 binnes@uk.ibm.com started **BI-MyFirstDeploy** a|

Select 'VIEW GUIDE' then '2. Download the starter application package'



QUICK START AND NOTIFICATION

Get started with BI-MyFirstDeploy

This is a starter application for Java with Cloudant NoSQL DB service.

The sample is a Favorites Organizer application, that allows users to organize and manage their favorites and supports different types in each category. This sample demonstrates how to access the Cloudant NoSQL DB service that binds to the application, using Ektorp Java APIs.

1 Install the cf command-line tool.

2 Download the starter application package.

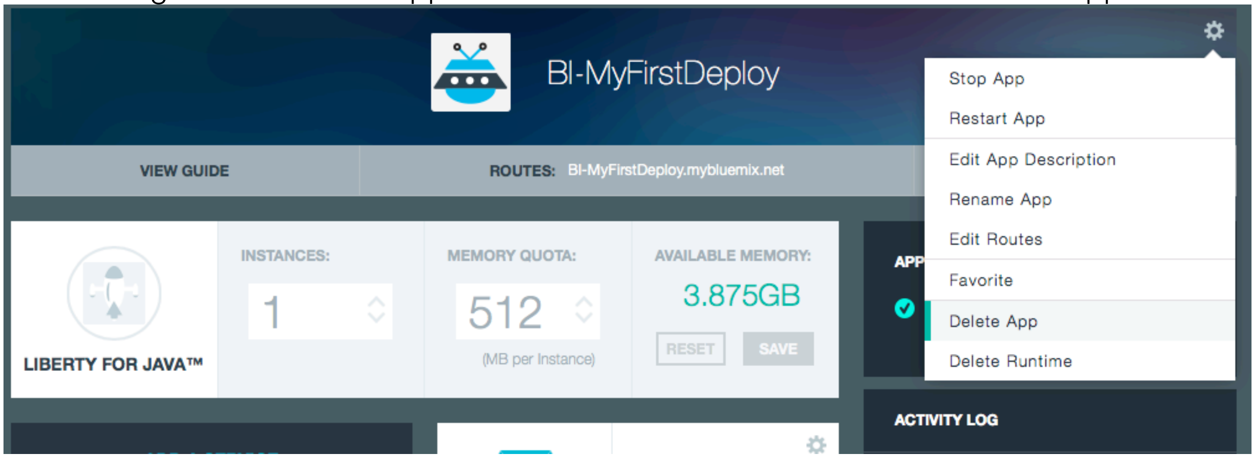
3 Extract the package and 'cd' to it.

4 Connect to Bluemix:

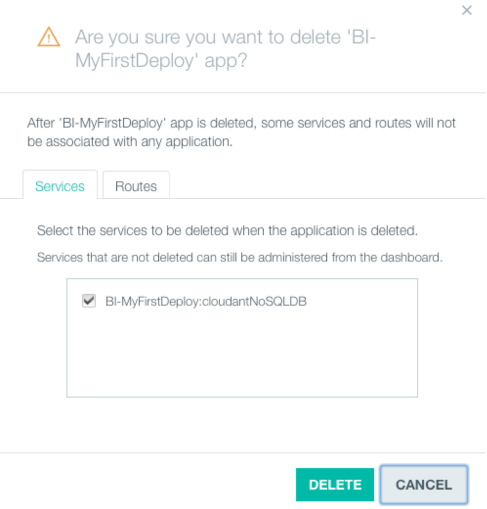
```
cf api https://api.ng.bluemix.net
```

Once the starter package has been downloaded move it to a directory on your workstation where you want to work, such as Bluemix directory in your Documents folder. Then unzip it (double clicking or right-click and select to unarchive) . Don't delete the zip file – we will need it in Exercise 3.c

You can delete the deployed application so we can deploy it from the command line. Select the gear wheel in the application Overview window then select 'Delete App'



You want to delete the Service and the Route with the application, so select the checkbox in the services tab and the Routes tab

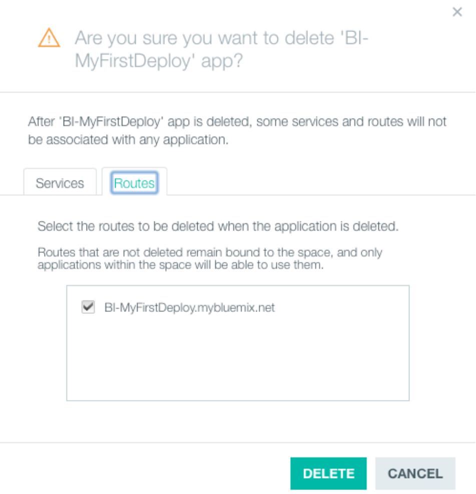

Are you sure you want to delete 'BI-MyFirstDeploy' app?

After 'BI-MyFirstDeploy' app is deleted, some services and routes will not be associated with any application.

Select the services to be deleted when the application is deleted.

Services that are not deleted can still be administered from the dashboard.

☑ BI-MyFirstDeploy:cloudantNoSQLDB


Are you sure you want to delete 'BI-MyFirstDeploy' app?

After 'BI-MyFirstDeploy' app is deleted, some services and routes will not be associated with any application.

Select the routes to be deleted when the application is deleted.

Routes that are not deleted remain bound to the space, and only applications within the space will be able to use them.

☑ BI-MyFirstDeploy.mybluemix.net

Select OK to delete the application.

Open up a command or Terminal window and change directory to the location you unzipped the downloaded sample application.

We need to log in to Bluemix so issue the following command:

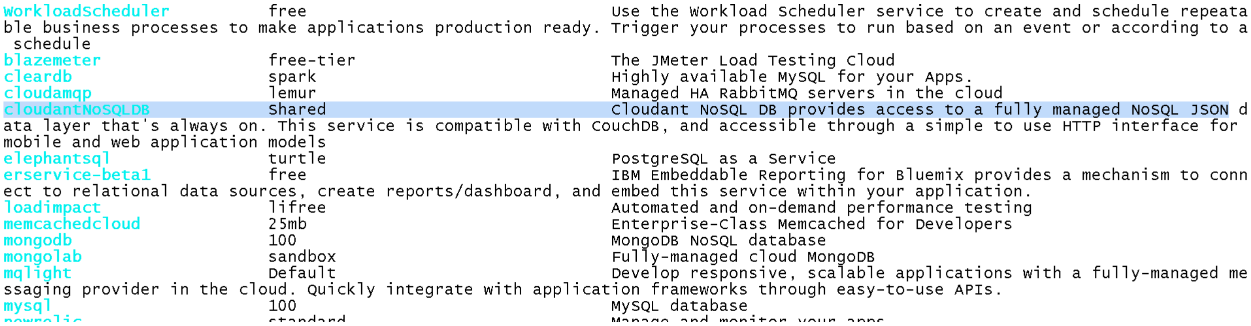
```
cf l -a https://api.ng.bluemix.net
```

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.

Before we deploy the application we need to deploy a Cloudant database, so we can look at the available services using

```
cf marketplace
```

Your will get a list of all the services, the one we are interested in is the cloudantNoSQLDB



```
WorkloadScheduler          free                               Use the Workload Scheduler service to create and schedule repeata
ble business processes to make applications production ready. Trigger your processes to run based on an event or according to a
 schedule
blazemeter                 free-tier                          The JMeter Load Testing Cloud
cleardb                    spark                              Highly available MySQL for your Apps.
cloudamqp                  lemur                              Managed HA RabbitMQ servers in the cloud
cloudantNoSQLDB            Shared                             Cloudant NoSQL DB provides access to a fully managed NoSQL JSON d
ata layer that's always on. This service is compatible with CouchDB, and accessible through a simple to use HTTP interface for
mobile and web application models
elephantsql                turtle                             PostgreSQL as a Service
erservice-beta1            free                               IBM Embeddable Reporting for Bluemix provides a mechanism to conn
ect to relational data sources, create reports/dashboard, and embed this service within your application.
loadimpact                 lifree                             Automated and on-demand performance testing
memcachedcloud             25mb                               Enterprise-Class Memcached for Developers
mongodb                    100                                MongoDB NoSQL database
mongolab                   sandbox                            Fully-managed cloud MongoDB
mqlight                    Default                            Develop responsive, scalable applications with a fully-managed me
ssaging provider in the cloud. Quickly integrate with application frameworks through easy-to-use APIs.
mysql                      100                                MySQL database
newrelic                   standard                           Manage and monitor your apps
```

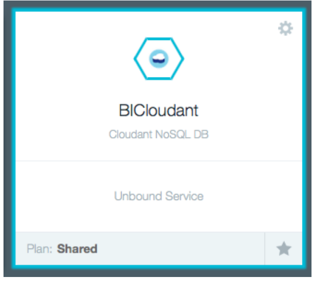
to create the service use command

```
cf cs cloudantNoSQLDB Shared BICloudant
```

where:

- CloudantNoSQLDB is the name of the service from the cf marketplace command
- Shared is the name of the service plan we want to use from the cf marketplace command
- BICloudant is the name of the service instance we want to use – please choose your own name rather than BICloudant – you will need to use this name when connecting (binding) the service to the application.

If you refresh your Web UI you will now see the deployed service:



We can now deploy the application.

Ensure you are in the directory for your application you should have the following files and directories:
JavaCloudantDB.war WebContent build.xml instructions.md src README.txt
bin dep-jar manifest.yml
Enter the following command – changing the application name to a unique name

```
cf push BI-MyFirstDeploy -p JavaCloudantDB.war -m 512M --
no-manifest --no-start
```

where:

- BImyFirstDeploy will be the application name and hostname
- -p specifies the path or file (war file) containing the application
- -m specifies the amount of memory to allocate each application instance (1GB is default)
- --no-manifest instructs to CLI tool not to use the supplied manifest (will be explained later)
- --no-start instructs to CLI tool not to automatically start the application

We don't want the application to automatically start because it needs a database to run – we need to link the Cloudant database instance to the application before we want the application to start.

To link the database and application we use the following command – substitute the application name and service instance names you used:

```
        cf bs BI-MyFirstDeploy BICloudant
```

where:

- BImyFirstDeploy is the application name used when deloying the application
- BICloudant is the service instance name used when deploying the service

If you refresh the Web UI you should see the application and service now linked, but the application is still stopped.

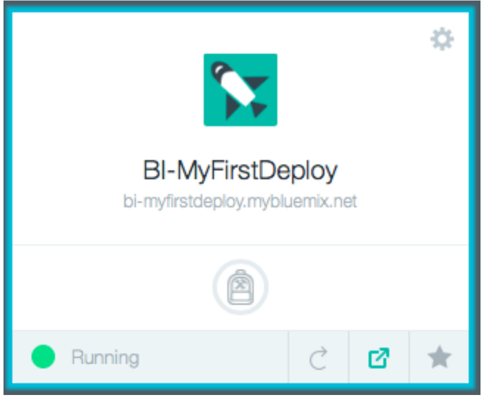
To start an application use the following command – substitute the name of your application:

```
        cf start BI-MyFirstDeploy
```

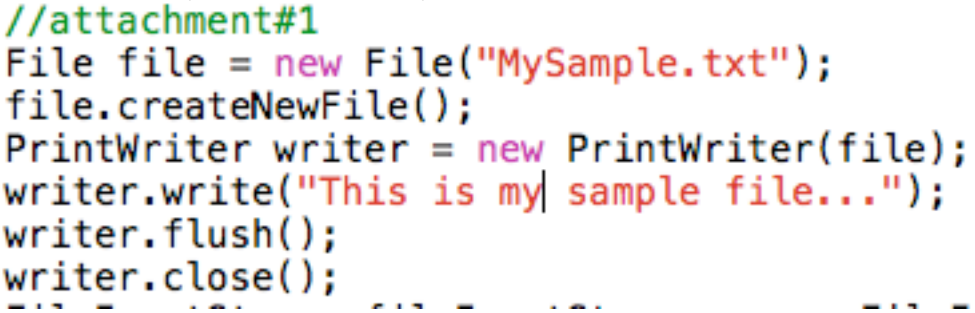
where:

- BImyFirstDeploy is the application name you want to start

If you refresh the Web UI you should see the application running. You can launch the application from the Dashboard view



In a text editor open up file src/example/nosql/ResourceServlet.java and modify the name of the fie and file content (line 346 and 349)



```
//attachment#1
File file = new File("MySample.txt");
file.createNewFile();
PrintWriter writer = new PrintWriter(file);
writer.write("This is my sample file...");
writer.flush();
writer.close();
```

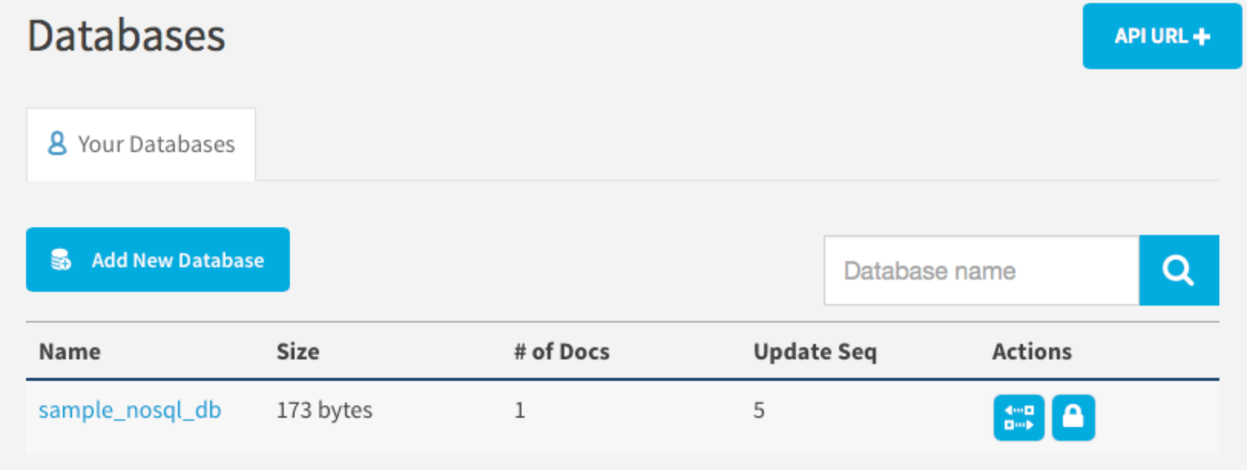
rebuild the WAR file by issuing the ant command in the root directory of the project (contains build.xml)

```
ant
Buildfile: /Users/binnes/work/Cloud/WW_IICs/BlueMix/Workshop V2/Lab 3/BImyFirstDeploy/build.xml

clean:
   [delete] Deleting directory /Users/binnes/work/Cloud/WW_IICs/BlueMix/Workshop V2/Lab
3/BImyFirstDeploy/bin
   [delete] Deleting: /Users/binnes/work/Cloud/WW_IICs/BlueMix/Workshop V2/Lab
3/BImyFirstDeploy/JavaCloudantDB.war

init:
    [mkdir] Created dir: /Users/binnes/work/Cloud/WW_IICs/BlueMix/Workshop V2/Lab
3/BImyFirstDeploy/bin

build-project:
     [echo] Java Cloudant DB Web Starter: /Users/binnes/work/Cloud/WW_IICs/BlueMix/Workshop V2/Lab
3/BImyFirstDeploy/build.xml
    [javac] Compiling 1 source file to /Users/binnes/work/Cloud/WW_IICs/BlueMix/Workshop V2/Lab
3/BImyFirstDeploy/bin
    [javac] warning: [options] bootstrap class path not set in conjunction with -source 1.5
    [javac] Note: /Users/binnes/work/Cloud/WW_IICs/BlueMix/Workshop V2/Lab
3/BImyFirstDeploy/src/example/nosql/ResourceServlet.java uses unchecked or unsafe operations.
    [javac] Note: Recompile with -Xlint:unchecked for details.
    [javac] 1 warning

build-war:
      [war] Building war: /Users/binnes/work/Cloud/WW_IICs/BlueMix/Workshop V2/Lab
3/BImyFirstDeploy/JavaCloudantDB.war

build:

BUILD SUCCESSFUL
```

We need to remove the sample file from the database to allow it to be populated again, so in the Bluemix Web UI select the Cloudant Service instance then launch the Cloudant Dashboard.

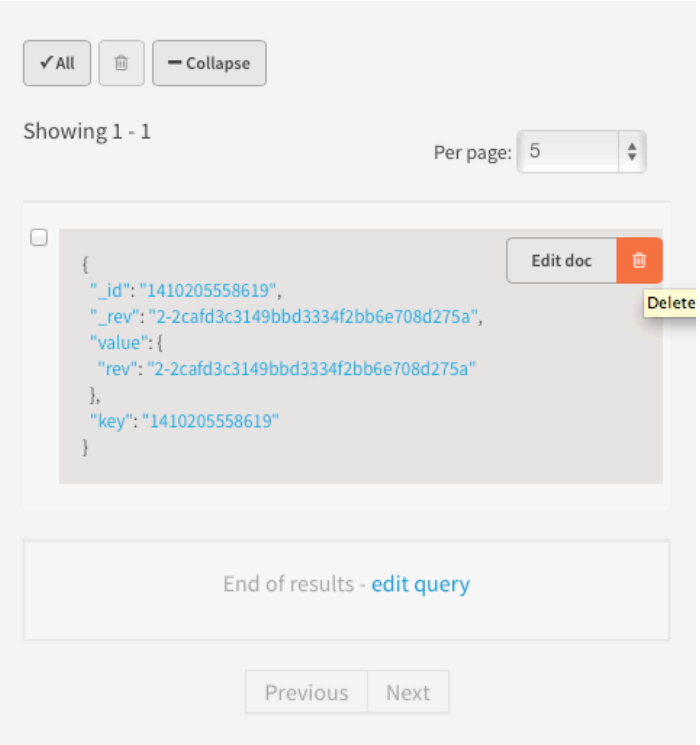
Cloudant NoSQL DB
LAUNCH

You should see a single DB



Name	Size	# of Docs	Update Seq	Actions
sample_nosql_db	173 bytes	1	5	

select it, then select to delete the document



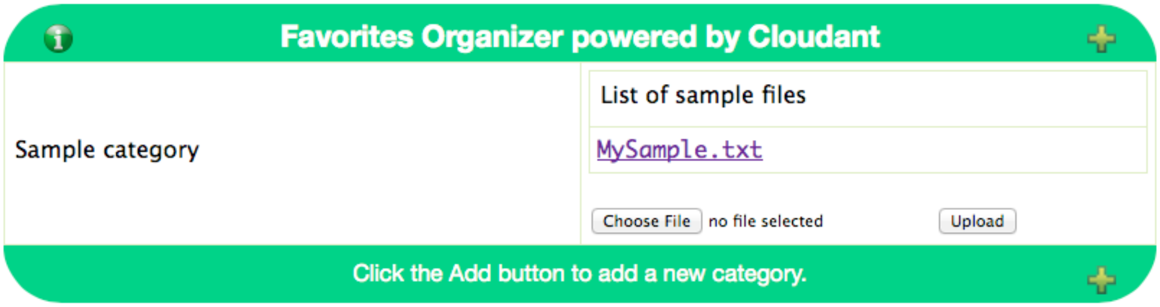
```
{
 "_id": "1410205558619",
 "_rev": "2-2cafd3c3149bbd3334f2bb6e708d275a",
 "value": {
  "rev": "2-2cafd3c3149bbd3334f2bb6e708d275a"
 },
 "key": "1410205558619"
}
```

confirm the delete when prompted.

Redeploy the updated WAR file with the push command – this time no need to include the --no-start or memory parameter

```
cf push BI-MyFirstDeploy -p JavaCloudantDB.war --no-manifest
```

Once the application has restarted test to ensure your changes are now running.


Favorites Organizer powered by Cloudant
Sample category
List of sample files
MySample.txt
Choose File
no file selected
Upload
Click the Add button to add a new category.

We will finish this exercise by deleting the application and service.

```
cf d BI-MyFirstDeploy -r
```

where:

- BImyFirstDeploy is the application name to be deleted
- -r instructs Bluemix to also delete the routes attached to the application

```
cf ds BICloudant
```

where

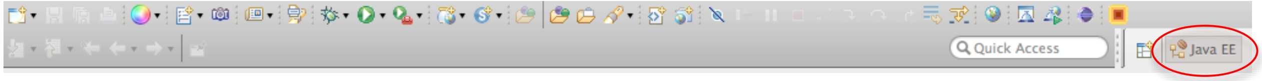
- BICloudant is the name of the service instance to be deleted

Note : you will be asked to confirm the delete of the application and service answer y to confirm you want to delete

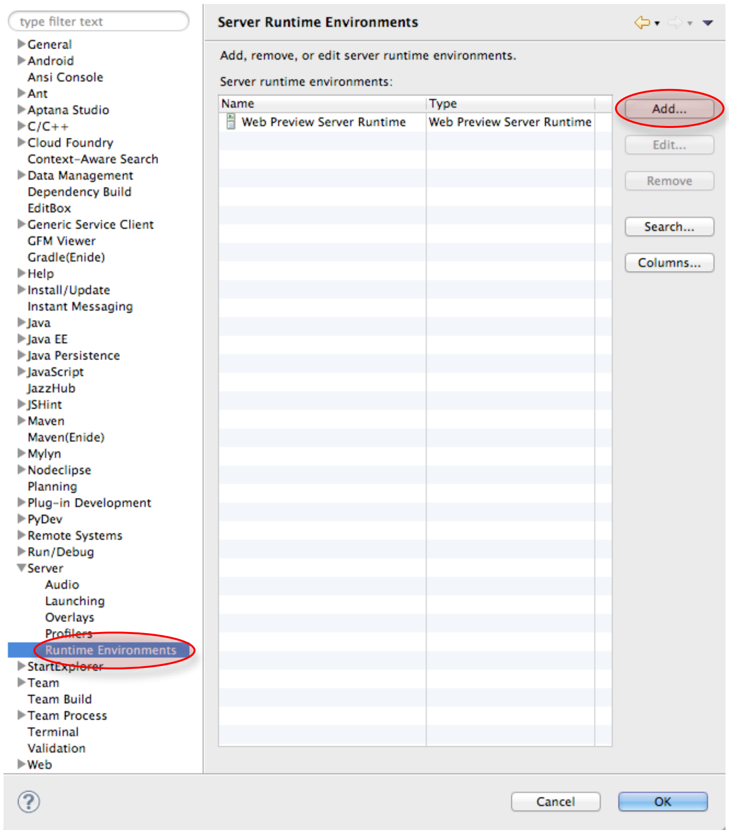
Exercise 3.c – Working with Eclipse and Bluemix

This exercise will show you how to work with Eclipse and Bluemix.

Launch Eclipse - suggest use a new workspace, but not essential. Switch to Java EE perspective.



First task is to configure Eclipse to use Bluemix as a server, so open up Eclipse Preferences and select Server -> Runtime Environments



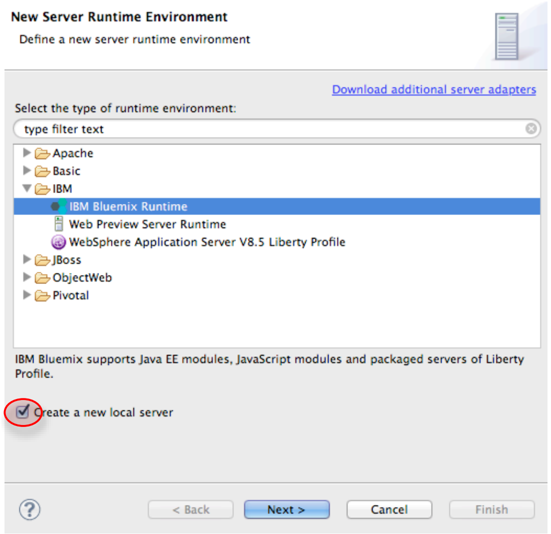
Server Runtime Environments

Add, remove, or edit server runtime environments.

Server runtime environments:

Name	Type
Web Preview Server Runtime	Web Preview Server Runtime

select 'Add…' then select IBM Bluemix Runtime and select 'Create a new local server checkbox'


Download additional server adapters
type filter text
Apache
Basic
IBM
IBM Bluemix Runtime
Web Preview Server Runtime
WebSphere Application Server V8.5 Liberty Profile
JBoss
ObjectWeb
Pivotal
< Back
Next >
Cancel
Finish

New Server Runtime Environment

Define a new server runtime environment

Select the type of runtime environment:

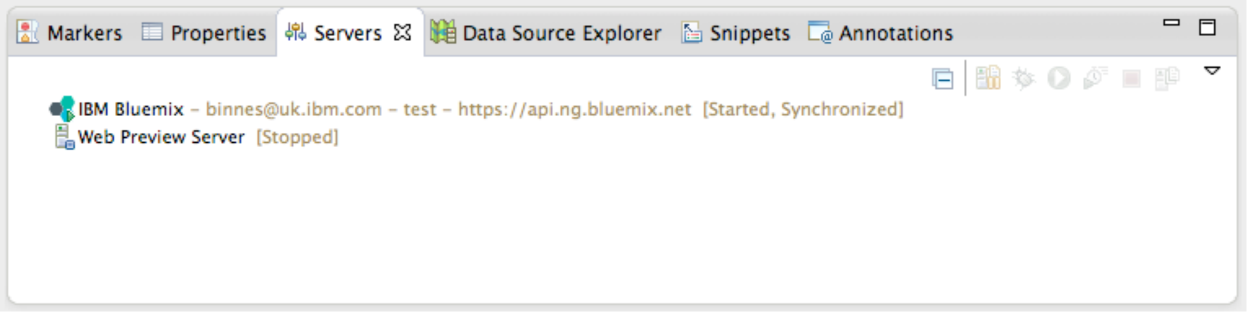
IBM Bluemix supports Java EE modules, JavaScript modules and packaged servers of Liberty Profile.

☑ Create a new local server

select ‘Next >’ then enter your Email and Password on the next panel – there are the credentials you use to log into Bluemix. Select ‘Validate Account’ to ensure all details are OK then select ‘next >’. Choose the organization and space you want to use then select ‘Finish’. Select OK to close the preferences page.

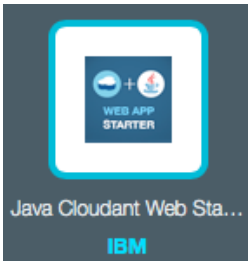
Note: If you want to work with multiple spaces in Eclipse you need to create multiple server configurations.

Open the Servers view in Eclipse – if it is not showing use the menu items -> Window -> Show View -> Servers to open the view

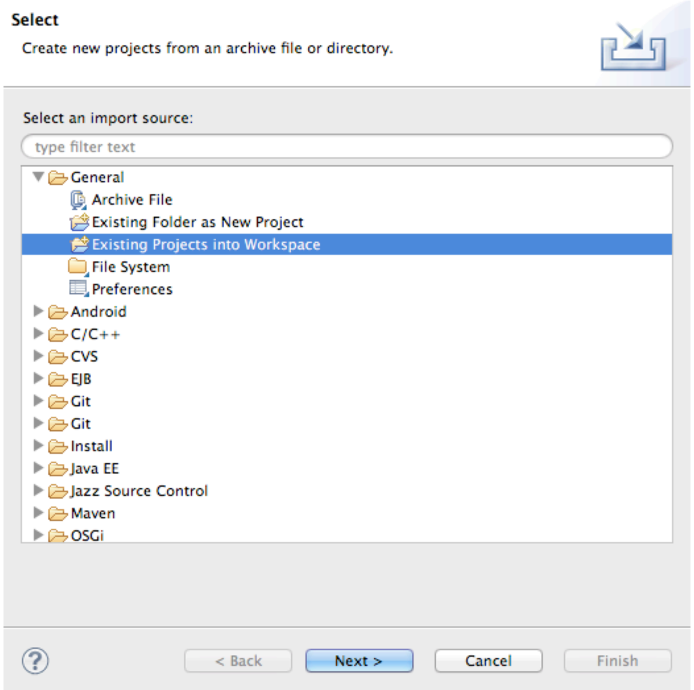


IBM Bluemix – binnes@uk.ibm.com – test – https://api.ng.bluemix.net [Started, Synchronized]
Web Preview Server [Stopped]

We will use the same application as we used in the last session, so you should have the archive file you downloaded in the last exercise already on your workstation – if not, deploy the Java Cloudant Web Starter application from the Bluemix UI, select View Guide then download the starter application.



We need to import the starter application package to Eclipse – File -> Import
This will open up the Import dialog. Select General -> Existing Projects into Workspace

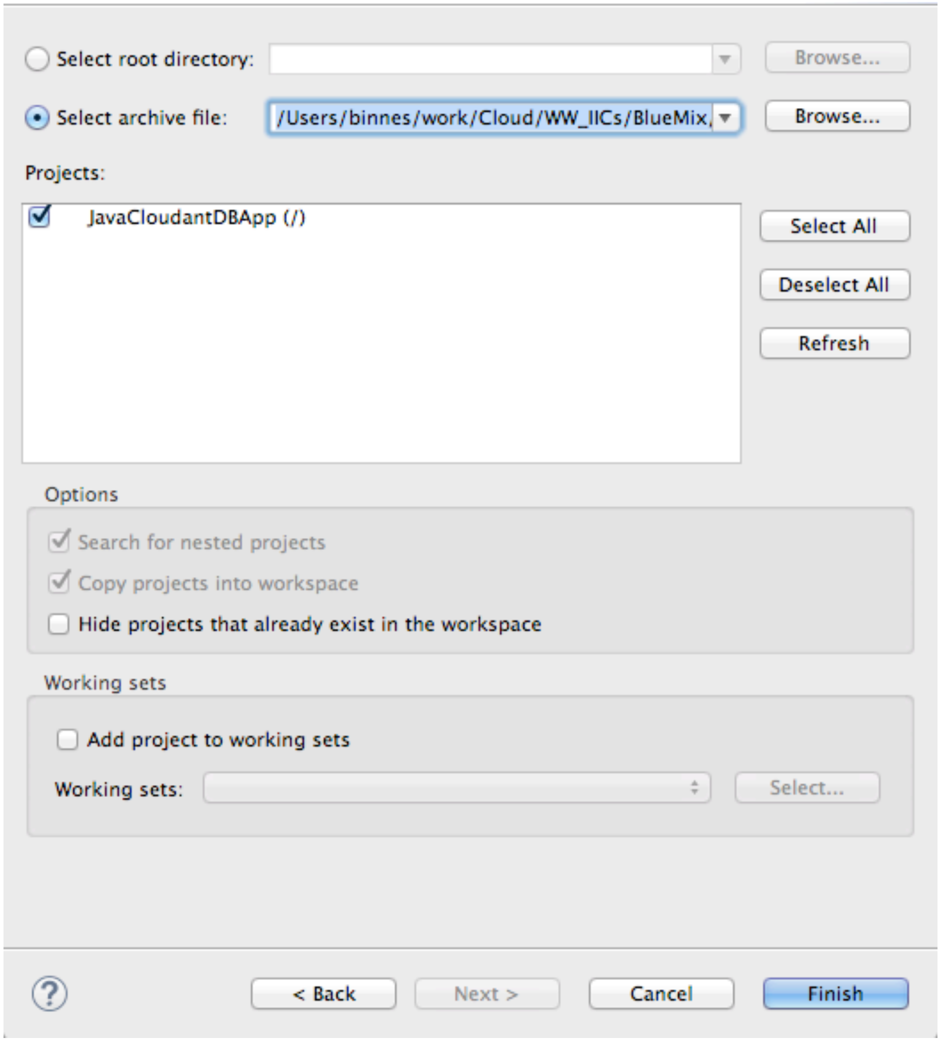


Select

Create new projects from an archive file or directory.

Select an import source:

select ‘Next >’ then select the downloaded zip file and select ‘Finish’



○ Select root directory:

● Select archive file: /Users/binnes/work/Cloud/WW_IICs/BlueMix,

Projects:

☑ JavaCloudantDBApp (/)

Options

☑ Search for nested projects

☑ Copy projects into workspace

□ Hide projects that already exist in the workspace

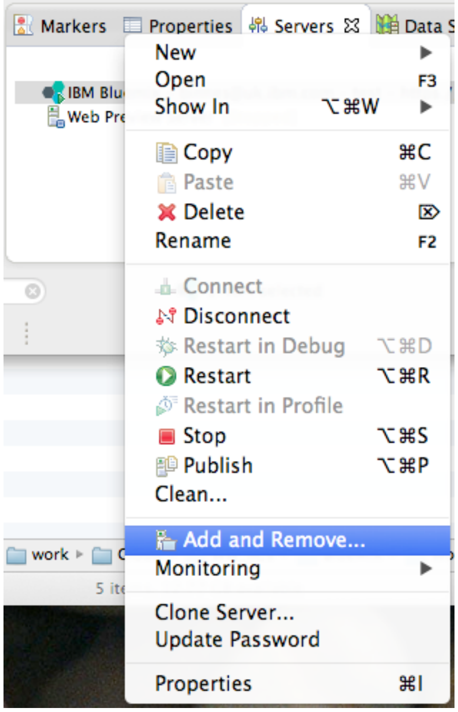
Working sets

□ Add project to working sets

Working sets:

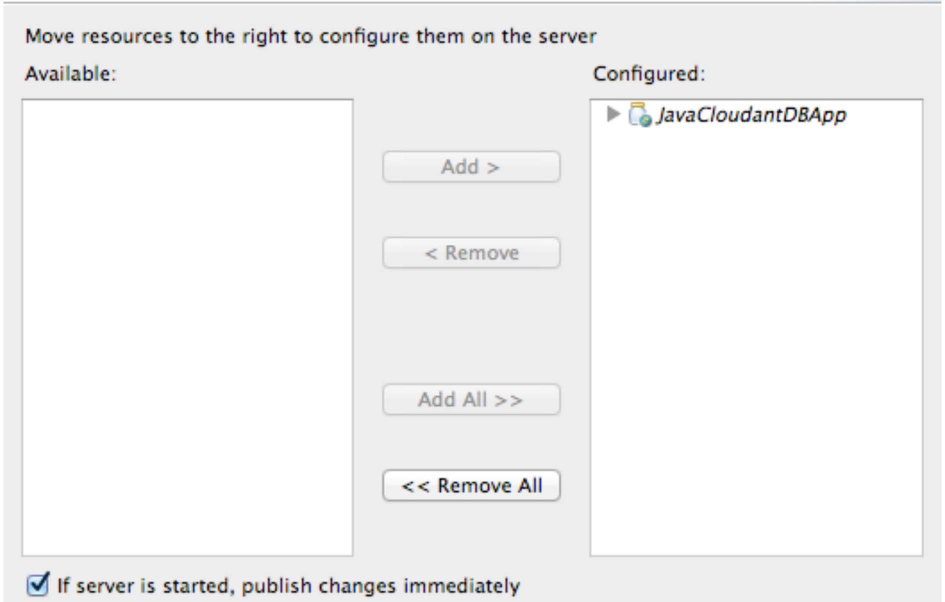
The project will be created

To deploy the application right-click on IBM Bluemix in the Servers view



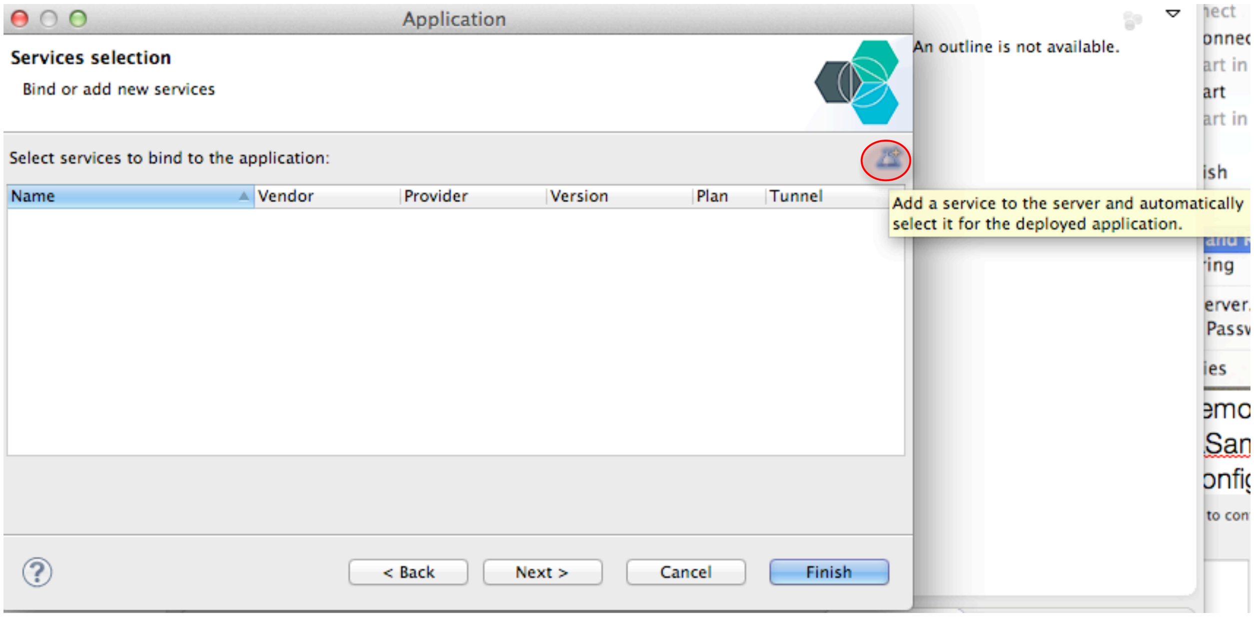
then Add and Remove

select the 'JavaCloudantDBApp' in the Available column and then select 'Add >', which will move it to the Configured column


Move resources to the right to configure them on the server

☑ If server is started, publish changes immediately

Press finish – this will then launch the deploy dialog. Change the Appication name to something unique then press 'Next', check the URL contains something that you think will be unique the press 'Next >' On the Services selection screen press the icon to add a service



Services selection

Bind or add new services

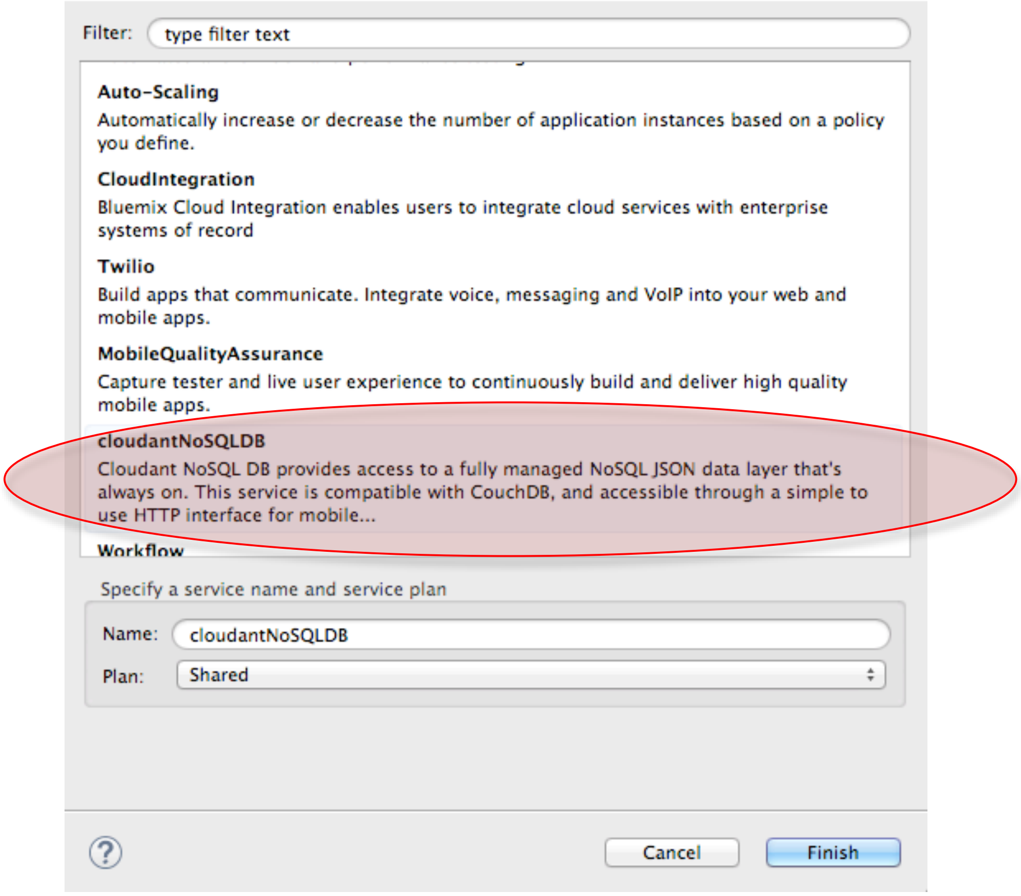
Select services to bind to the application:

Name	Vendor	Provider	Version	Plan	Tunnel

Add a service to the server and automatically select it for the deployed application.

An outline is not available.

when the list of available services come up select the CloudantNoSQLDB service



Filter: type filter text

Auto-Scaling
Automatically increase or decrease the number of application instances based on a policy you define.

CloudIntegration
Bluemix Cloud Integration enables users to integrate cloud services with enterprise systems of record

Twilio
Build apps that communicate. Integrate voice, messaging and VoIP into your web and mobile apps.

MobileQualityAssurance
Capture tester and live user experience to continuously build and deliver high quality mobile apps.

cloudantNoSQLDB
Cloudant NoSQL DB provides access to a fully managed NoSQL JSON data layer that's always on. This service is compatible with CouchDB, and accessible through a simple to use HTTP interface for mobile...

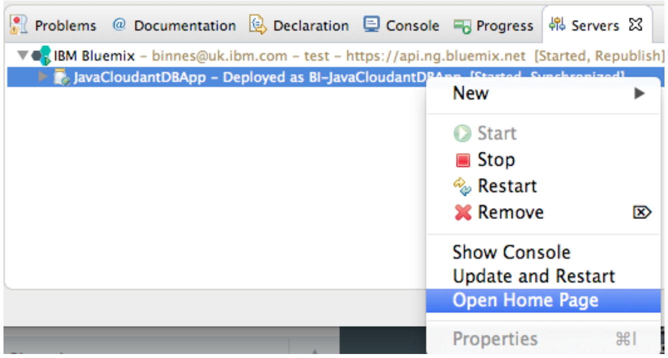
Workflow

Specify a service name and service plan

Name: cloudantNoSQLDB

Plan: Shared

press Finish and Finish again to close the application Deploy dialog. The application is now getting deployed to Bluemix. Eclipse should automatically switch to the Console view where you will see details of the deploy.


Problems
Documentation
Declaration
Console
Progress
Servers
IBM Bluemix – binnes@uk.ibm.com – test – https://api.ng.bluemix.net [Started, Republish]
JavaCloudantDBApp – Deployed as BI-JavaCloudantDBApp [Started, Synchronized]
New
Start
Stop
Restart
Remove
Show Console
Update and Restart
Open Home Page
Properties ⌘I

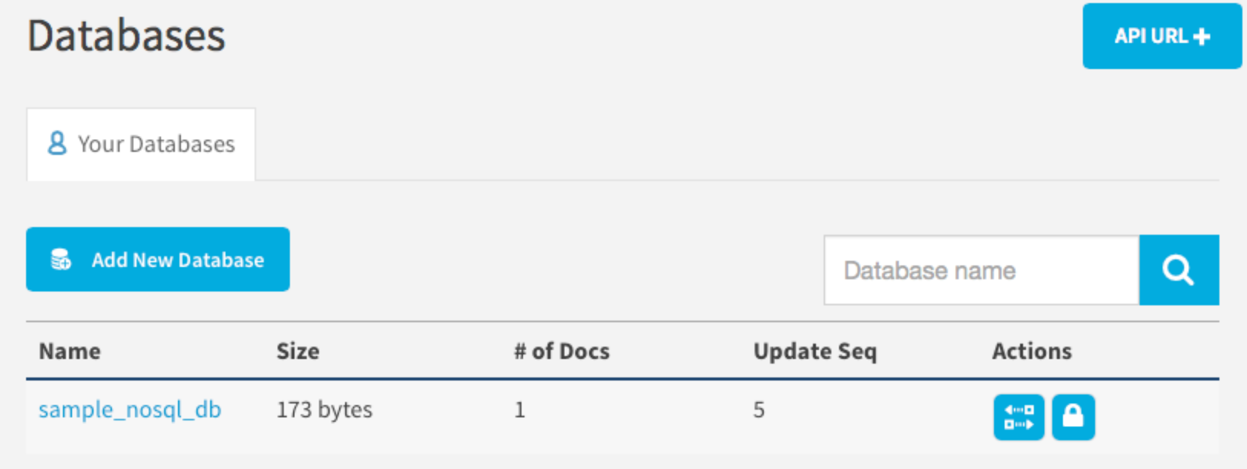
Once the application is running – switch back to the server view and expand the Bluemix server – you should see the application listed. You can launch the application from Eclipse by right-clicking on the application in the servers view and selecting 'Open Home Page'.

Note: In Eclipse you can alter the Browser used to launch applications from the menu -> Window -> Web Browser - then select the preferred option.

We need to remove the sample file from the database to allow it to be populated again, so in the Bluemix Web UI select the Cloudant Service instance then launch the Cloudant Dashboard.

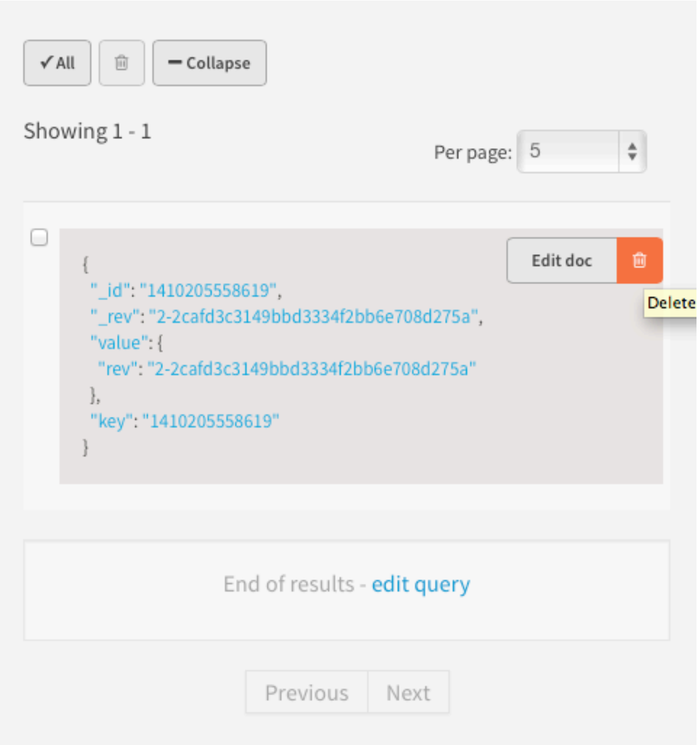
Cloudant NoSQL DB
LAUNCH

You should see a single DB



Name	Size	# of Docs	Update Seq	Actions
sample_nosql_db	173 bytes	1	5	

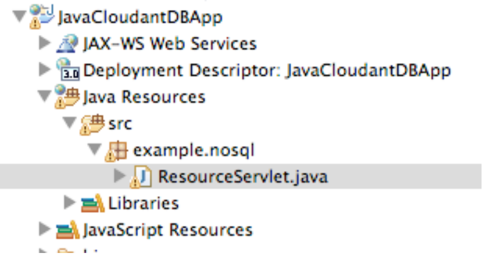
select it, then select to delete the document



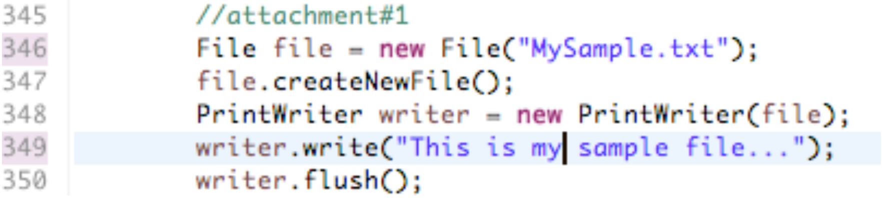
```
{
 "_id": "1410205558619",
 "_rev": "2-2cafd3c3149bbd3334f2bb6e708d275a",
 "value": {
  "rev": "2-2cafd3c3149bbd3334f2bb6e708d275a"
 },
 "key": "1410205558619"
}
```

confirm the delete when prompted.

In a text editor open up file src/example.nosql/ResourceServlet.java

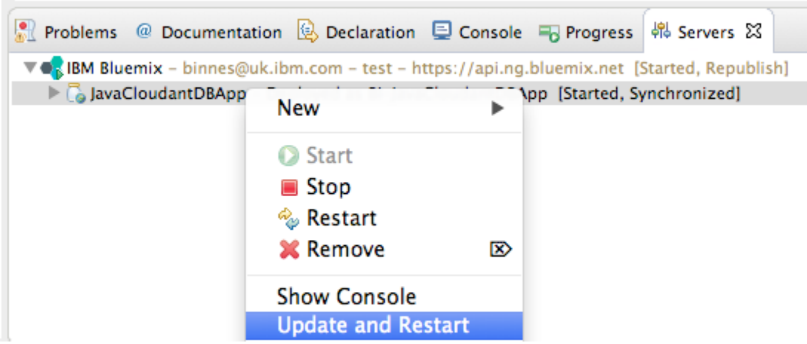


and modify the name of the fie and file content (line 346 and 349)



```
345           //attachment#1
346           File file = new File("MySample.txt");
347           file.createNewFile();
348           PrintWriter writer = new PrintWriter(file);
349           writer.write("This is my sample file...");
350           writer.flush();
```

save the change File->Save then notice in the Server view the state of the Bluemix server has changed to republish – telling us that an application has changed, which is not yet been published to Bluemix. Select the JavaCloudntDBApp application in the Server view and right-click then select ‘Update and Restart’



IBM Bluemix – binnes@uk.ibm.com – test – https://api.ng.bluemix.net [Started, Republish]
JavaCloudantDBApp … App [Started, Synchronized]

Once the application has restarted test the application to ensure the change is now live.

To finish this exercise right-click the project in the Explorer view and select Delete to delete the project. Select to delete project contents on disk and then press OK. You will then be asked if you want to delete the cloudantNoSQLDB service – deleting a project deployed via Eclipse will also delete it from Bluemix! Select the checkbox to delete the service. In the Bluemix Web UI confirm that the application and server have been deleted.