IBM Bluemix for Administrators with Focus on XPages

Niklas Heidloff, IBM
Bluemix Developer Advocate
@nheidloff
heidloff.net

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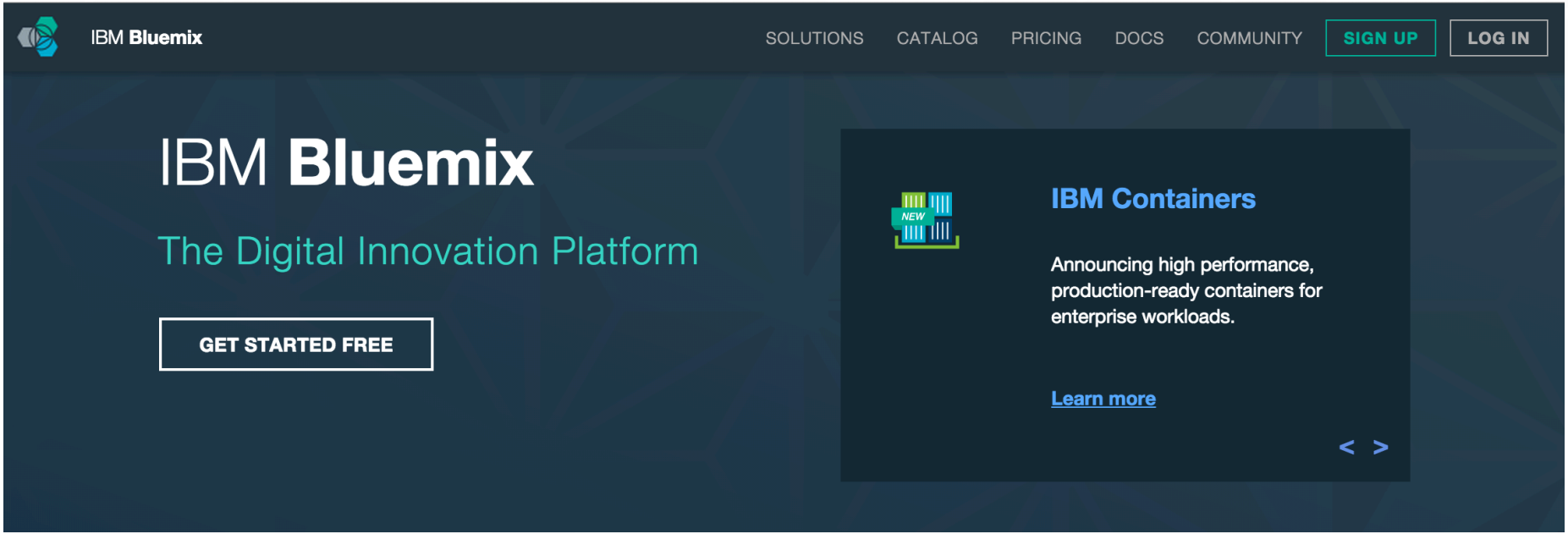
NOTES & DOMINO ADMINCAMP

Gelsenkirchen
21.09.2015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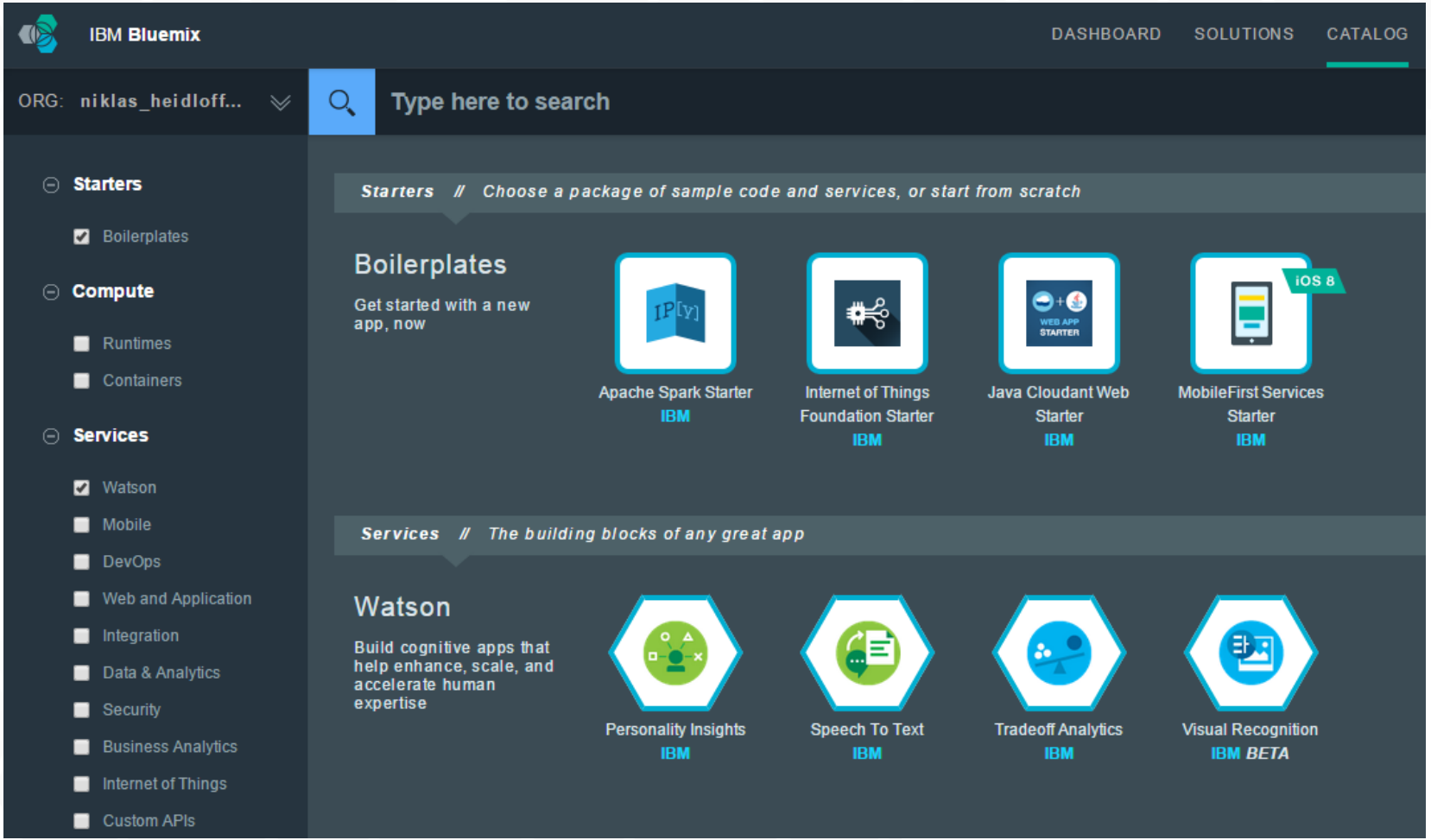
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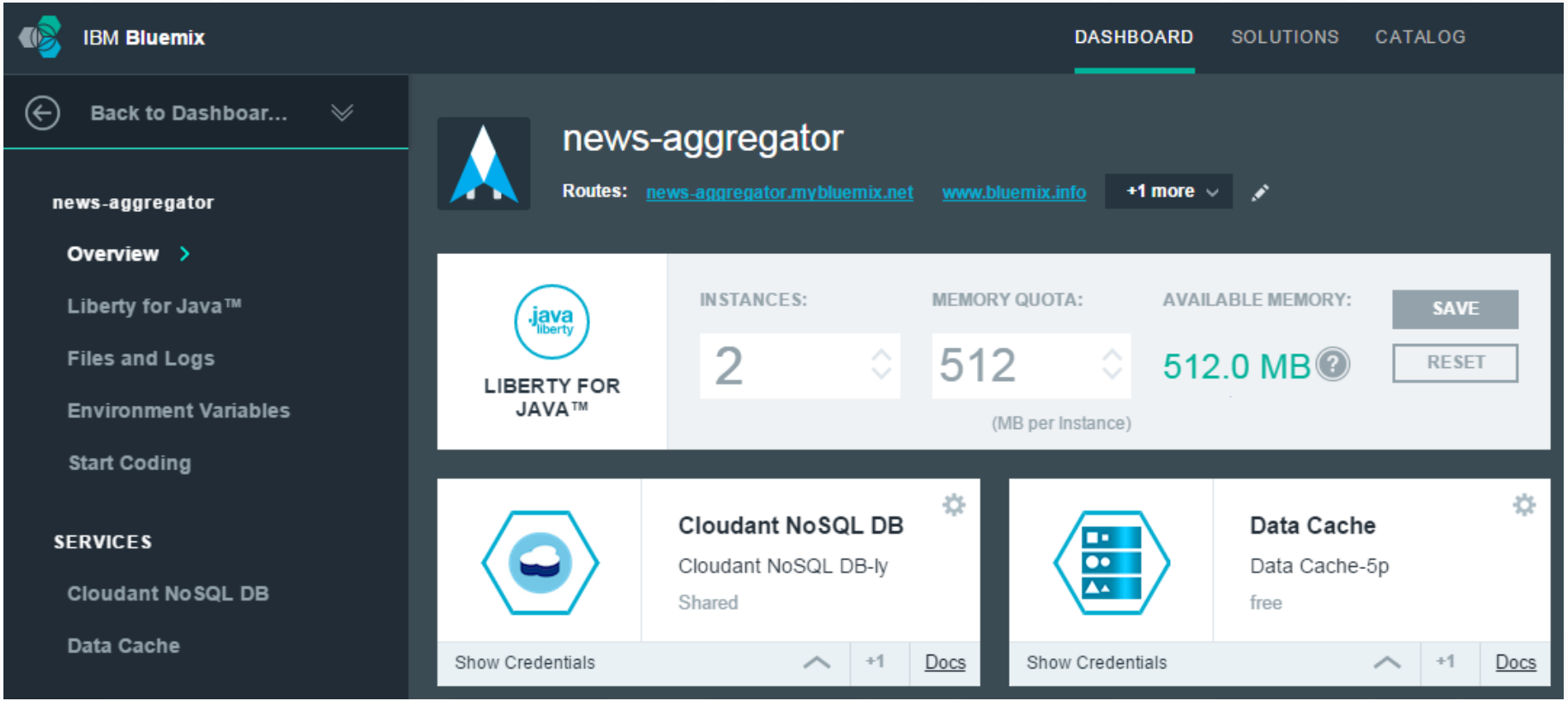
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2
MEMORY QUOTA:
512
(MB per Instance)
AVAILABLE MEMORY:
512.0 MB
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RESET
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Data Cache
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+1
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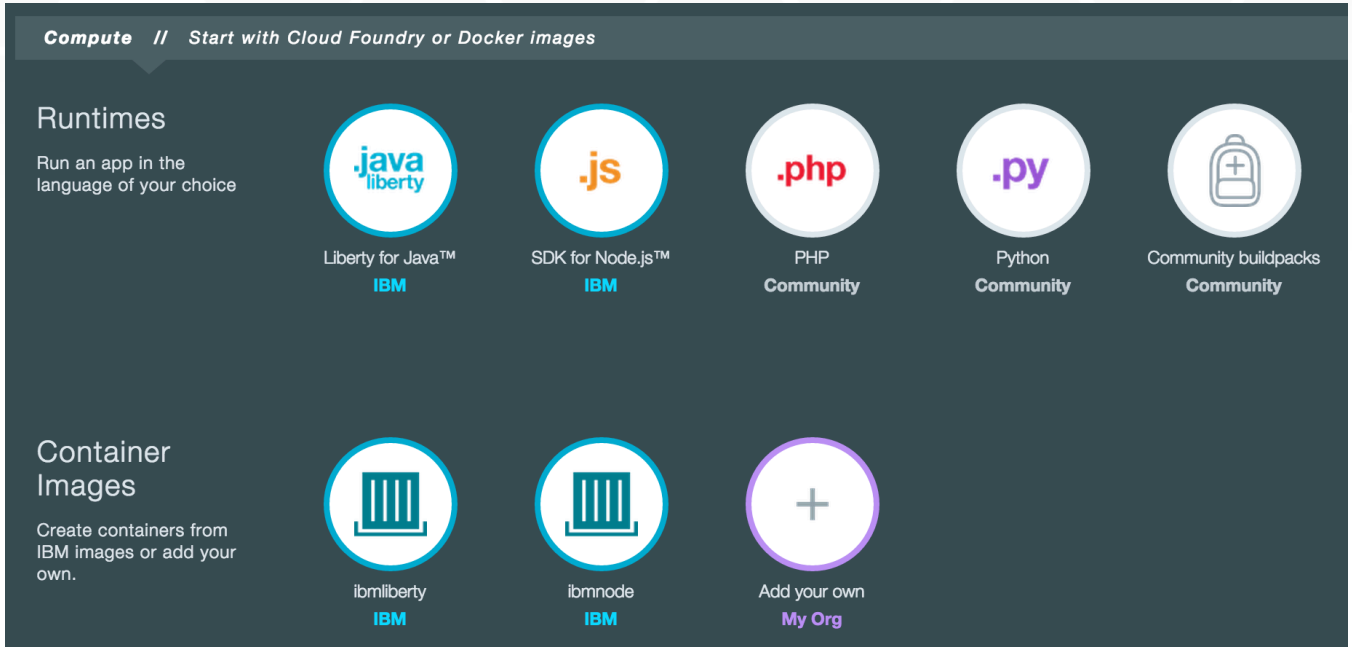

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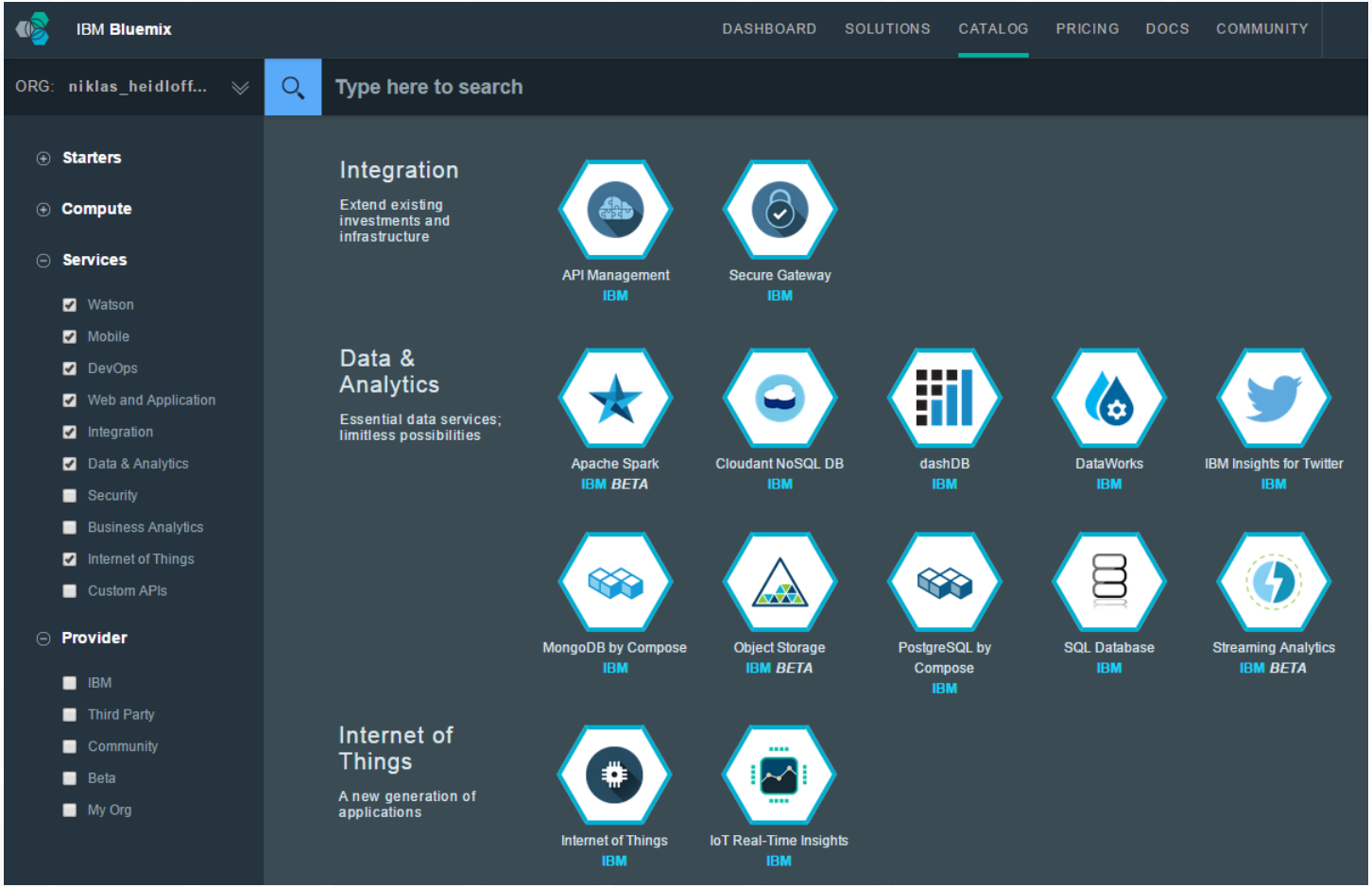
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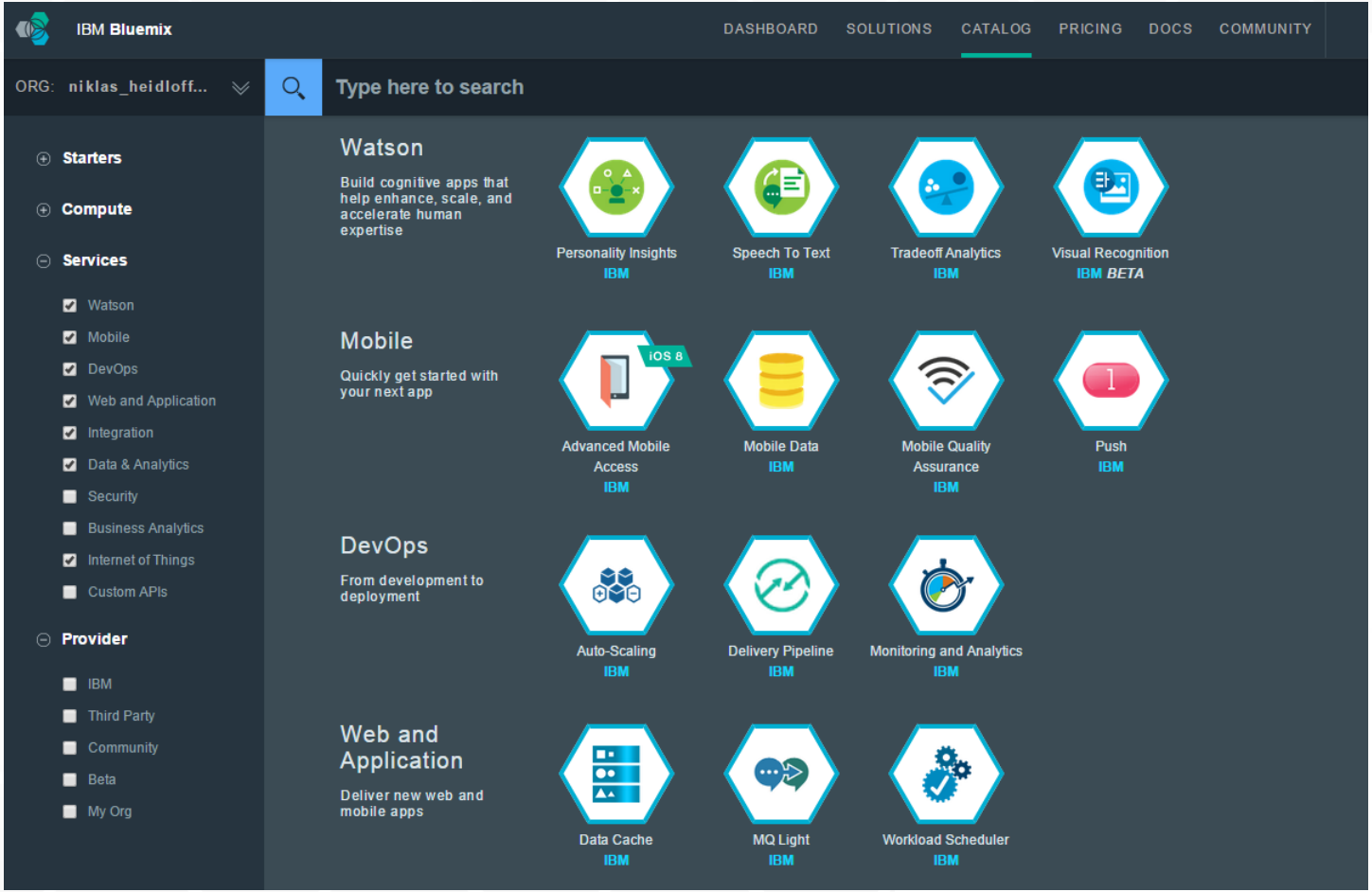
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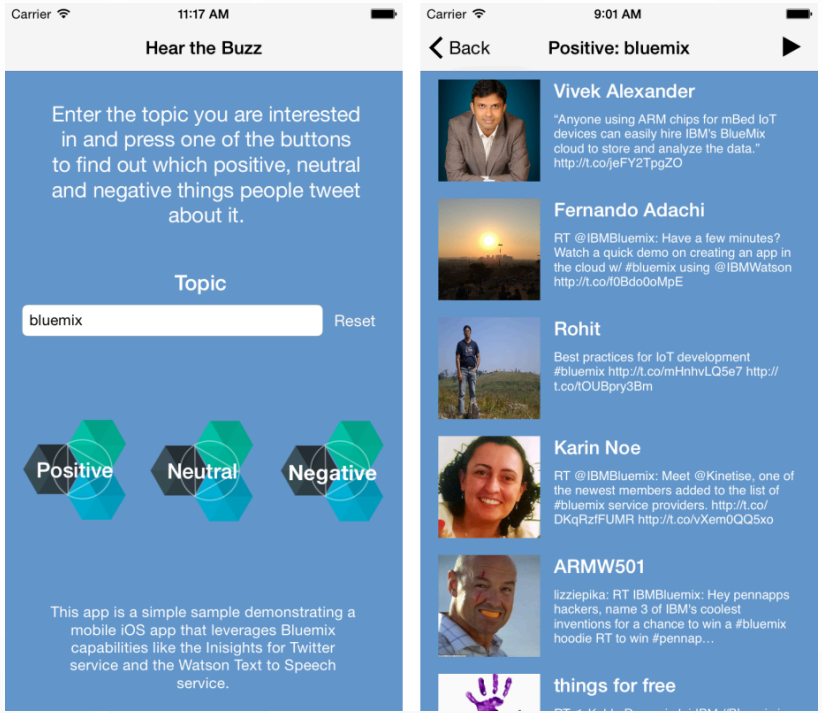
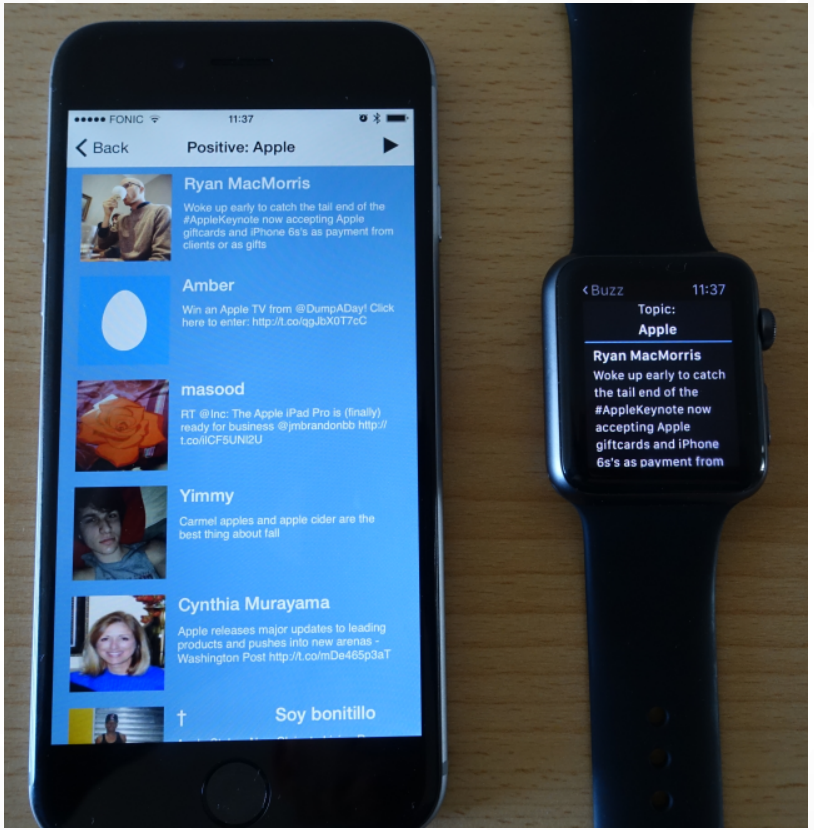
Sample: Hear the Buzz





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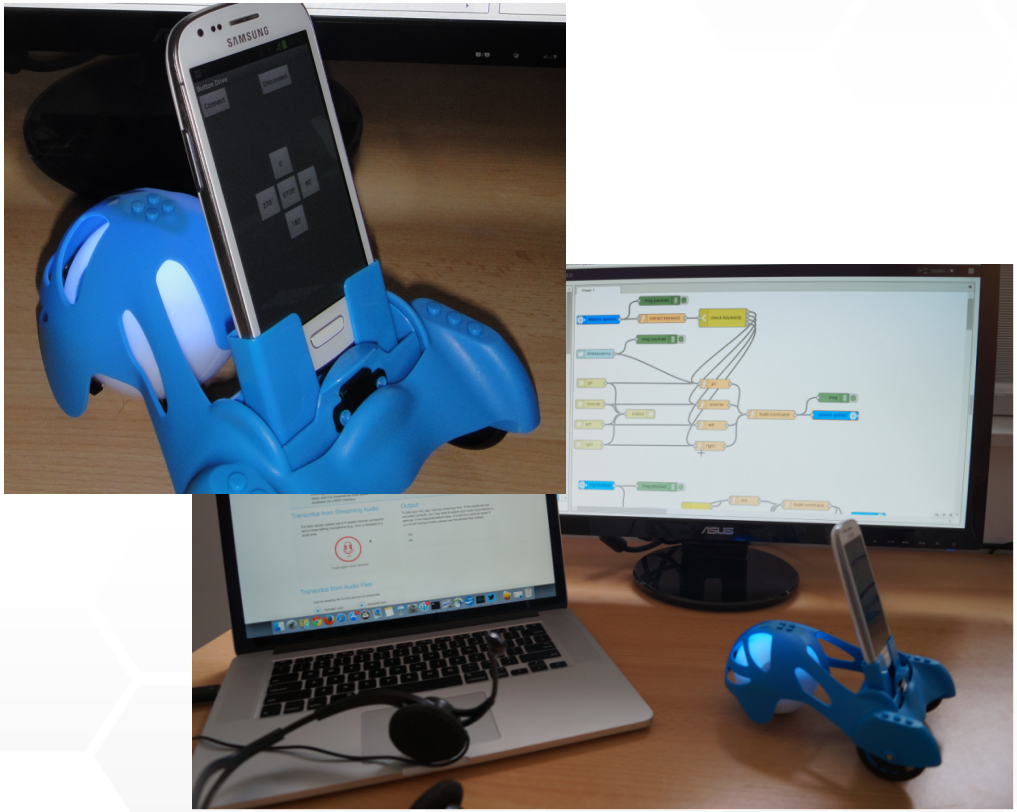
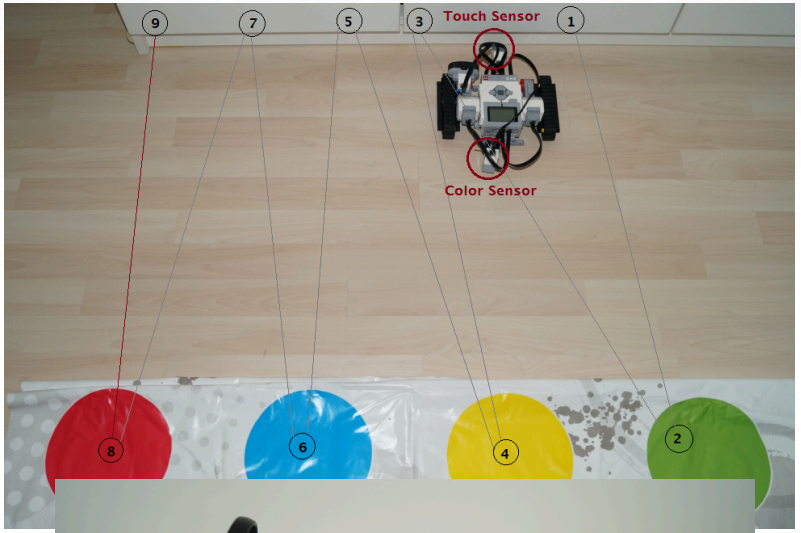
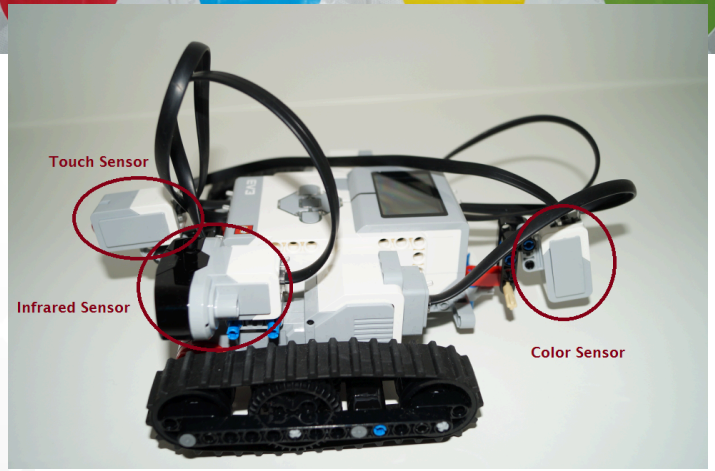
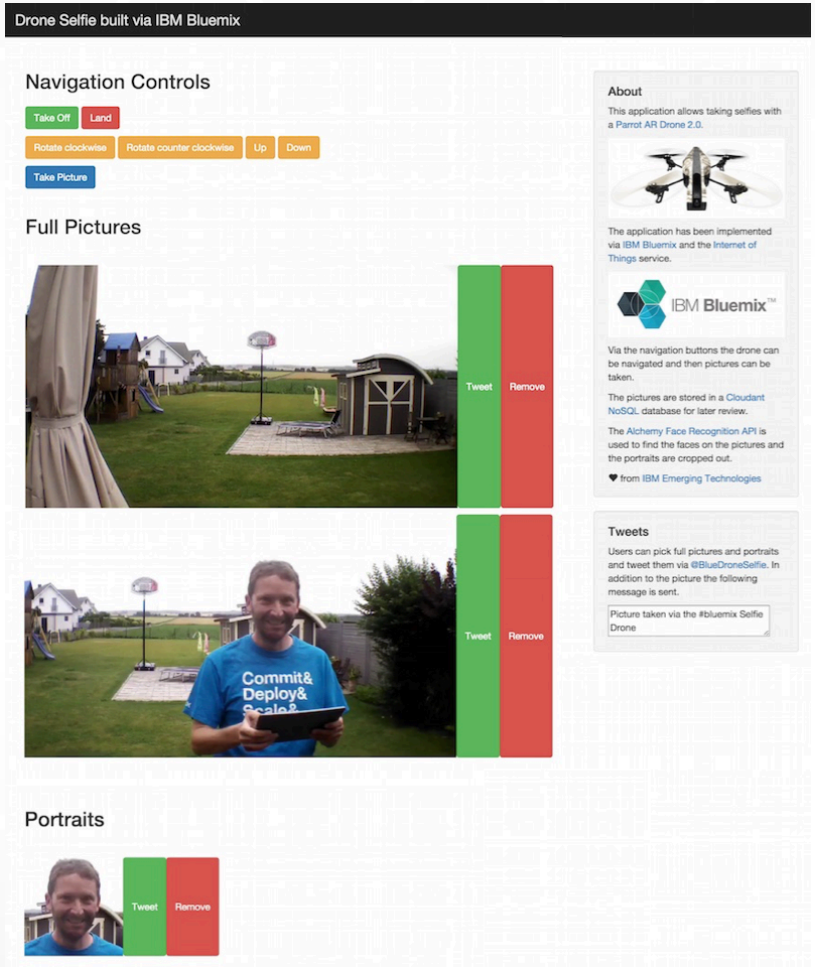
Samples: Sphero and Lego







Sample: Selfie Drone



Bluemix Offerings

Public

Multi-tenant public cloud rolling out globally.

Dedicated

Bluemix in an isolated SoftLayer private cloud.

Local

Bluemix delivered as a managed service in your data center.

Syndicated Catalog

The catalog of IBM, 3rd party and private services is syndicated across Bluemix.

Ops Console

A single view of the health and status across apps and infrastructure.

Bluemix Offerings

The open source cloud platform to build, run and manage all your apps and services.

Free 30-Day Trial

- No credit card needed
- Up to 2 GB total memory
- Unlimited select IBM services
- Free helpdesk support

START NOW FOR FREE

Example 1: Hobbyist or Startup	**Example 2:** Medium Business	**Example 3:** Large Enterprise
Language: **Java for IBM**	Language: **NodeJS**	Language:**Ruby Sinatra**
Memory: **256 MB**	Memory: **512 MB**	Memory: **1 GB**
Instances: **1**	Instances: **2**	Instances:**4**
Users: **<100**	Users: **<8000**	Users: **200,000+**
HTTP Requests:**<300/s**	HTTP Requests: **<600/s**	HTTP Requests: **>10k/s**
Free!	**$24.15**	**$175.35**

Demo

- XPages buildpack
- XPages NoSQL Database service

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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.

.xsp

XPages Web Starter

Experimental

Create a sample application that demonstrates how to use an IBM XPages application connected to an IBM XPages NoSQL Database service.

VERSION
1.0

TYPE
Boilerplate

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.xsp
IBM XPages

IBM XPages NoSQL Database

Develop, deploy, and scale IBM XPages applications with ease. The IBM XPages runtime provides you with a cloud-ready XPages web container designed for running XPages applications in Bluemix.

VIEW DOCS

Pick a plan

Monthly prices shown are for country or region: United States

Plan	Features	Price
✓ **Default**	Run one or more apps free for 30 days (375 GB-hours free, shared across Bring Your Buildpack and Community runtimes).	$0.07 USD/GB-Hour

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

Create an app:

Space: demo

Name: admincamp

Host: admincamp

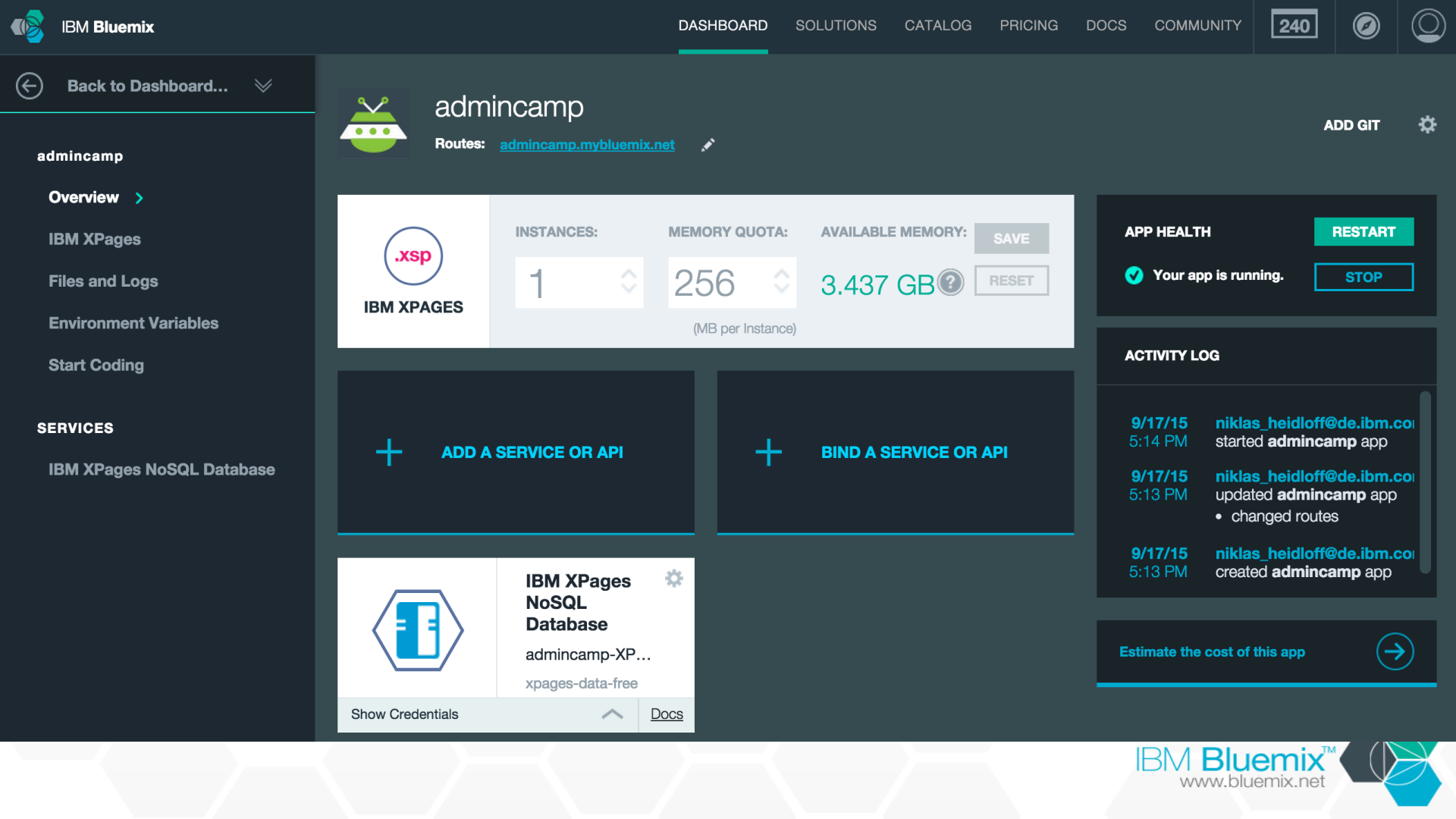
Domain: mybluemix.net

Selected Plan:

IBM XPages: Default

IBM XPages NoSQL Database: Free

CREATE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IBM XPAGES
INSTANCES:
1
MEMORY QUOTA:
256
(MB per Instance)
AVAILABLE MEMORY:
3.437 GB
SAVE
RESET
APP HEALTH
RESTART
Your app is running.
STOP
ACTIVITY LOG
9/17/15 5:14 PM
niklas_heidloff@de.ibm.co
started admincamp app
9/17/15 5:13 PM
niklas_heidloff@de.ibm.co
updated admincamp app
• changed routes
9/17/15 5:13 PM
niklas_heidloff@de.ibm.co
created admincamp app
ADD A SERVICE OR API
BIND A SERVICE OR API
IBM XPages NoSQL Database
admincamp-XP...
xpages-data-free
Show Credentials
Docs
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My Dashboard

Quick Start

Bluemix Documentation

This page lists details about the credentials and data NSFs created for your Bluemix Organisation.

Organization Details

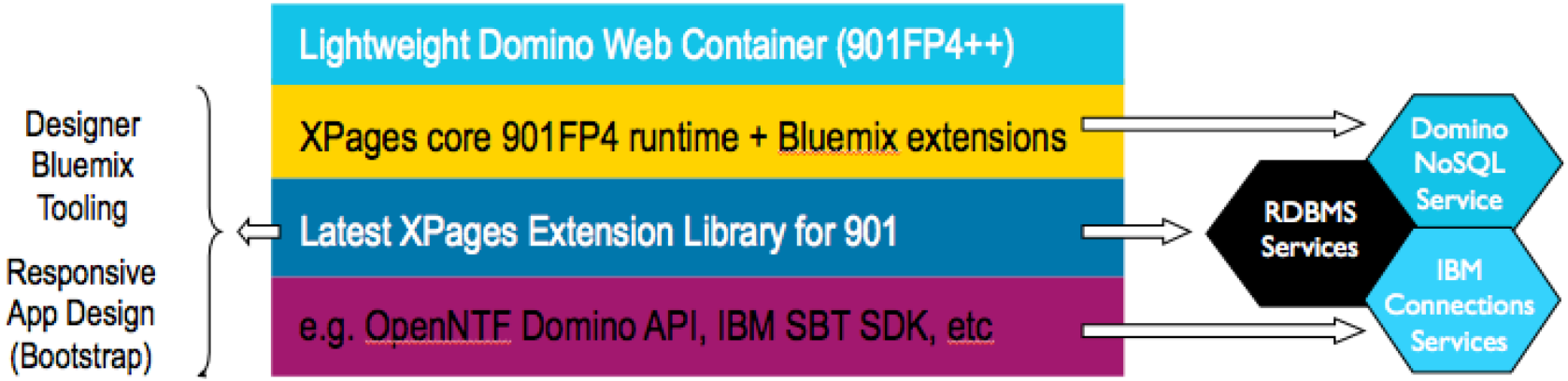
Download ID	niklas_heidloff_de_ibm_com.id
Domino User Name	niklas_heidloff_de_ibm_com
Password	●●●●●●●● Show
Hostname	xpages-domino.ng.bluemix.net
Domino IP Address	169.55.18.211
Server Name	slaney/Bluemix
Bluemix Org. Name	niklas_heidloff@de.ibm.com
Web End Users	0 Users Manage Web End Users

Active DBs | Archived DBs

Database Details

DB Name	tododata.nsf
DB Path	bluemix/niklas_heidloff_de_ibm_com/demo/tododata.nsf
Bluemix Space Name	demo
Enabled/Disabled	Enabled
Provisioned Status	Provisioned
Bound Applications	admincamp

Composition of the XPages Runtime



An **extensible** runtime stack

YOU can add your own plug-ins, leverage open-source libraries etc

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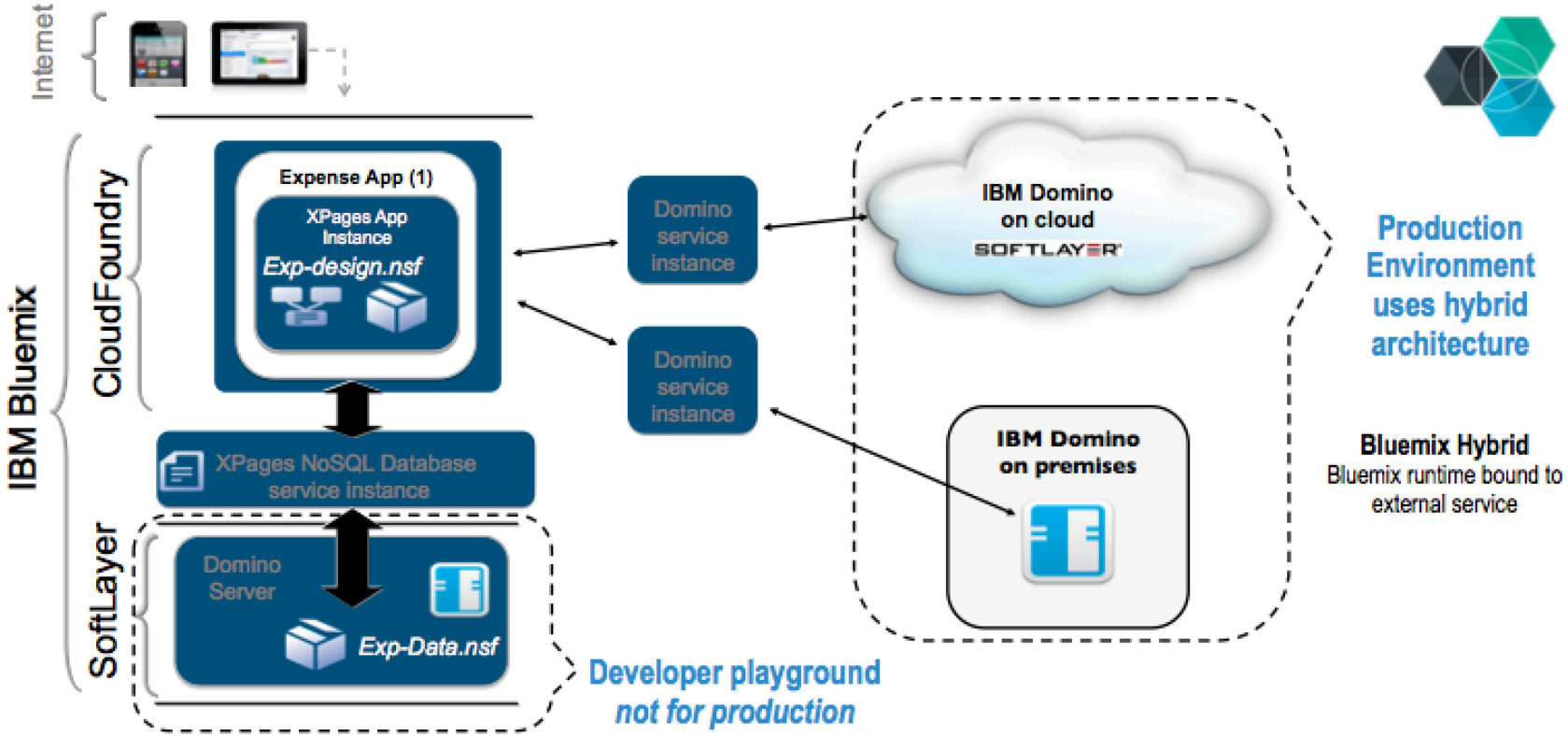
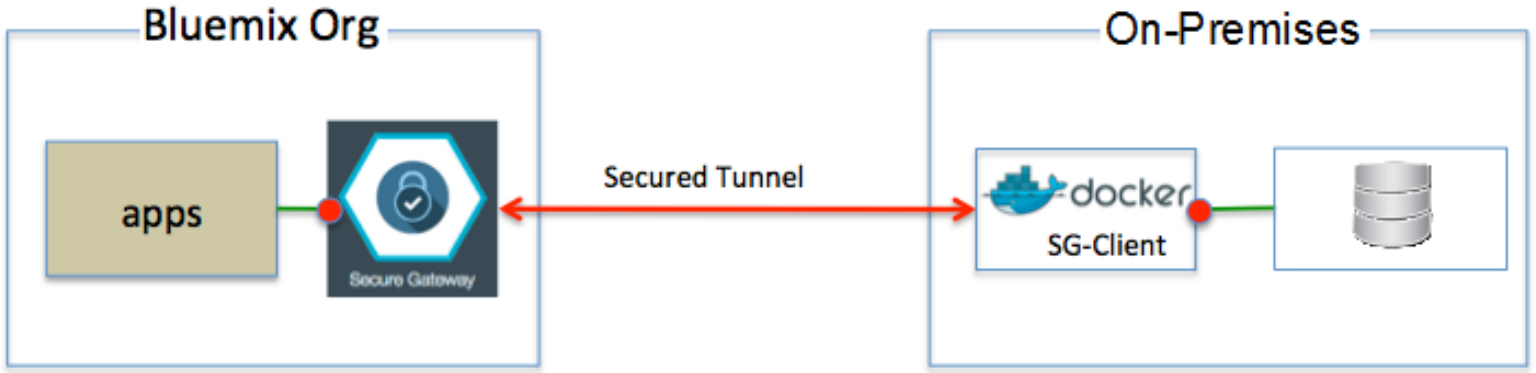
Architecture – Development vs. Production



Access to On-Premises NSFs

- Via the Secure Gateway service



Walkthrough

- Access to On-Premises NSFs

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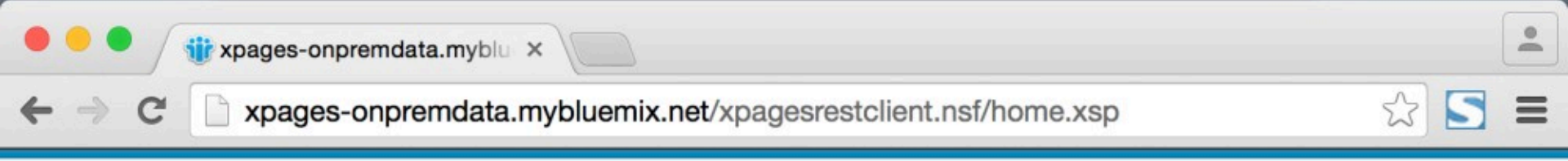

Simple XPages REST Client - Access to Domino REST API on-prem from Bluemix

Bluemix Selfie Drone now available as Open Sourc

The project contains an application to take selfies via a Parrot AR Drone 2.0. Via navigation buttons in a web application the drone can be steered and a series of pictures can be taken. The pictures are stored for later review

Cloud Foundry Maven Plugin to build and deploy Bluemix Application

For some people this is old news, but I just used for the first time the Cloud Foundry Maven Plugin to build and deploy a Bluemix application and it made the deployment really easy. Below are some of the key concepts I used

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home - XPage

```
<?xml version="1.0" encoding="UTF-8"?>
<xp:view xmlns:xp="http://www.ibm.com/xsp/core" xmlns:xe="http://www.ibm.com/xsp/coreex">
    <xe:applicationLayout id="applicationLayout1">
        <xp:panel>
            <xp:repeat id="repeat" var="entry" rows="30">
                <xp:this.value><![CDATA[${javascript:
                    restClient.getEntries();
                }]]></xp:this.value>
                <xp:text value="#{javascript:entry.NTitle}"
                    style="font-weight:bold">
                </xp:text><br></br>
                <xp:text value="#{javascript:entry.NAbstract}"></xp:text>
                <br></br><br></br>
            </xp:repeat>
        </xp:panel>
        <xe:this.configuration>
            <xe:applicationConfiguration titleBar="true"
                titleBarLabel="label"
                titleBarName="Simple XPages REST Client - Access to Domino REST API on-prem fr
            </xe:applicationConfiguration>
        </xe:this.configuration>
    </xe:applicationLayout>
</xp:view>
```

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RESTClient.java

```
public NewsEntry[] getEntries() {
    NewsEntry[] entries;
    String urlCalledFromOnPrem =
        "http://nheidloff-1/ctdata.nsf/api/data/collections/unid/3AC01885E98DBF9CC1257A4D0023
    String urlCalledFromCloud =
        "http://cap-sg-prd-1.integration.ibmcloud.com:15219/ctdata.nsf/api/data/collections/u

    org.apache.http.client.fluent.Request req = Request.Get(urlCalledFromCloud);

    String name = "Niklas Heidloff";
    String password = "          ";
    String authenticationString = name + ":" + password;
    String stringEncoded = com.ibm.commons.util.io.base64.Base64.encode(authenticationString)

    try {
        req.addHeader("Authorization", "Basic " + stringEncoded);
        org.apache.http.client.fluent.Response res;
        res = req.execute();
        String returnValue = res.returnContent().asString();

        // reflection currently disabled by XPages security
        //com.google.gson.Gson gson = new Gson();
        //entries = gson.fromJson(returnValue, NewsEntry[].class);
        entries = parseJSON(returnValue);
    } catch (Exception e) {
        e.printStackTrace();
        return null;
    }
    return entries;
}
```

Secure Gateway-oa

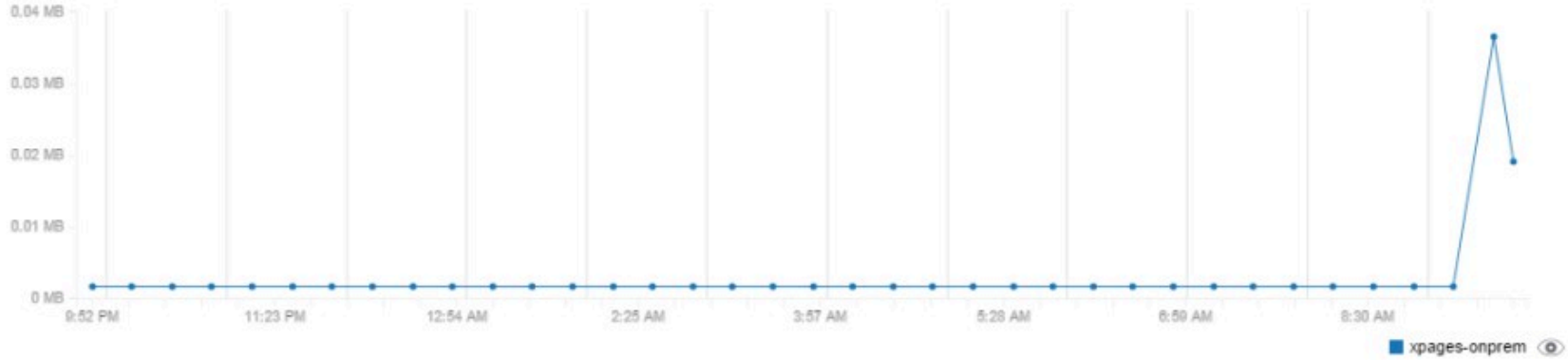
DOC

Secure Gateway Dashboard

1 Current Connections

0 MB Total Inbound

0 MB Total Outbound



Add Gateway

xpages-onprem

Enabled

Destinations: 1

Access to Bluemix Services

- Via REST APIs
- Or language specific libraries
- Credentials stored in VCAP_SERVICES environment variable

Walkthrough

- Access Cloudant from XPages

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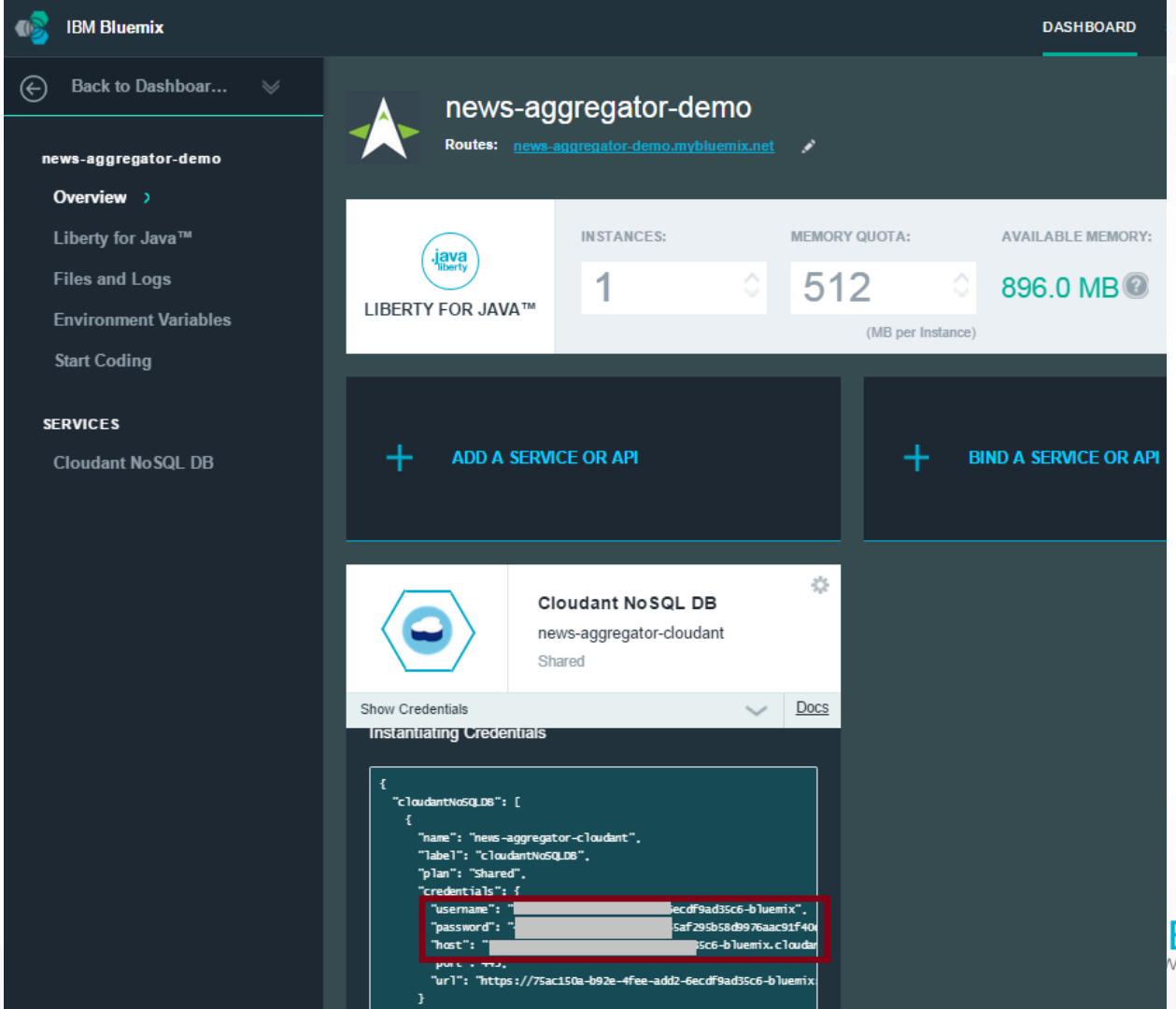

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```
private org.ektorp.CouchDbConnector db;
@SuppressWarnings("deprecation")
public CouchDbConnector getDB() {
    try {
        org.ektorp.http.HttpClient httpClient;
        org.apache.http.conn.ssl.SSLSocketFactory sslSocketFactory = null;
        try {
            javax.net.ssl.SSLContext sslContext = SSLContext.getInstance("SSL_TLSv2");
            sslContext.init(null,
                    new TrustManager[] { new X509TrustManager() {
                        public X509Certificate[] getAcceptedIssuers() {
                            return null;
                        }
                        public void checkClientTrusted(
                                X509Certificate[] certs, String authType) {
                        }
                        public void checkServerTrusted(
                                X509Certificate[] certs, String authType) {
                        }
                    } }, new SecureRandom());
            org.apache.http.client.fluent.Executor.unregisterScheme("https");
            sslSocketFactory = new SSLSocketFactory(sslContext,
                    SSLSocketFactory.ALLOW_ALL_HOSTNAME_VERIFIER);
            Executor.registerScheme(new Scheme("https", 443, sslSocketFactory));
            javax.net.ssl.HttpsURLConnection.setDefaultSSLSocketFactory(sslContext
                    .getSocketFactory());
        } catch (Exception e) {
            e.printStackTrace();
        }

        org.ektorp.http.StdHttpClient.Builder builder = new StdHttpClient.Builder();
        String host = "[redacted]8dd6dce84-bluemix.cloudant.com";
        String username = "[redacted]f308dd6dce84-bluemix";
        String password = "[redacted]b24b68ae2ec";
        String database = "bluemixinfo";
        builder.url("https://" + host + "/" + database).username(username).password(password);
        builder.port(443);
        builder.sslSocketFactory(sslSocketFactory);
        httpClient = builder.build();
        org.ektorp.CouchDbInstance dbInstance = new StdCouchDbInstance(httpClient);
        db = dbInstance.createConnector(database, true);

        DatabaseDesign.createDesign(db);

        return db;
```

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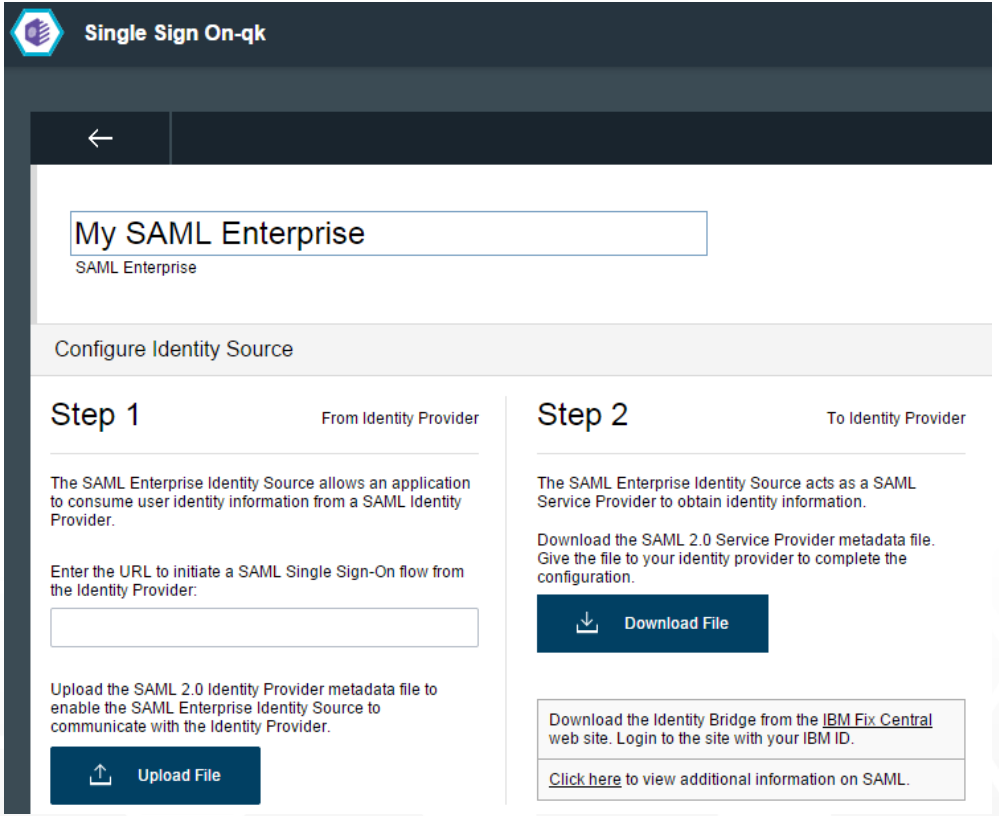
Authentication

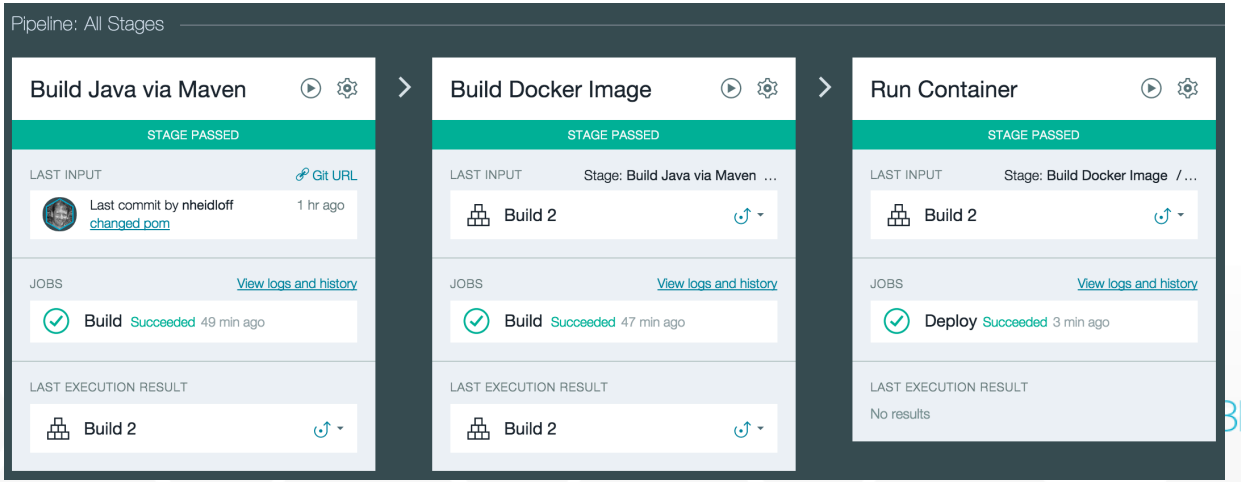
- OpenID
- SAML
- LDAP identity bridge
- Social networks
- Third party solutions



Deployments

Cloud Foundry: cf
Docker: cf ic

eclipse maven gradle Jenkins



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Demo

- DevOps pipelines

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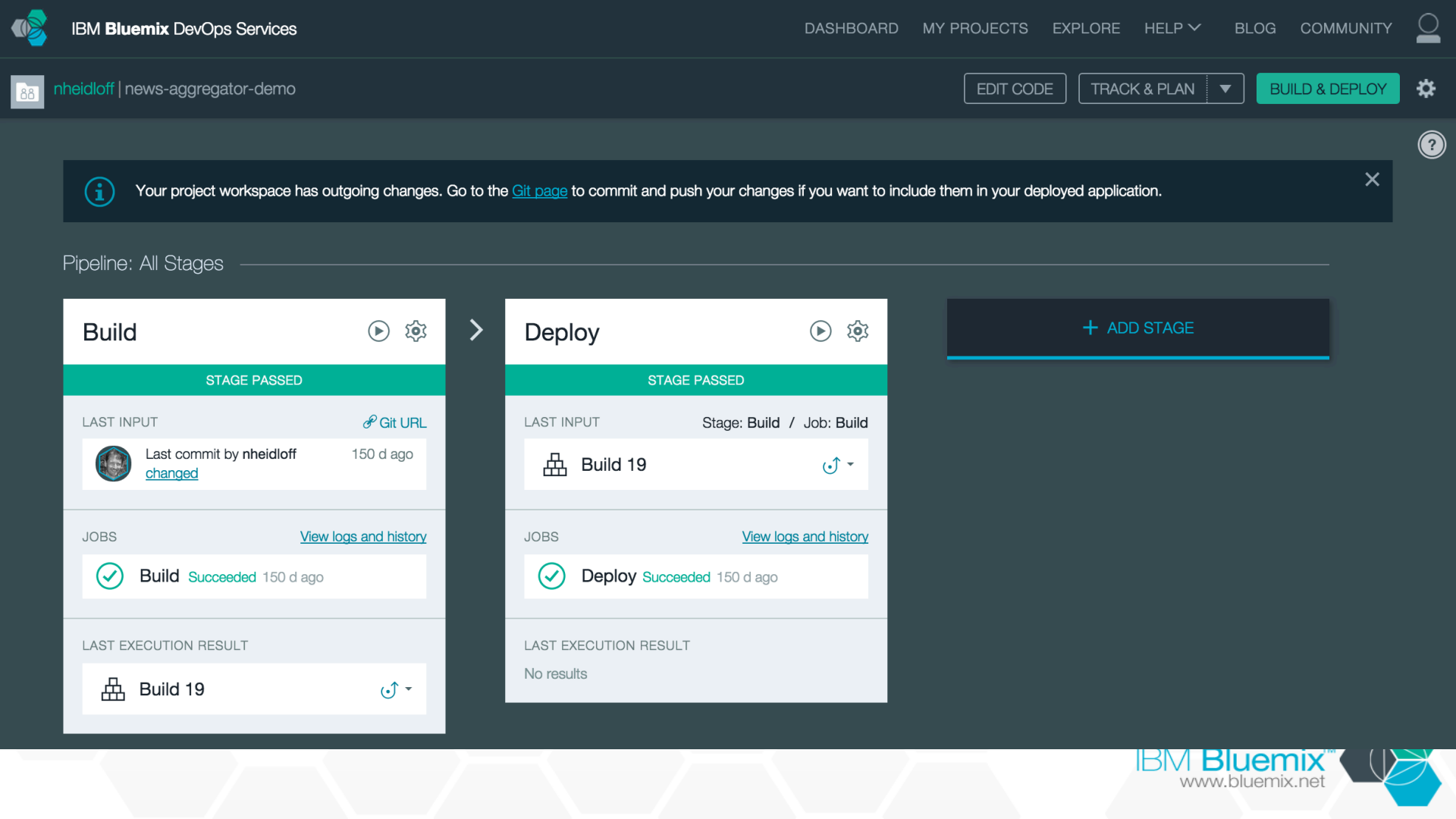
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COMMUNITY
nheidloff | news-aggregator-demo
EDIT CODE
TRACK & PLAN
BUILD & DEPLOY
Your project workspace has outgoing changes. Go to the Git page to commit and push your changes if you want to include them in your deployed application.
Pipeline: All Stages
Build
STAGE PASSED
LAST INPUT
Git URL
Last commit by nheidloff
changed
150 d ago
JOBS
View logs and history
Build Succeeded 150 d ago
LAST EXECUTION RESULT
Build 19
Deploy
STAGE PASSED
LAST INPUT
Stage: Build / Job: Build
Build 19
JOBS
View logs and history
Deploy Succeeded 150 d ago
LAST EXECUTION RESULT
No results
ADD STAGE
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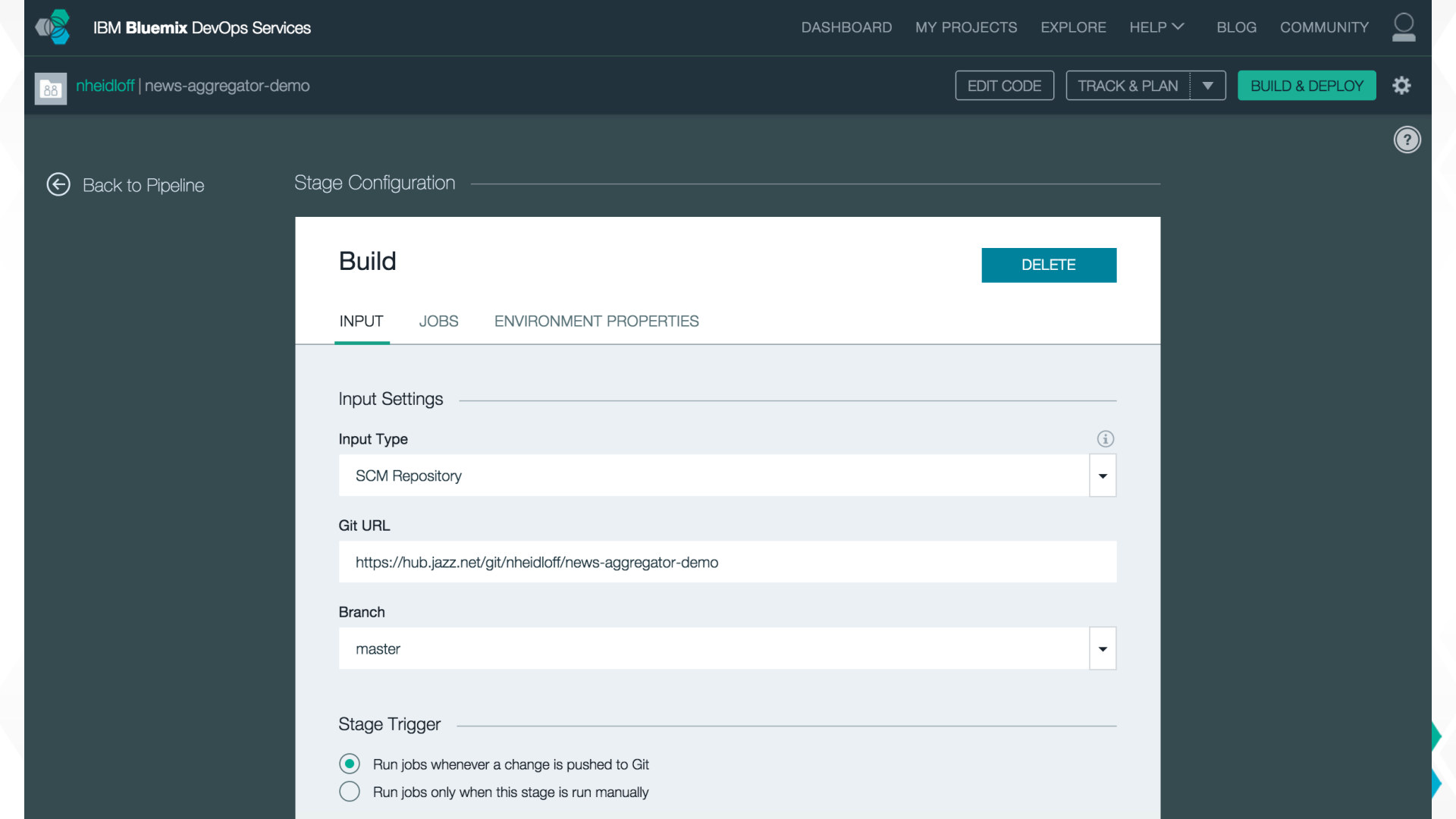
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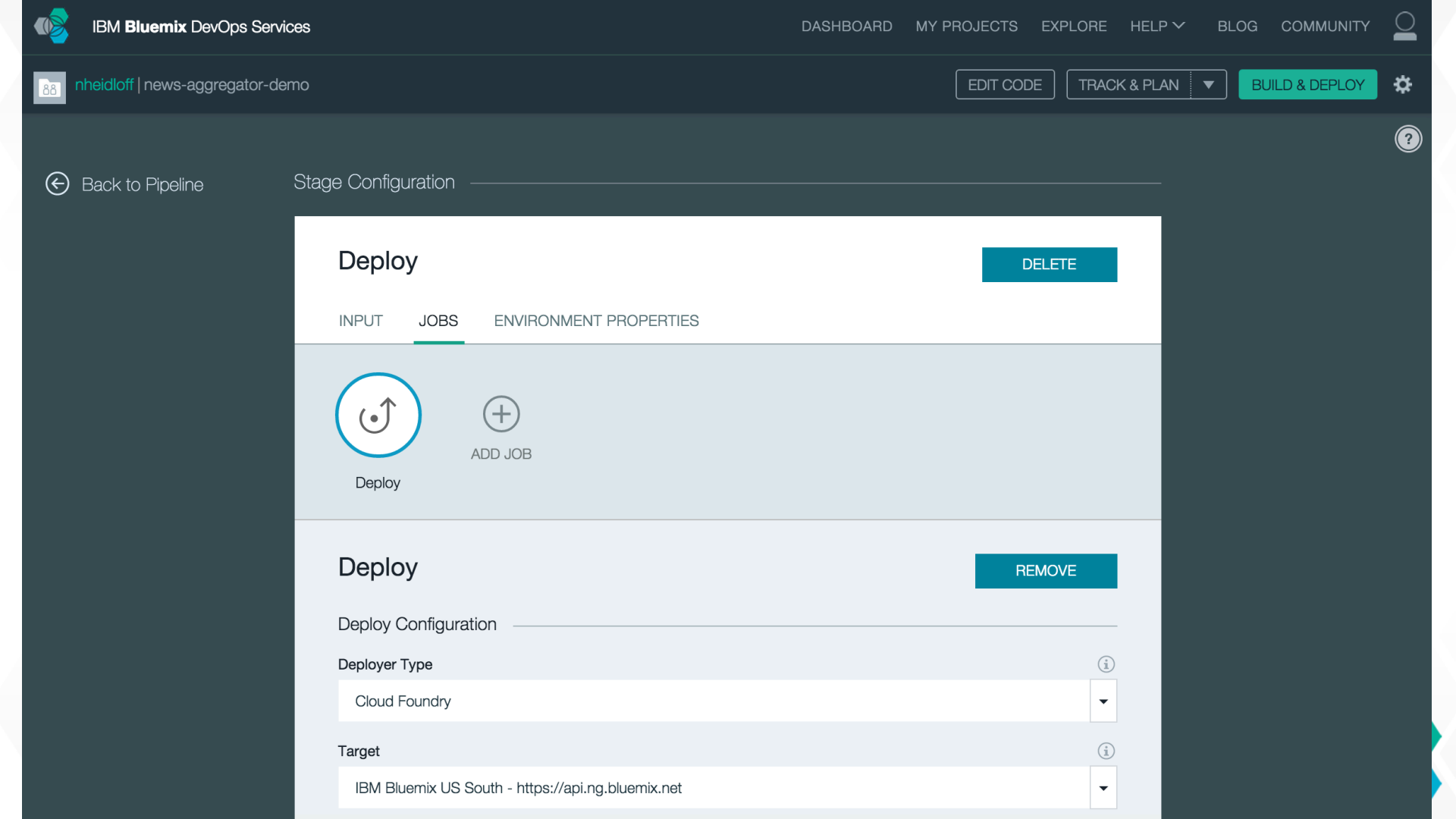
Stage Configuration
Build
DELETE
INPUT
JOBS
ENVIRONMENT PROPERTIES
Input Settings
Input Type
SCM Repository
Git URL
https://hub.jazz.net/git/nheidloff/news-aggregator-demo
Branch
master
Stage Trigger
Run jobs whenever a change is pushed to Git
Run jobs only when this stage is run manually


IBM Bluemix DevOps Services
DASHBOARD
MY PROJECTS
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HELP
BLOG
COMMUNITY
nheidloff | news-aggregator-demo
EDIT CODE
TRACK & PLAN
BUILD & DEPLOY
Back to Pipeline
Stage Configuration
Deploy
DELETE
INPUT
JOBS
ENVIRONMENT PROPERTIES
Deploy
ADD JOB
Deploy
REMOVE
Deploy Configuration
Deployer Type
Cloud Foundry
Target
IBM Bluemix US South - https://api.ng.bluemix.net

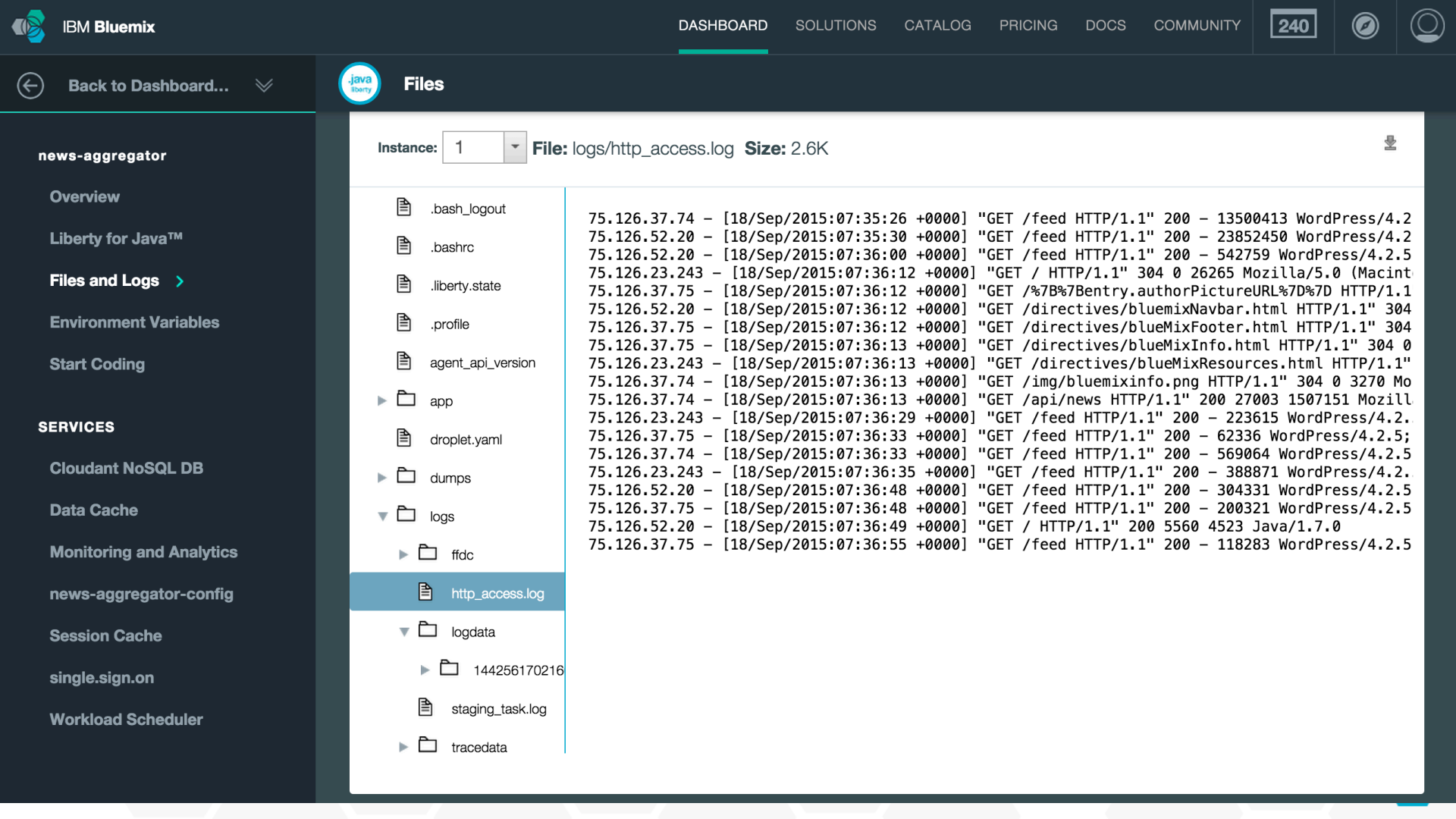
Logs

- CLIs: cf and cf ic
- Bluemix application dashboard
- Monitoring and Analytics service
- Third party logging service via syslog protocol

Demo

- Logs application dashboard
- Monitoring and Analytics service

- SSL certificates and custom domains


IBM Bluemix
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Back to Dashboard...
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Cloudant NoSQL DB
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Monitoring and Analytics
news-aggregator-config
Session Cache
single.sign.on
Workload Scheduler
Files
Instance: 1
File: logs/http_access.log
Size: 2.6K
.bash_logout
.bashrc
.liberty.state
.profile
agent_api_version
app
droplet.yaml
dumps
logs
ffdc
http_access.log
logdata
1442561702 16
staging_task.log
tracedata
75.126.37.74 - [18/Sep/2015:07:35:26 +0000] "GET /feed HTTP/1.1" 200 - 13500413 WordPress/4.2
75.126.52.20 - [18/Sep/2015:07:35:30 +0000] "GET /feed HTTP/1.1" 200 - 23852450 WordPress/4.2
75.126.52.20 - [18/Sep/2015:07:36:00 +0000] "GET /feed HTTP/1.1" 200 - 542759 WordPress/4.2.5
75.126.23.243 - [18/Sep/2015:07:36:12 +0000] "GET / HTTP/1.1" 304 0 26265 Mozilla/5.0 (Macint
75.126.37.75 - [18/Sep/2015:07:36:12 +0000] "GET /%7B%7Bentry.authorPictureURL%7D%7D HTTP/1.1
75.126.52.20 - [18/Sep/2015:07:36:12 +0000] "GET /directives/bluemixNavbar.html HTTP/1.1" 304
75.126.37.75 - [18/Sep/2015:07:36:12 +0000] "GET /directives/blueMixFooter.html HTTP/1.1" 304
75.126.37.75 - [18/Sep/2015:07:36:13 +0000] "GET /directives/blueMixInfo.html HTTP/1.1" 304 0
75.126.23.243 - [18/Sep/2015:07:36:13 +0000] "GET /directives/blueMixResources.html HTTP/1.1"
75.126.37.74 - [18/Sep/2015:07:36:13 +0000] "GET /img/bluemixinfo.png HTTP/1.1" 304 0 3270 Mo
75.126.37.74 - [18/Sep/2015:07:36:13 +0000] "GET /api/news HTTP/1.1" 200 27003 1507151 Mozill
75.126.23.243 - [18/Sep/2015:07:36:29 +0000] "GET /feed HTTP/1.1" 200 - 223615 WordPress/4.2.
75.126.37.75 - [18/Sep/2015:07:36:33 +0000] "GET /feed HTTP/1.1" 200 - 62336 WordPress/4.2.5;
75.126.37.74 - [18/Sep/2015:07:36:33 +0000] "GET /feed HTTP/1.1" 200 - 569064 WordPress/4.2.5
75.126.23.243 - [18/Sep/2015:07:36:35 +0000] "GET /feed HTTP/1.1" 200 - 388871 WordPress/4.2.
75.126.52.20 - [18/Sep/2015:07:36:48 +0000] "GET /feed HTTP/1.1" 200 - 304331 WordPress/4.2.5
75.126.37.75 - [18/Sep/2015:07:36:48 +0000] "GET /feed HTTP/1.1" 200 - 200321 WordPress/4.2.5
75.126.52.20 - [18/Sep/2015:07:36:49 +0000] "GET / HTTP/1.1" 200 5560 4523 Java/1.7.0
75.126.37.75 - [18/Sep/2015:07:36:55 +0000] "GET /feed HTTP/1.1" 200 - 118283 WordPress/4.2.5

news-aggregator
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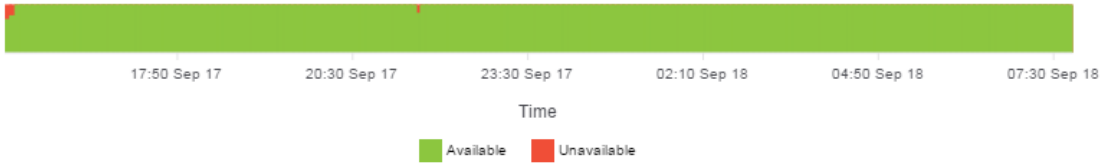
single.sign.on
Workload Scheduler

Availability | Performance Monitoring | Log Analysis | Events
Learn More
Get code level visibility with Diagnostics plan

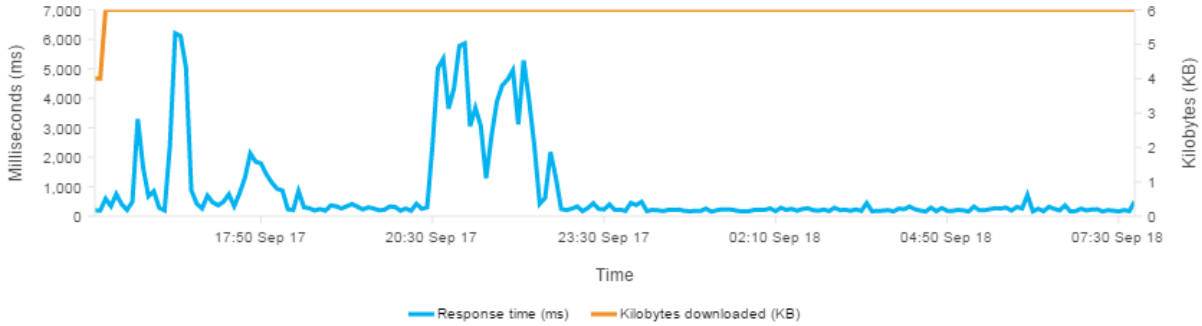
Application Availability

Availability (%): **99.6**



Application Response Time

Average response time (ms): **842.2** | Average download (KB): **6.0**



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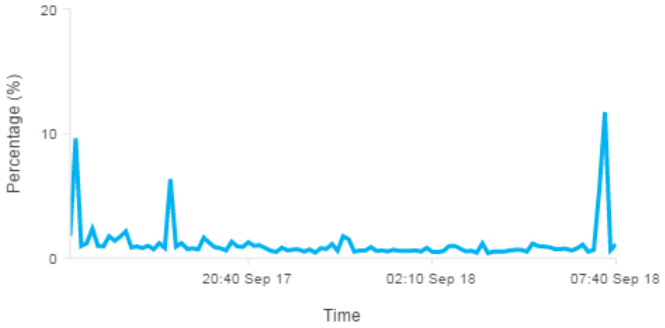
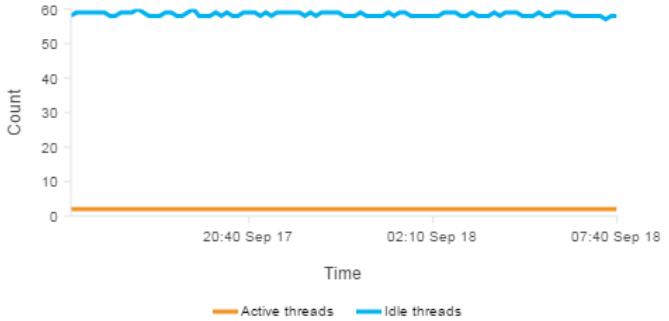
Monitoring and Analytics-7n

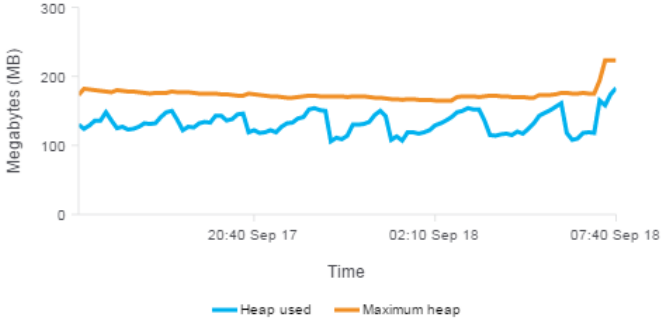
JVM CPU Usage



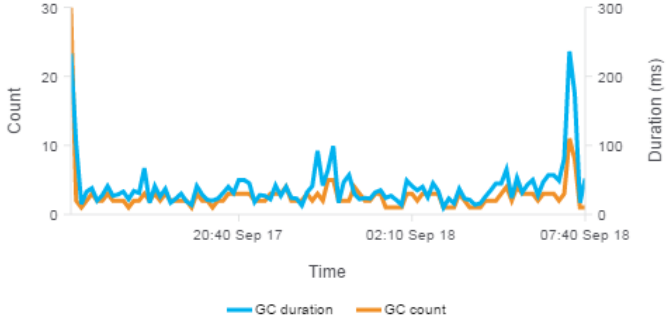
Average Thread Pool Usage



Java Heap Usage



Garbage Collection Count and Duration



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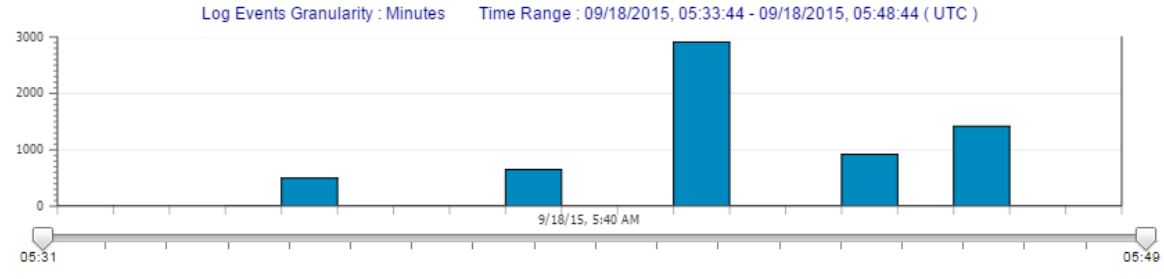
Workload Scheduler

Monitoring and Analytics-7n

- className(1)
- methodName(1)
- remoteHost(4)
- responseCode(1)
  - 200 (87)
- severity(3)
- source(2)
- _datasource(2)

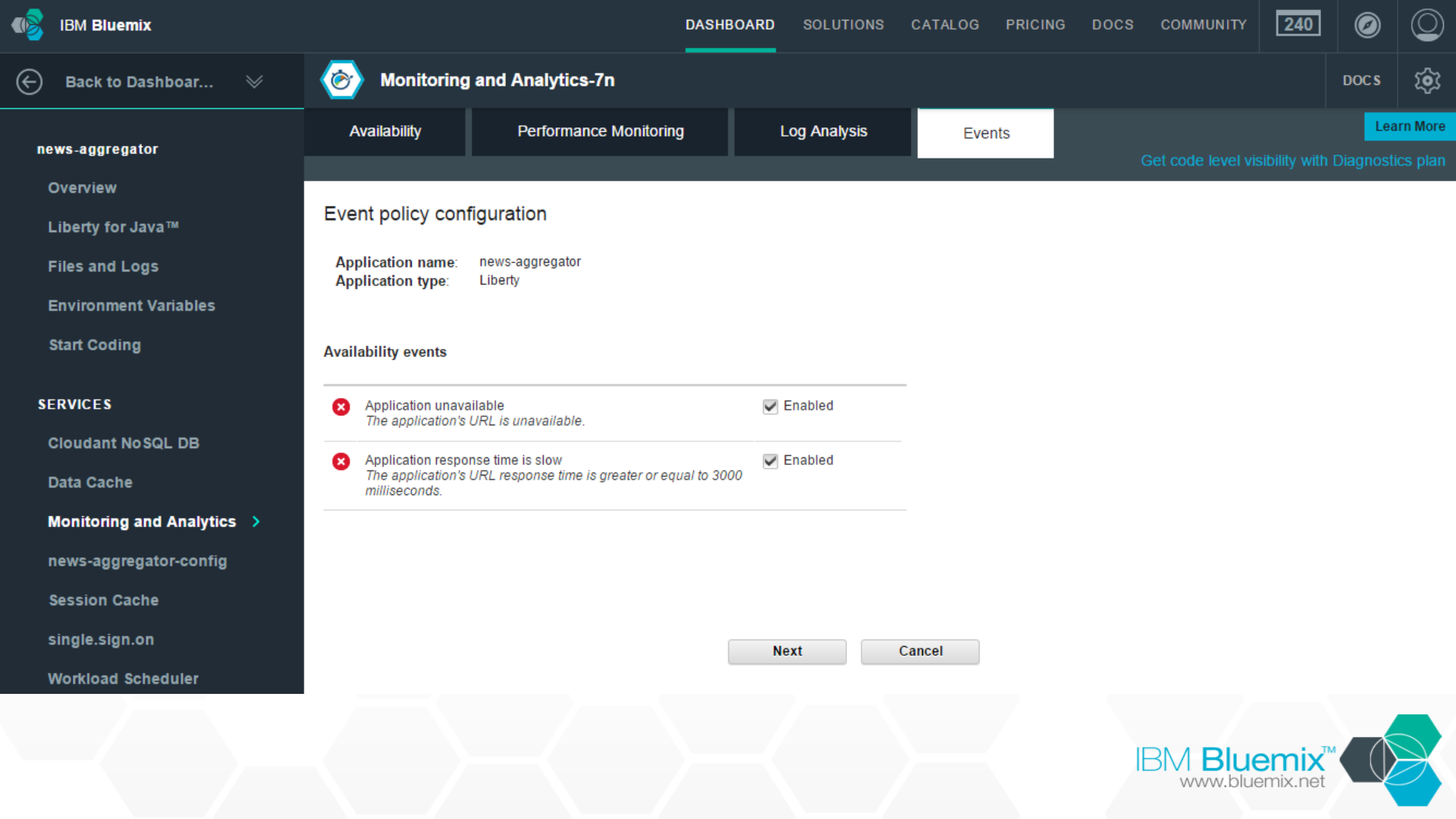
* Search 15 minutes



1 to 100 of 6443 results >

[09/18/15 05:48:10:967 +0000]
_datasource:liberty_message:1442496005077, source:/home/vcap/app/wlp/usr/servers/defaultServer/../../../../../logs/logdata, _writetime:09/18/15 05:48:27:344 +0000, severity:W, className:null, methodName:null
datetime=2015-09-18T05:48:10.967+0000,,threadId=000000a6,severity=W,loggerName=com.ibm.ws.xs.xio.actor.impl.FutureImpl,message=CWOBJ Received a timeout while waiting for a response to a com.ibm.ws.xs.xio.protobuf.XIOMessage$XIORefLookupRequest/reqID=223193 message from endpoint 23.246.231.29:2809. The current timeout is 30 seconds. When the message was added, the queue size was 1.,source=/home/vcap/app/wlp/usr/servers/defaultServer/../../../../../logs/logdata,sequence=360614,thread=XIOScheduledPool : 3,className=null,messageId=CWOBJ7851W,methodName=null

[09/18/15 05:48:07:000 +0000]
_datasource:access_log:1442496024937, responseCode:200, source:../../../../../logs/http_access.log, _writetime:09/18/15 05:48:16:412 +0000, remoteHost:75.126.37.74
datetime=2015-09-18T05:48:07.000+0000,,requestProtocol=HTTP/1.1,responseCode=200,userAgent=WordPress/4.2.5; https://developer.ibm.com/bluemix,elapsedTime=214695,remoteHost=75.126.37.74,source=../../../../../logs/http_access.log,sequen



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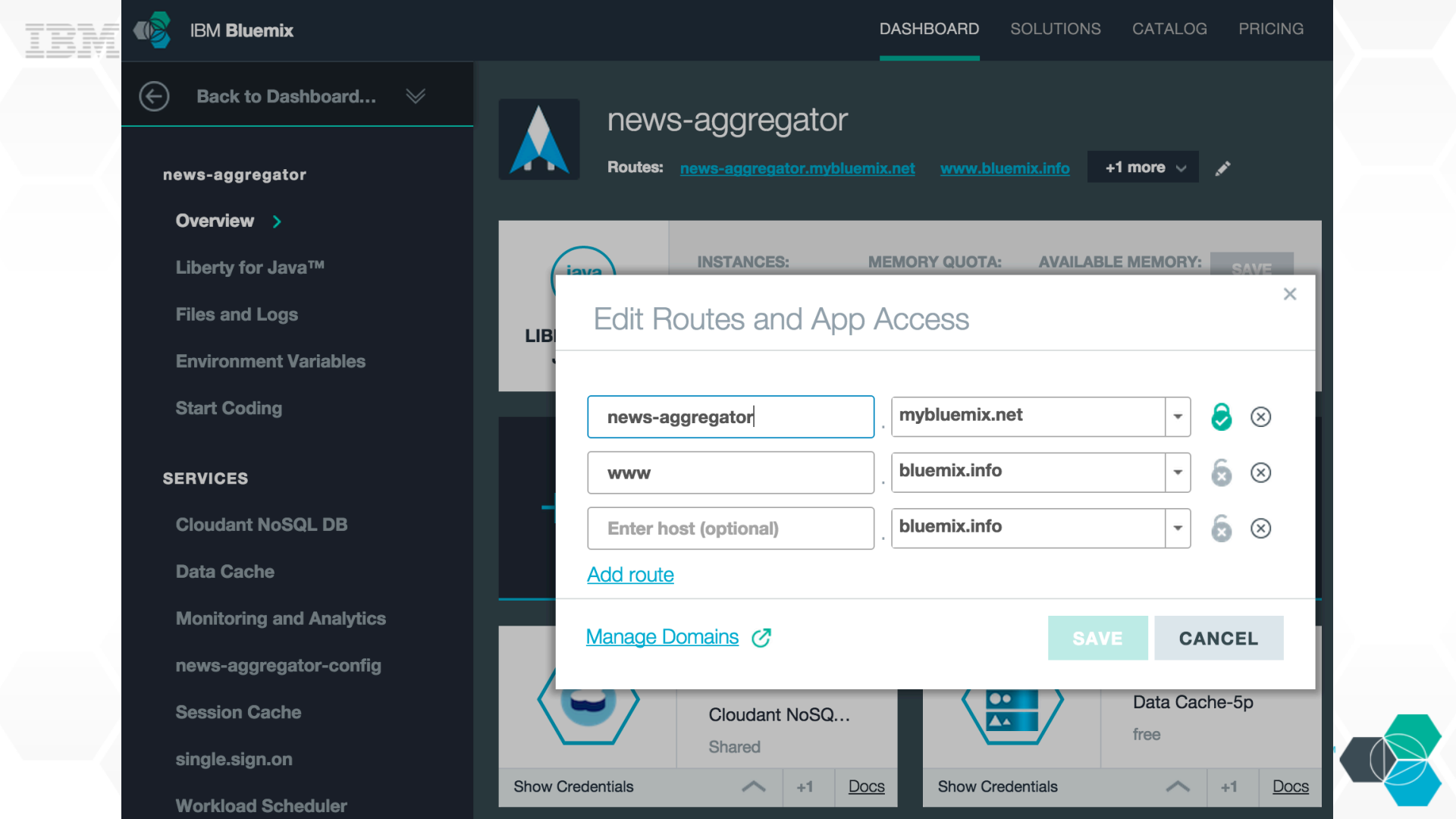
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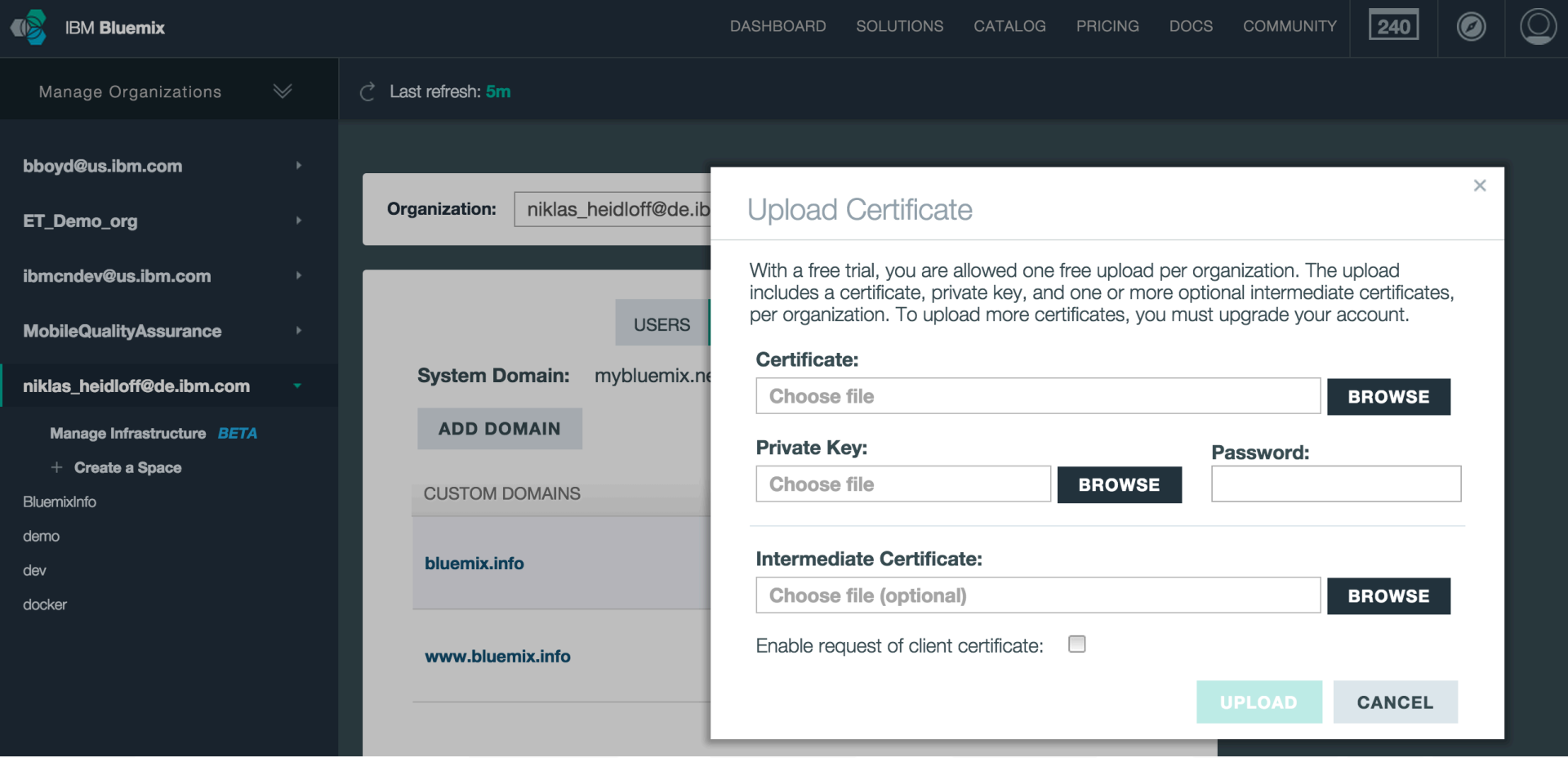
news-aggregator
Routes: news-aggregator.mybluemix.net www.bluemix.info +1 more
INSTANCES:
MEMORY QUOTA:
AVAILABLE MEMORY:
SAVE
Edit Routes and App Access
news-aggregator
mybluemix.net
www
bluemix.info
Enter host (optional)
bluemix.info
Add route
Manage Domains
SAVE
CANCEL
Cloudant NoSQ...
Shared
Data Cache-5p
free
Show Credentials
+1
Docs
Show Credentials
+1
Docs



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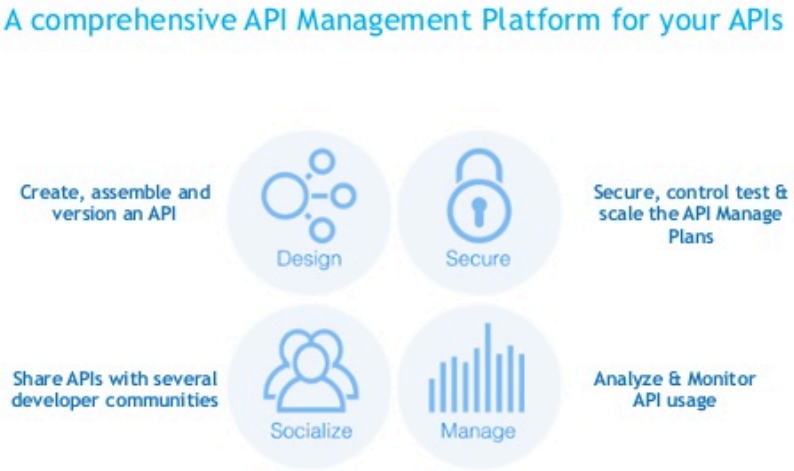
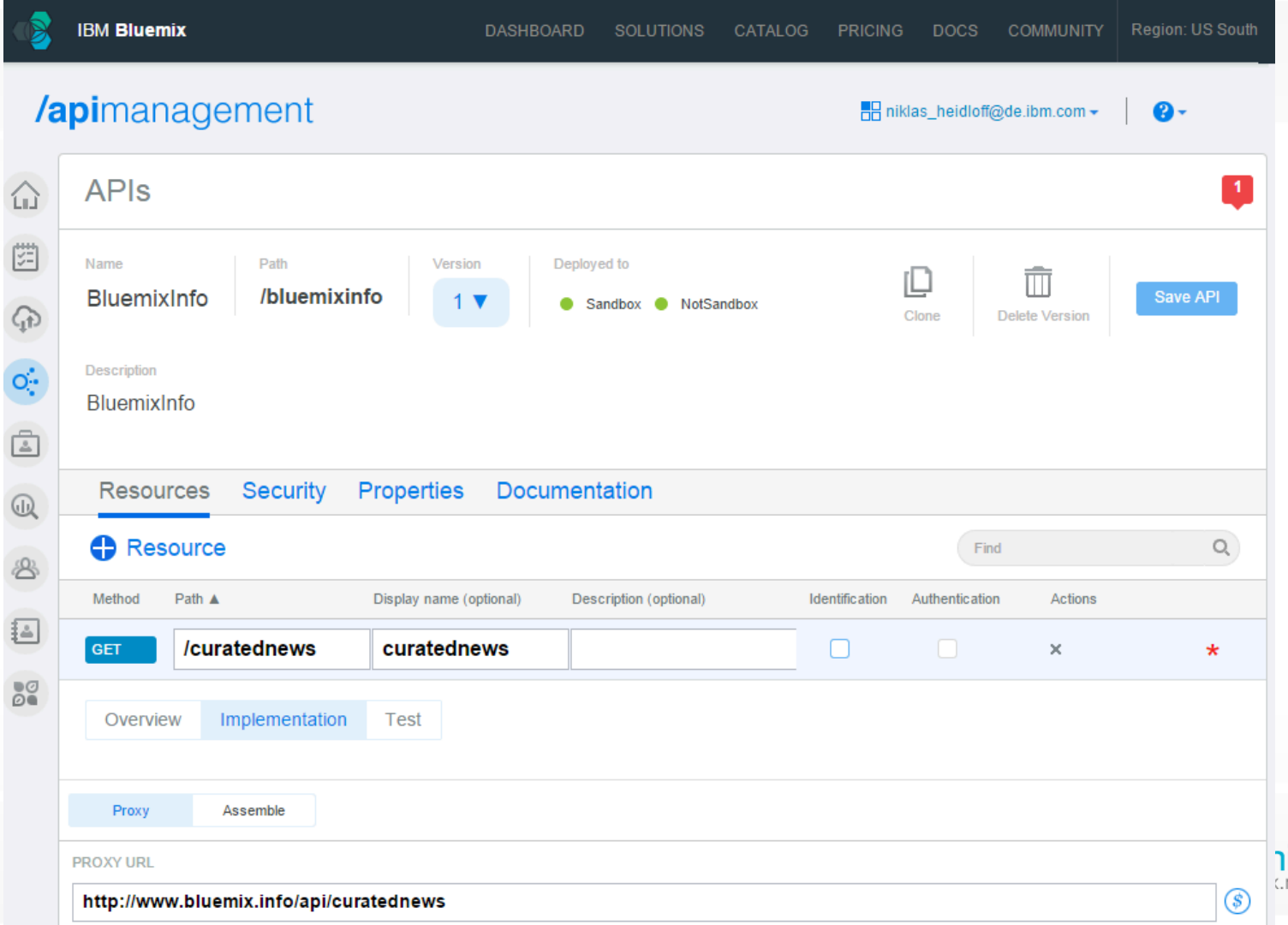
API Management

- Analyze API usage
- Secure APIs



Walkthrough

- API management


IBM Bluemix
DASHBOARD
SOLUTIONS
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Region: US South
/apimanagement
niklas_heidloff@de.ibm.com
APIs
1
Name
BluemixInfo
Path
/bluemixinfo
Version
1
Deployed to
Sandbox
NotSandbox
Clone
Delete Version
Save API
Description
BluemixInfo
Resources
Security
Properties
Documentation
Resource
Find
Method
Path ▲
Display name (optional)
Description (optional)
Identification
Authentication
Actions
GET
/curatednews
curatednews
Overview
Implementation
Test
Proxy
Assemble
PROXY URL
http://www.bluemix.info/api/curatednews

Plans

Name: NiklasAPIMana...

Version: 1

Restricted: Subscription does not require approval

Deployed to: Sandbox, NotSandbox

Deploy | Delete Version | Save

Description: NiklasTest

Rate limit: Unlimited

Rate limit

Number of Requests: 100

Time Interval: 3 Minutes

Reject calls when limit is reached

Apply

Resource

Find

Method	Path	Rate limit	Actions
BluemixInfo (Versio			
GET	/curatednews	curatednews	Unlimited

/apimanagement

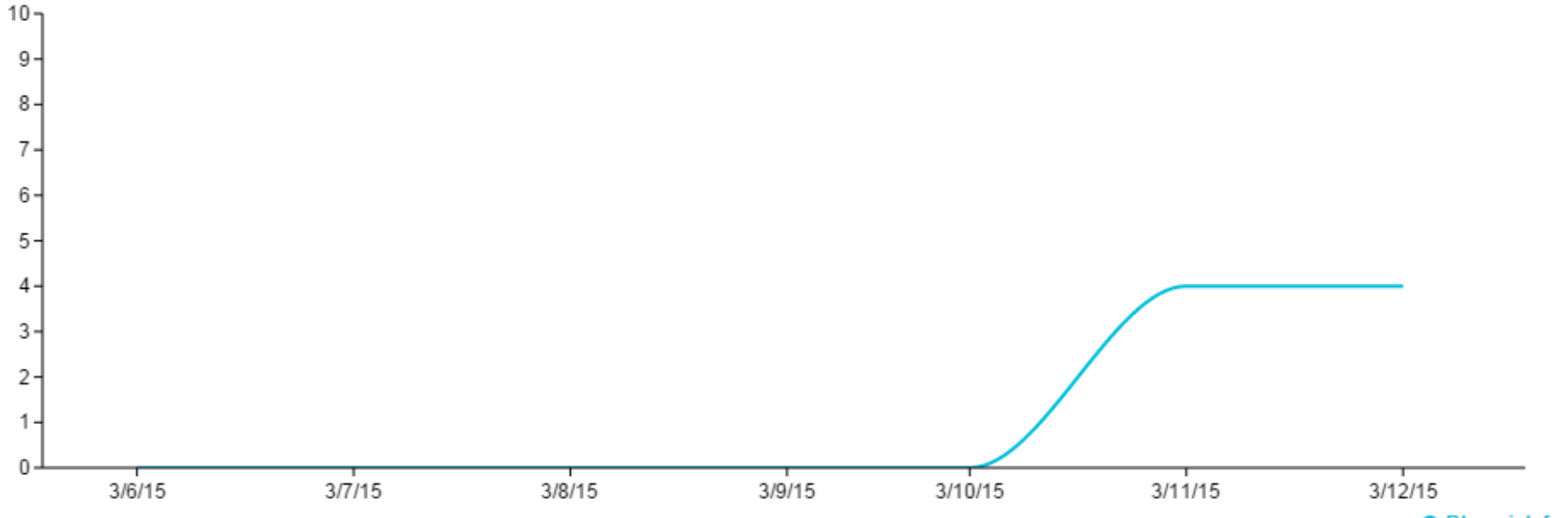
niklas_heidloff@de.ibm.com

Home

1

Show statistics from Sandbox

5 Most Active APIs



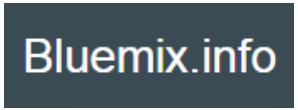
Resources

bluemix.net

Bluemix Dev

developerWorks

bluemix.info



StackOverflow

Thank you

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