

# BLuemix DevOps Services

# WHOAMI: SIDHARTA NOLETO



- Systems Architect in CI&T (~9 years)
- Cloud Computing enthusiast
- PK of social networks:
  - <http://github.com/sidharta>
  - <http://fb.com/sidhartanoleto>
  - <http://twitter.com/sidhartanoleto>

# WHAT IS BLuemix?

- IBM Cloud Computing Platform
- <http://www.ibm.com/cloud-computing/bluemix/>

# DEVOPS (NOT AGAIN?)

- Dev + Ops?
- Culture, best practices, tools, ecosystem
- Accelerate Software Delivery
- Balance speed, cost and risk
- Reduce time to customer feedback

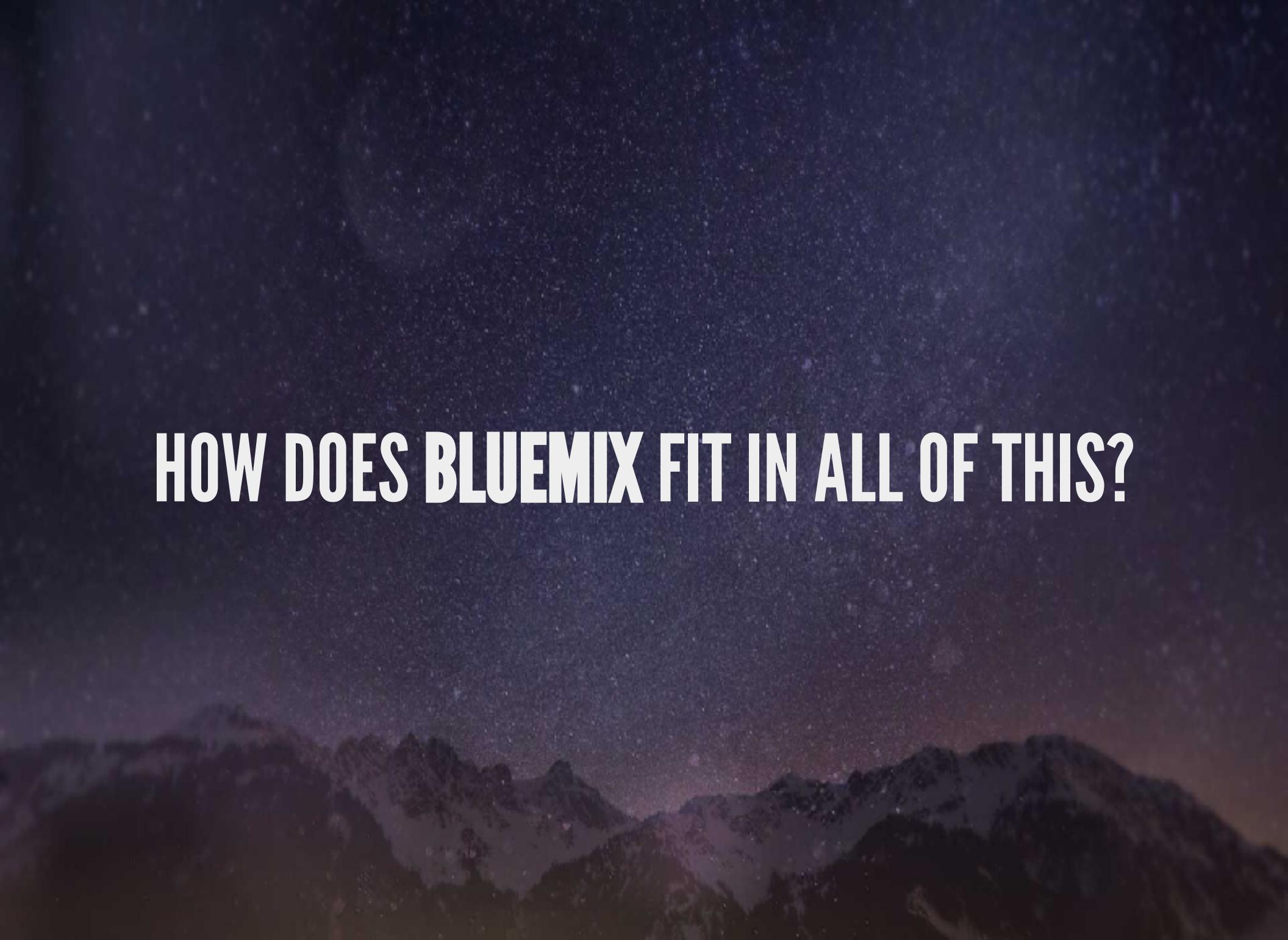
# DEVOPS MATURITY

- Maturity model
  - SCM & CI
  - Continuous quality evaluation
  - Workflow automation:
  - Tests, code integration, artifact building
  - Deployment and infrastructure
  - Monitoring and alerts

# 12FACTORS AND DEVOPS

*The twelve-factor app is a methodology for building software-as-a-service apps  
(<https://12factor.net/>)*

- Codebase (I)
- Build, release, run (V)
- Concurrency (VIII)
- Disposability (IX)
- Dev & Prod Parity (X)
- Logs (XI)



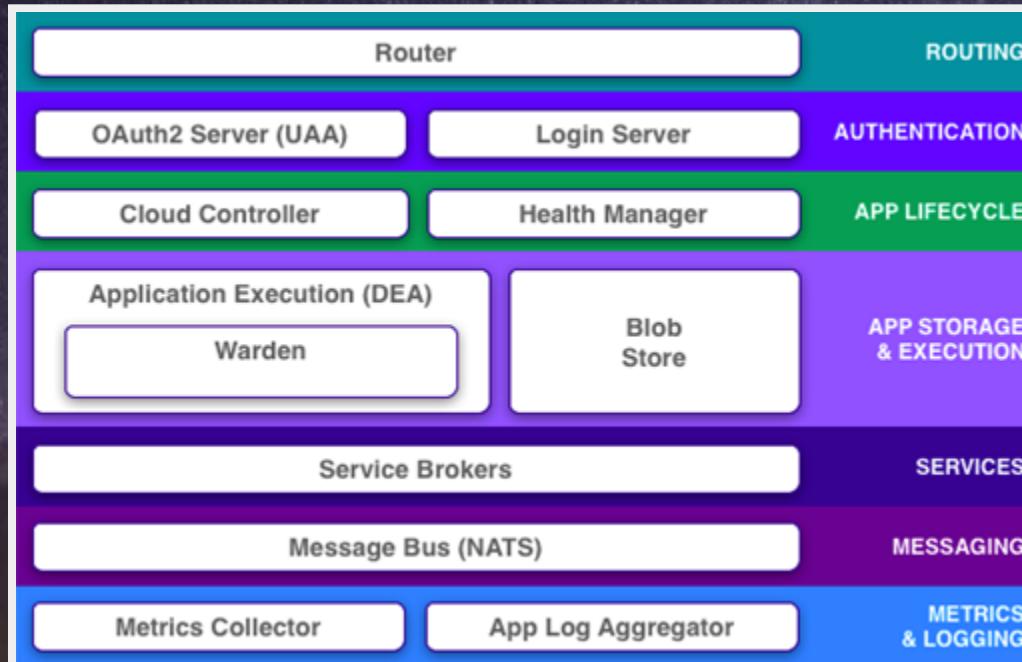
**HOW DOES BLuemix FIT IN ALL OF THIS?**

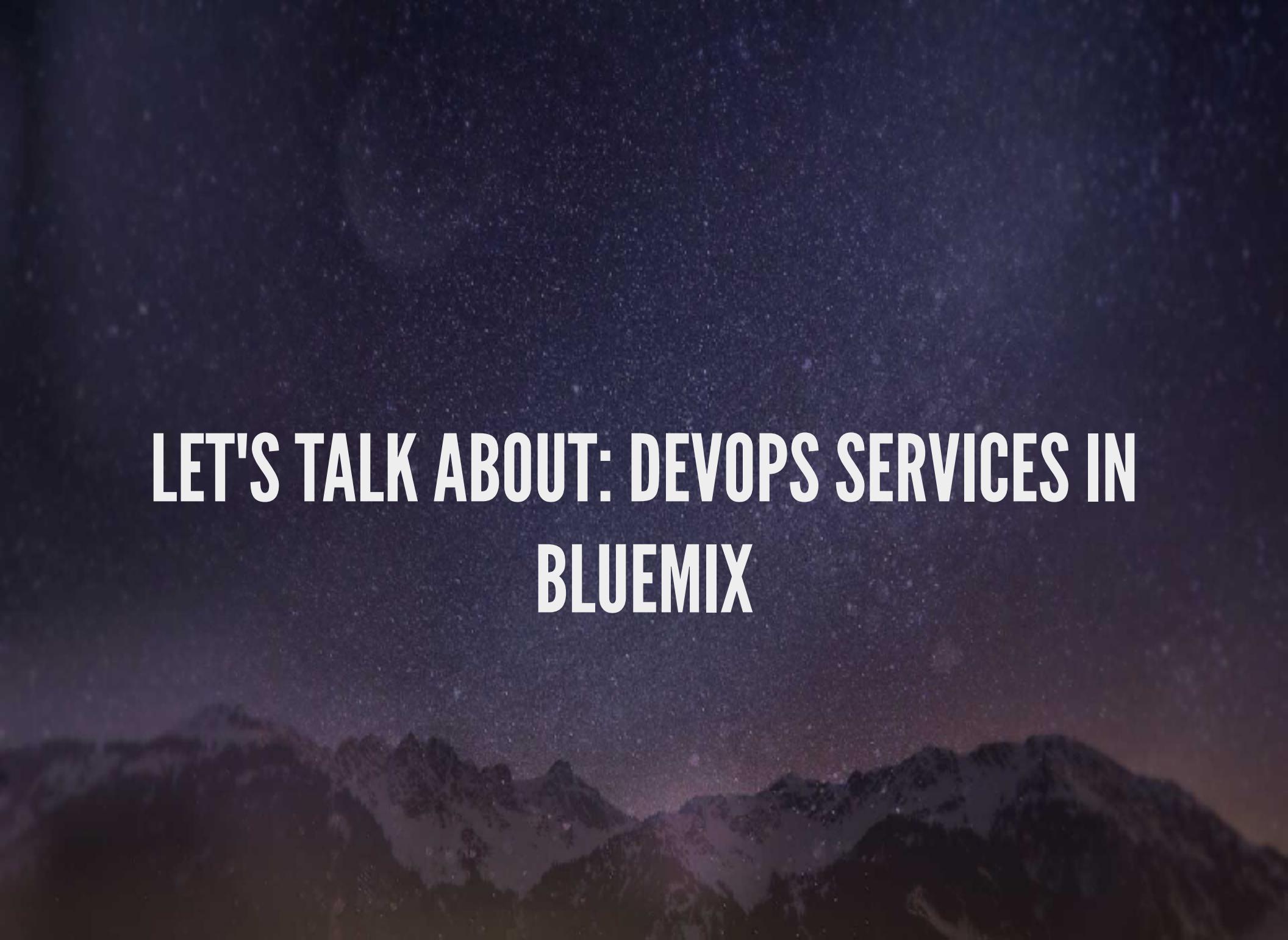
<http://www.ibm.com/cloud-computing/bluemix/devops/>

- From code to production in minutes
- Fast TTM
- Reliable development and deployment

# BUILT-IN FEATURES (PaaS)

- Router & LoadBalance
- Authentication
- Metrics & Health Management
- Logging & Monitoring
- Fully managed by CLI





# LET'S TALK ABOUT: DEVOPS SERVICES IN BLuemix

# AUTOSCALING

*The number of application instances are adjusted dynamically based on the Auto-Scaling policy that you define. ([Docs...](#))*

- By CPU, Memory, Throughput, Heap (only Java)
- Schedule specific dates
  - e.g.: black friday, weekends, lunch-time
- **Pricing:** Free

#### Default Instance Limits

Minimum Instance Count

Maximum Instance Count

#### Scaling Rule(s)

##### ▼ Rule 1

Add 1 instance(s) if average Memory utilization exceeds 80% for 600 seconds.

Remove 1 instance(s) if average Memory utilization is below 30% for 600 seconds.

Metric Type:

Memory

Scale Out:

If average Memory utilization exceeds  %, then increase  instance(s).

Scale In:

If average Memory utilization is below  %, then decrease  instance(s).

► Advanced Configurations

# GIT

*You can create a hosted Git repository that deploys to IBM® Bluemix® automatically. Then, you can modify the code that runs in your app by pushing changes to the Git repository. ([Docs...](#))*

- Built-in: host your code at Bluemix DevOps Services (jazz.net)
- Link to an existing Github project
- Not active by default

- Features:
  - Branching (no pull/merge request)
  - Online Code Commit and Push

Branch: master



URL de Git

## g2s | digital-day



Última confirmação por Sidharta Noleto 4 minutos atrás

Add starter application package

public	Add starter application package	4 minutos atrás	
.cignore	Add starter application package	4 minutos atrás	1 KB
.project	Add starter application package	4 minutos atrás	1 KB
app.js	Add starter application package	4 minutos atrás	1 KB
CHANGELOG.md	Add starter application package	4 minutos atrás	1 KB
License.txt	Initial commit	4 minutos atrás	1 KB
manifest.yml	Add starter application package	4 minutos atrás	1 KB
package.json	Add starter application package	4 minutos atrás	1 KB
README.md	Initial commit	4 minutos atrás	1 KB

## README.md

This README.md file is displayed on your project page. You should edit this file to describe your project, including instructions for building and running the project, pointers to the license under which you are making the project available, and anything else you think would be useful for others to know.

We have created an empty `license.txt` file for you. Well, actually, it says, "<Replace this text with the license you've chosen for your project.>" We recommend you edit this and include text for license terms under which you're making your code available. A good resource for open source licenses is the [Open Source Initiative](#).

Be sure to update your project's profile with a short description and eye-catching graphic.

Finally, consider defining some sprints and work items in Track & Plan to give interested developers a sense of your cadence and upcoming enhancements.

# DELIVERY PIPELINE

*The IBM® Bluemix® DevOps Services Build & Deploy feature, also known as the pipeline, automates the continuous deployment of your projects. In a project's pipeline, sequences of stages retrieve input and run jobs, such as builds, tests, and deployments. ([Docs...](#))*

- Started by a push on master or manually
- Works fine on your mobile phone :)
- **Pricing:** Free

- Build:
  - Ant, Gradle, Grunt, Container, Maven, npm, shell
- Test:
  - AppScan Dynamic, Security Static, Vulnerability, SauceLabs\*, shell
- Deploy:
  - Cloud Foundry, Container, Active Deploy\*

Pipeline: All Stages

Stage	Status	Last Input	Jobs	Last Execution Result
Build Stage	STAGE PASSED	Last commit by Sidharta Noleto 1 hr ago <a href="#">Add starter application package</a>	<a href="#">View logs and history</a> Build Succeeded 38 min ago	<a href="#">View logs and history</a> Build 1
Test	STAGE PASSED	Last INPUT Stage: Build Stage / Job: Bu.. <a href="#">Git URL</a>	<a href="#">View logs and history</a> Test Succeeded 12 min ago	No results
Quality Gate	STAGE FAILED	Last INPUT Stage: Build Stage / Job: Bu.. <a href="#">Git URL</a>	<a href="#">View logs and history</a> AppScan Failed 7 min ago Static Analy... Not run	No results
Deploy Stage	STAGE PASSED	Last INPUT Stage: Build Stage / Job: Bu.. <a href="#">Git URL</a>	<a href="#">View logs and history</a> Deploy to dev Succeeded 37 min ago	<a href="#">View runtime log</a> digital-day digital-day.mybluemix.net Build 1

# APPLICATION SECURITY ON CLOUD

*IBM® Application Security on Cloud for Bluemix® identifies security issues in your mobile, web, and desktop apps, to help you keep them secure. ([Docs...](#))*

- AppScan & Static Analyser
- Android, iOS, Web App, Java and .NET
- **Pricing:** 10 analysis free / month

- Plugins for popular IDEs:
  - Eclipse, IntelliJ and Visual Studio
- CLI
- PDF report

The screenshot shows a web-based interface for managing mobile application scans. At the top left is a search bar with a magnifying glass icon. To its right is a blue button labeled "Scan another application". Below the search bar, there's a list of scanned applications:

- demo\_staging**: Status: "Scanning in progress... Step 2 of 2 Running". To its right are "Cancel" and "Re-scan same site/application" buttons.
- \_altrorapp**: Status: "This scan: 3/23/2016, 1:19:15 PM". A red box highlights this row. To its right are "Download report" and "Delete scan" buttons.
- IOS\_test**: Status: "This scan: 3/23/2016, 12:35:55 PM". To its right are "Download report" and "Delete scan" buttons.

**SCAN RESULTS**

Below the application list, the results for the highlighted scan ("\_altrorapp") are displayed in a table:

	Total Issues	High	Med	Low	Info
	45	11	19	1	14

A horizontal bar chart below the table shows the distribution of issue types: High (red), Med (orange), Low (yellow), and Info (blue).

Legend for interface elements:

- Scan a different site/application: Scan another application button
- Re-scan same site/application: Re-scan button
- Download report: Download report button
- Delete scan: Delete scan button

# EDIT & DEBUG ONLINE

*The Web IDE is a browser-based development environment where you can develop for the web. ([Docs...](#))*

- Deploy directly from editor
- Sync code from local

- Edit directly from browser:
  - Supports highlight for 35+ languages
  - Code assist: Javascript, CSS e HTML

The screenshot shows the IBM Bluemix DevOps Services interface. The top navigation bar includes links for DASHBOARD, MY PROJECTS, EXPLORE, HELP, BLOG, and COMMUNITY. Below the navigation is a toolbar with icons for Arquivo, Editar, Visualização, Ferramentas, and a live edit status. The main area features a dark-themed code editor with a sidebar containing project files. The sidebar shows a tree view of the project structure:

- g2s | digital-day
  - .git
  - launchConfigurations
    - digital-day.launch
  - public
    - images
    - stylesheets
    - index.html
  - .cignore
  - .gitignore
  - .project
- app.js
- CHANGELOG.md
- License.txt
- manifest.yml
- package.json
- README.md

The `app.js` file is selected and highlighted in green. The code editor displays the following Node.js application code:

```
/*eslint-env node*/
// -----
// node.js starter application for Bluemix
// -----
// This application uses express as its web server
// for more info, see: http://expressjs.com
var express = require('express');

// cfenv provides access to your Cloud Foundry environment
// for more info, see: https://www.npmjs.com/package/cfenv
var cfenv = require('cfenv');

// create a new express server
var app = express();

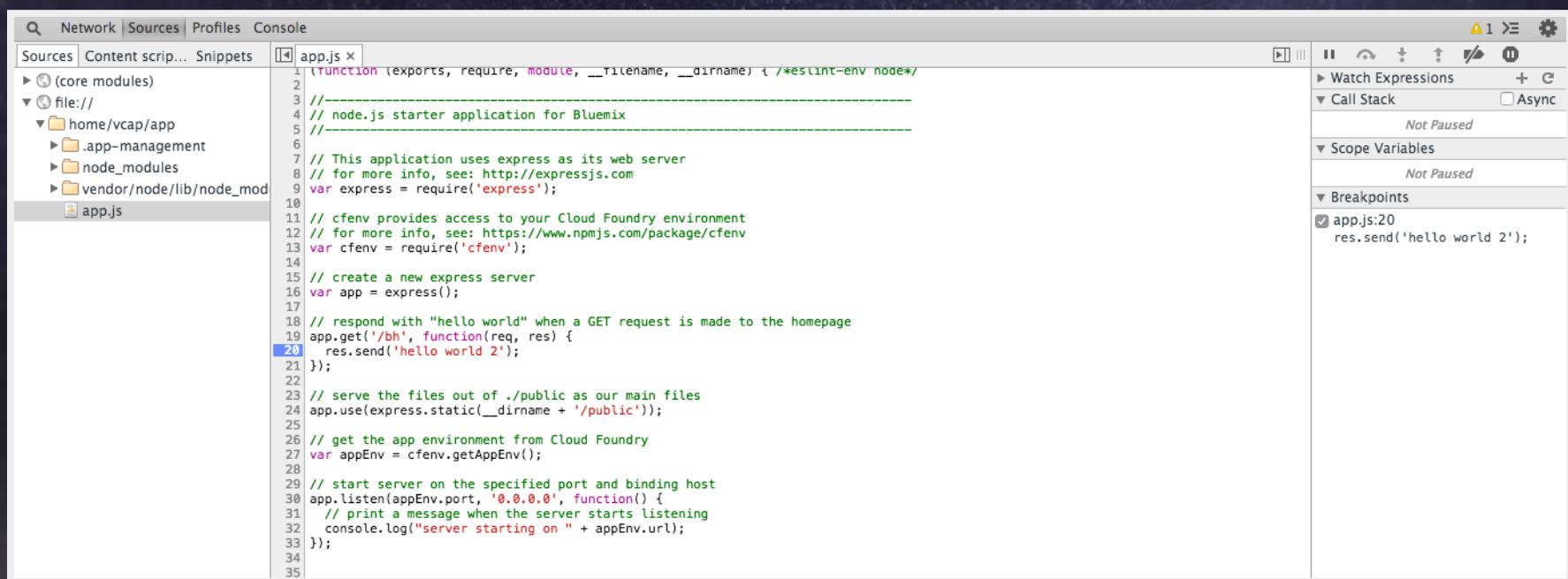
// respond with "hello world" when a GET request is made to the homepage
app.get('/', function(req, res) {
  res.send('hello world');
});

// serve the files out of ./public as our main files
app.use(express.static(__dirname + '/public'));

// get the app environment from Cloud Foundry
var appEnv = cfenv.getAppEnv();

// start server on the specified port and binding host
app.listen(appEnv.port, '0.0.0.0', function() {
  // print a message when the server starts listening
  console.log("server starting on " + appEnv.url);
});
```

- Debug from your browser or enter Shell (NodeJS)



The screenshot shows a Node.js debugger interface with the following details:

- File Structure:** Sources, Content scrip..., Snippets, Network, Sources, Profiles, Console.
- File:** app.js (selected in the left sidebar).
- Code View:**

```

1  (function (exports, require, module, __filename, __dirname) { /*eslint-env node*/
2
3  //-----
4  // node.js starter application for Bluemix
5  //
6
7  // This application uses express as its web server
8  // for more info, see: http://expressjs.com
9  var express = require('express');
10
11 // cfenv provides access to your Cloud Foundry environment
12 // for more info, see: https://www.npmjs.com/package/cfenv
13 var cfenv = require('cfenv');
14
15 // create a new express server
16 var app = express();
17
18 // respond with "hello world" when a GET request is made to the homepage
19 app.get('/hi', function(req, res) {
20   res.send('hello world 2');
21 });
22
23 // serve the files out of ./public as our main files
24 app.use(express.static(__dirname + '/public'));
25
26 // get the app environment from Cloud Foundry
27 var appEnv = cfenv.getAppEnv();
28
29 // start server on the specified port and binding host
30 app.listen(appEnv.port, '0.0.0.0', function() {
31   // print a message when the server starts listening
32   console.log("server starting on " + appEnv.url);
33 });
34
35

```
- Breakpoints:** A breakpoint is set at line 20, which is highlighted in blue.
- Watch Expressions:** Not Paused.
- Call Stack:** Not Paused.
- Scope Variables:** Not Paused.
- Breakpoints:** app.js:20 (res.send('hello world 2')) is checked.

# ACTIVE DEPLOY

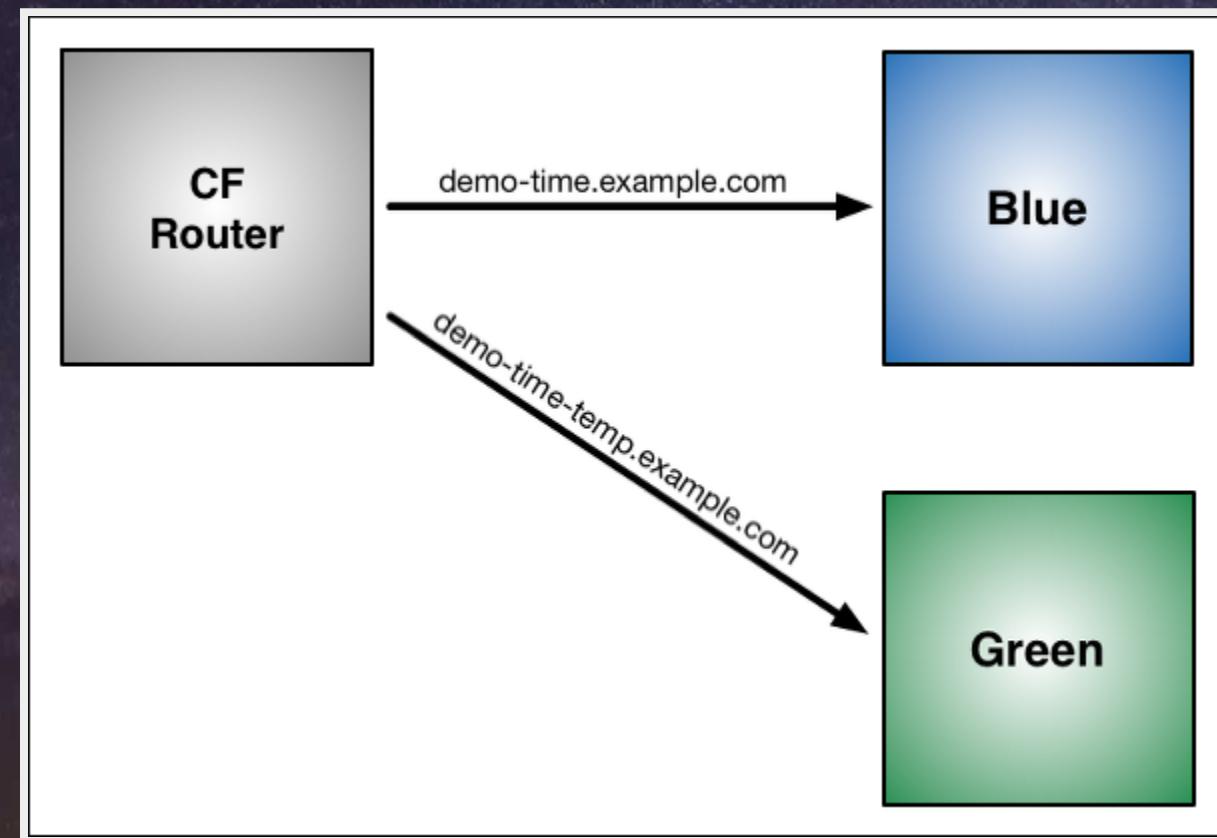
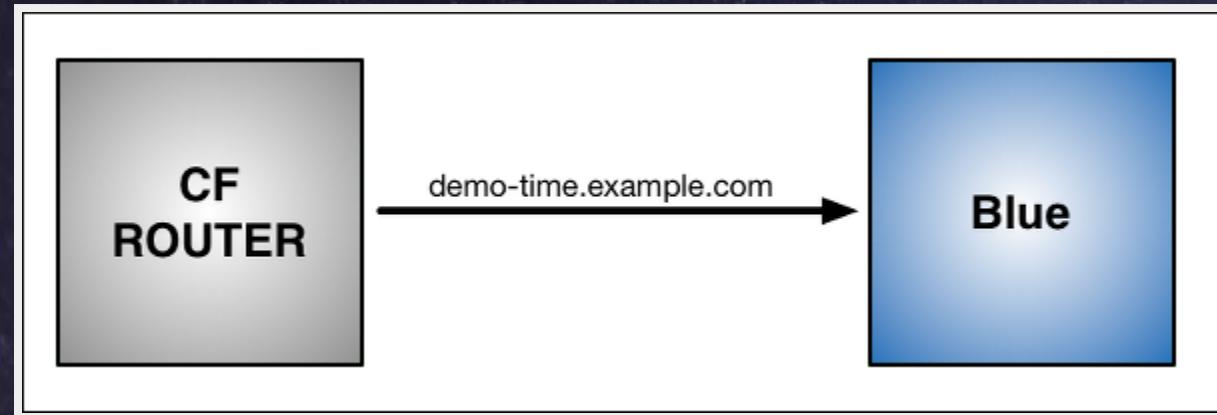
*You can update running apps or container groups with no downtime, by using the intelligent update capabilities of the IBM® Active Deploy service for Bluemix®. ([Docs...](#))*

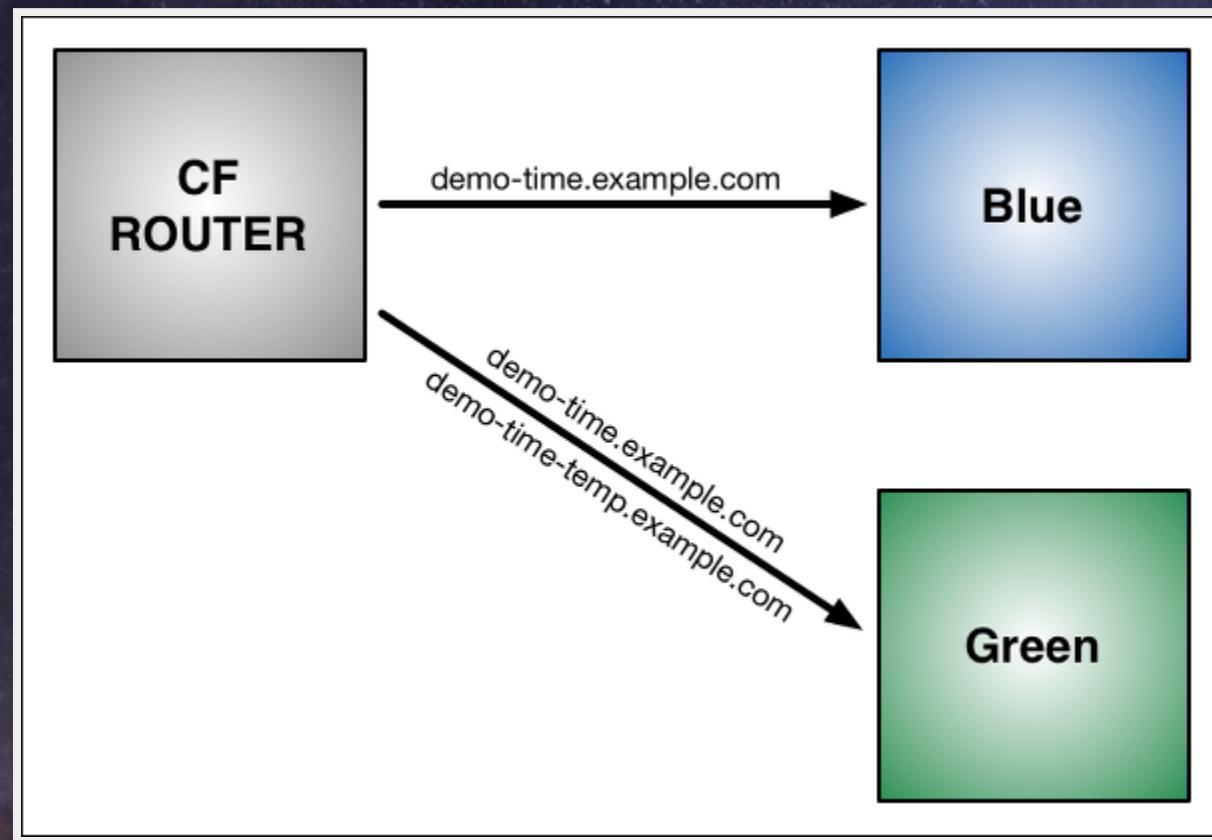
- Zero Downtime!
- Split traffic
- Define steps to transition

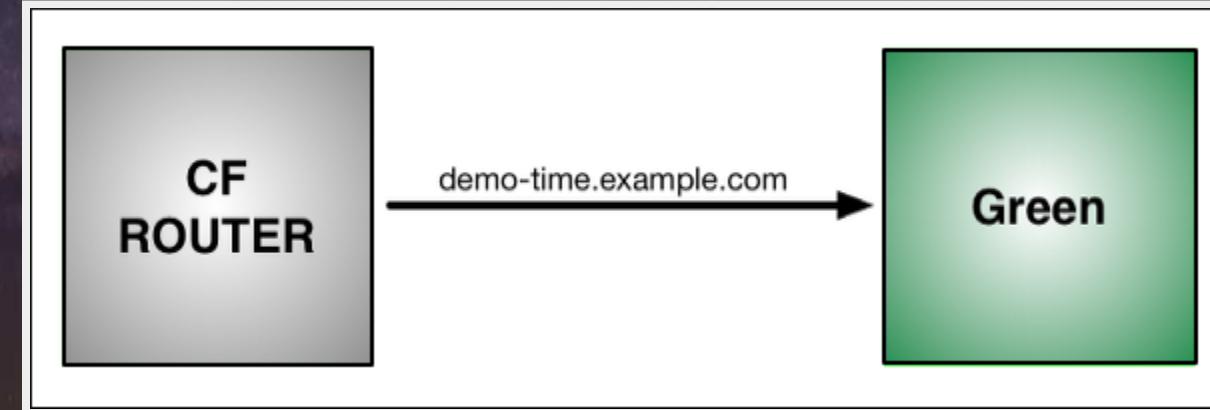
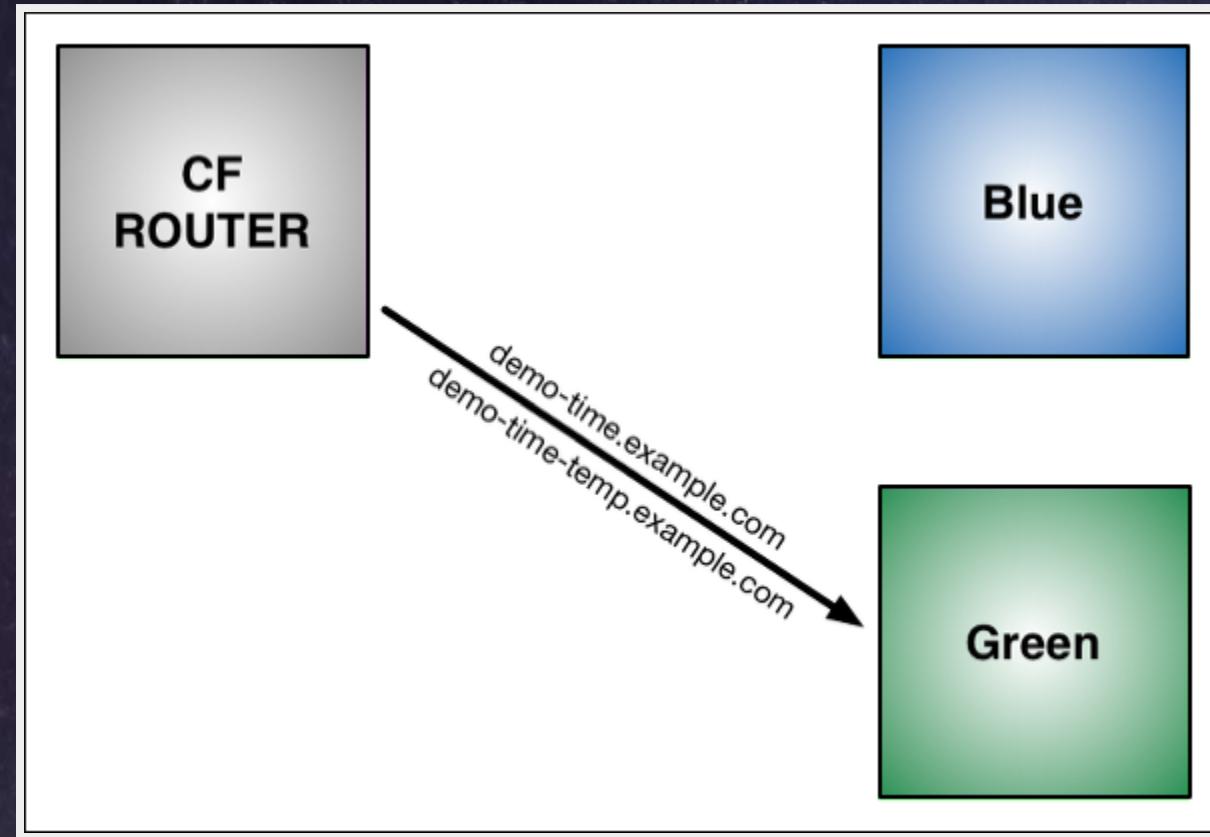
- Red Black (Blue Green) or resource optimization
- Manual or Auto transition

[+ CREATE DEPLOYMENT](#)

Select Current Version:	Ramp-up Phase:	Testing Phase:	Ramp-down Phase:	Total Time:
digital-day	0 HOURS 5 MINUTES	0 HOURS 15 MINUTES	0 HOURS 5 MINUTES	25 min
<b>Routes:</b> digital-day.mybluemix.net				
<b>Instances:</b> 1				
<b>Select New Version:</b>	<b>Transition:</b> Automatic — Manual <b>Deployment Method:</b> Red Black — Resource Optimized			
Name (optional): Deployment Digital Day	Cancel Create			
Description (optional):				

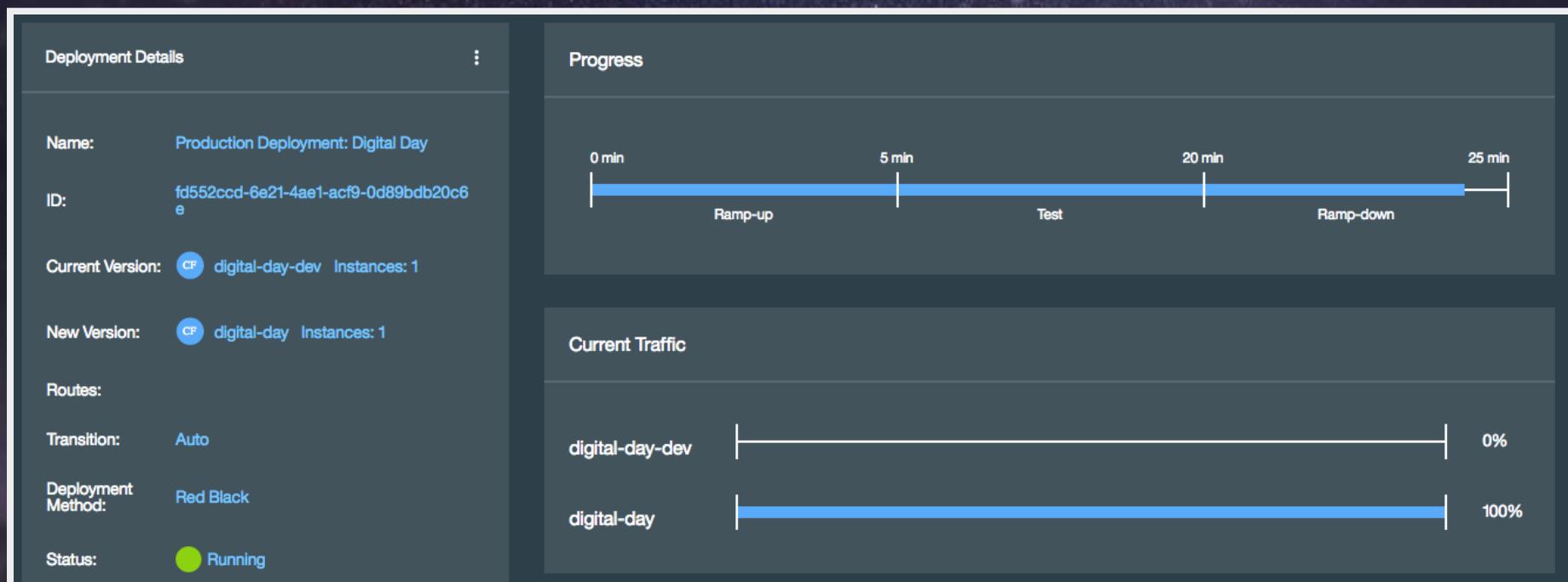






# BLUE / GREEN DEPLOYMENT

- Or Red / Black :)
- It's possible to rollback



# INTEGRATION WITH PIPELINE

*You can automate Active Deploy and enable faster continuous delivery by integrating the service into your pipeline. ([Docs...](#))*

- Works in three steps
- First Step:
  - Deploys new version without route
  - Start Active-Deploy ramp-up
- Second Step: run your tests here =)
- Last Step: Confirm transition!!

- Built-in scripts
- You must configure variables inside jobs

### Init Deploy

DELETE

INPUT JOBS ENVIRONMENT PROPERTIES

The interface displays a sequence of five circular icons representing deployment steps:

- New version: icon with a dot and an upward arrow.
- Init Transition: icon with a dot and an upward arrow, highlighted with a blue circle.
- Test Deploy: icon with a checkmark inside a box.
- Confirm De...: icon with a dot and an upward arrow.
- Add Job: icon with a plus sign.

Below the icons, the labels are: New version, Init Transition, Test Deploy, Confirm De..., and ADD JOB.

---

### Init Transition

REMOVE

Deploy Configuration

Deployer Type

Active Deploy - Begin

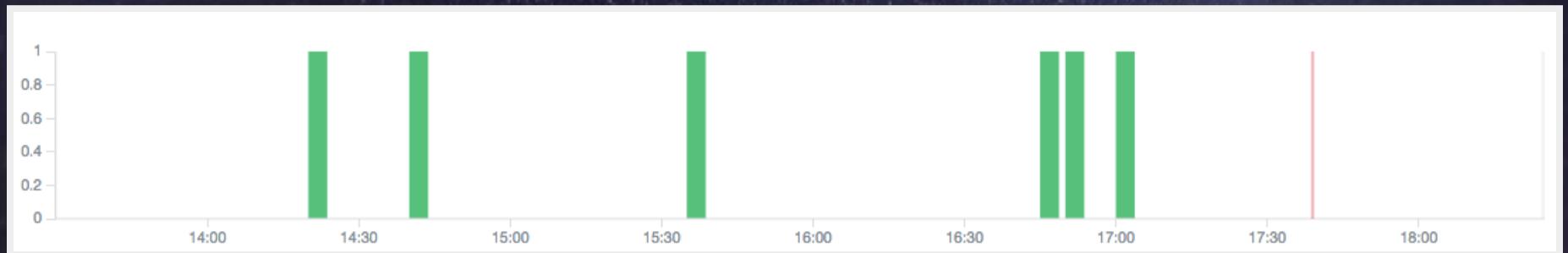
More Options

# LOGS

*(...) follow application execution and data flow  
to get a better understanding of your  
deployment (...) reduce the time and effort  
required to locate any issues. ([Docs...](#))*

- Standard output
- All output can be monitored
  - cf logs [ --recent ]
  - Via Kibana 4 (recommended)
  - Inside dashboard (not recommended :-( )
- Forward log to 3rd party tools (e.g.: splunk)

- e.g.: deploys, requests, custom logs



```
snoleto@MacBook-Air-de-Sidharta:~/Documents/Cit/Bluemix/devops_git/digital-day$ cf logs digital-day
Conectado, tailing logs para o app digital-day na organização sidharta / espaço digital-day-bh como sidvellos@gmail.com...
2016-09-02T17:42:03.98+0300 [RTR/0]      OUT digital-day.mybluemix.net - [02/09/2016:20:42:03.977 +0000] "GET / HTTP/1.1" 304 0 0 "-" "Mozilla/5.0 (Macintosh; Intel Mac OS X 10_11_5) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/51.0.2704.103 Safari/537.36" 108.168.250.155:12765 x_forwarded_for:"201.48.150.197" x_forwarded_proto:"http" vcap_request_id:1487e92a-f4f7-423f-5b82-85a0d65bda9f response_time:0.005532475 app_id:9a0daf93-97da-47ce-b1c2-5b83354d0a37 x_global_transaction_id:"2191579367"
2016-09-02T17:42:04.16+0300 [RTR/1]      OUT digital-day.mybluemix.net - [02/09/2016:20:42:04.164 +0000] "GET /stylesheets/style.css HTTP/1.1" 304 0 0 "http://digital-day.mybluemix.net/" "Mozilla/5.0 (Macintosh; Intel Mac OS X 10_11_5) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/51.0.2704.103 Safari/537.36" 108.168.250.156:10932 x_forwarded_for:"201.48.150.197" x_forwarded_proto:"http" vcap_request_id:c2bb4c95-4d98-400d-443b-086d0ca05e7d response_time:0.002260119 app_id:9a0daf93-97da-47ce-b1c2-5b83354d0a37 x_global_transaction_id:"1799278589"
2016-09-02T17:42:04.17+0300 [RTR/0]      OUT digital-day.mybluemix.net - [02/09/2016:20:42:04.166 +0000] "GET /images/newapp-icon.png HTTP/1.1" 304 0 0 "http://digital-day.mybluemix.net/" "Mozilla/5.0 (Macintosh; Intel Mac OS X 10_11_5) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/51.0.2704.103 Safari/537.36" 108.168.250.153:51044 x_forwarded_for:"201.48.150.197" x_forwarded_proto:"http" vcap_request_id:13fee3e8-5593-4226-4f5b-3dc1e342e003 response_time:0.004569449 app_id:9a0daf93-97da-47ce-b1c2-5b83354d0a37 x_global_transaction_id:"309905021"
2016-09-02T17:42:06.42+0300 [RTR/1]      OUT digital-day.mybluemix.net - [02/09/2016:20:42:06.420 +0000] "GET / HTTP/1.1" 200 0 682 "-" "Mozilla/5.0 (Macintosh; Intel Mac OS X 10_11_5) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/51.0.2704.103 Safari/537.36" 108.168.250.154:44022 x_forwarded_for:"81.95.151.60" x_forwarded_proto:"http" vcap_request_id:846d065f-e53d-4409-6bf7-9c2425e56864 response_time:0.007926032 app_id:9a0daf93-97da-47ce-b1c2-5b83354d0a37 x_global_transaction_id:"4177903695"
```

# MONITORING AND ALERTS SERVICES

- Soon will be deprecated, but useful

### Application Availability

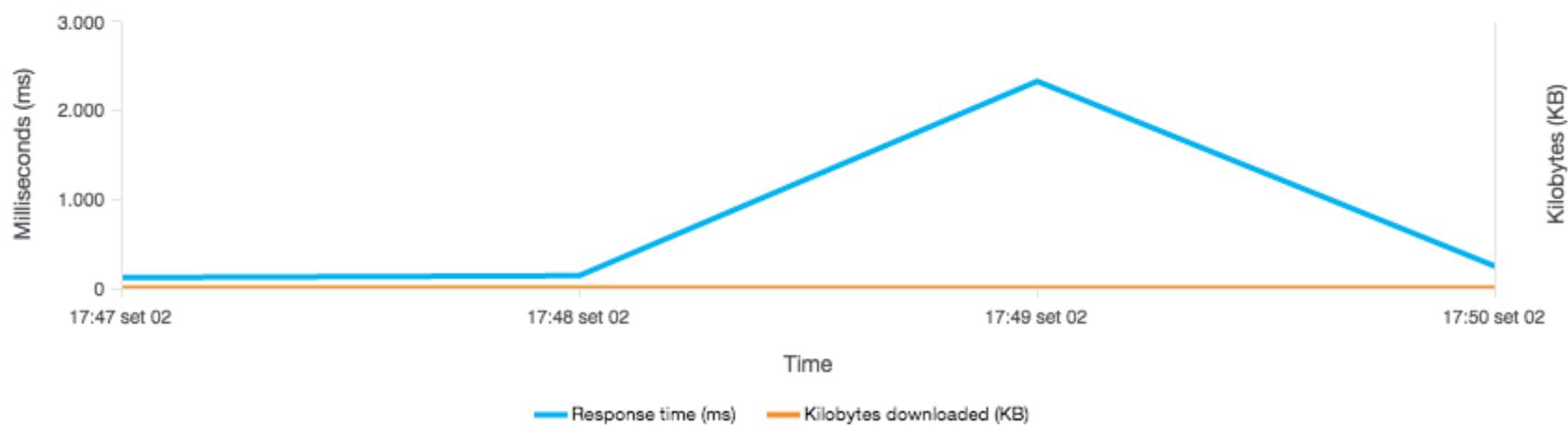


Availability (%): **100,0**



### Application Response Time

Average response time (ms): **706,8** | Average download (KB): **0,0**



# AVAILABILITY MONITORING

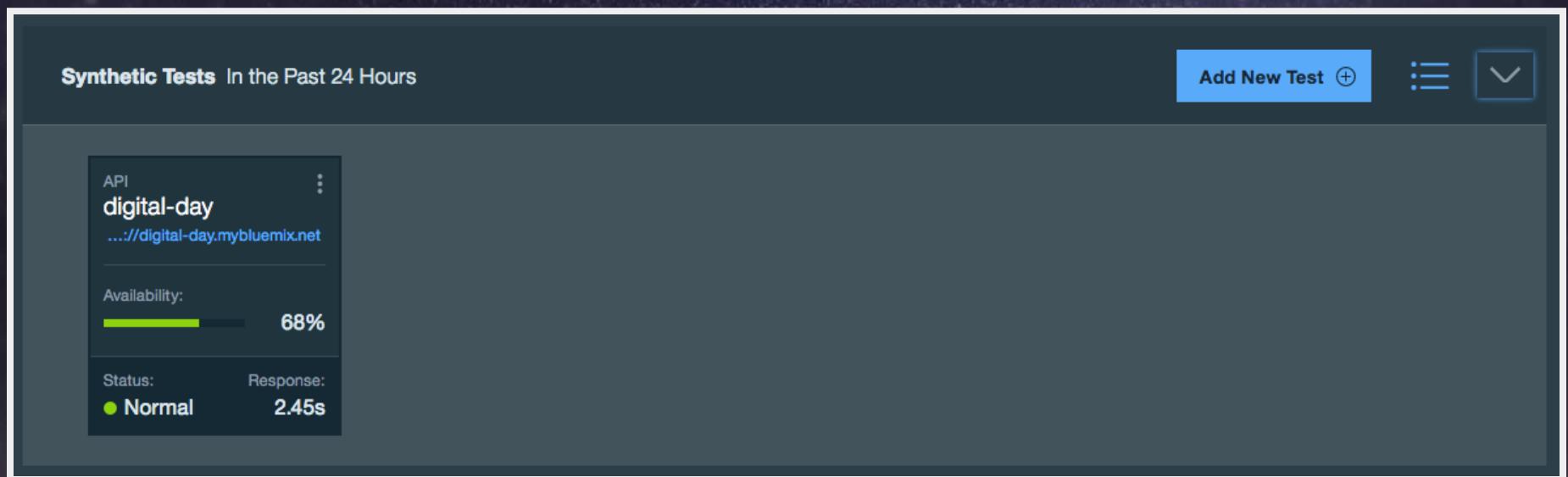
*[...] Run simulated performance tests from locations around the world, around the clock.*  
*[...] Ensure that your applications are available and meet response time targets when you roll out continuous updates. ([Docs...](#))*

- New service, still in beta
- Much cleaner interface
- **Pricing:** Free (currently)

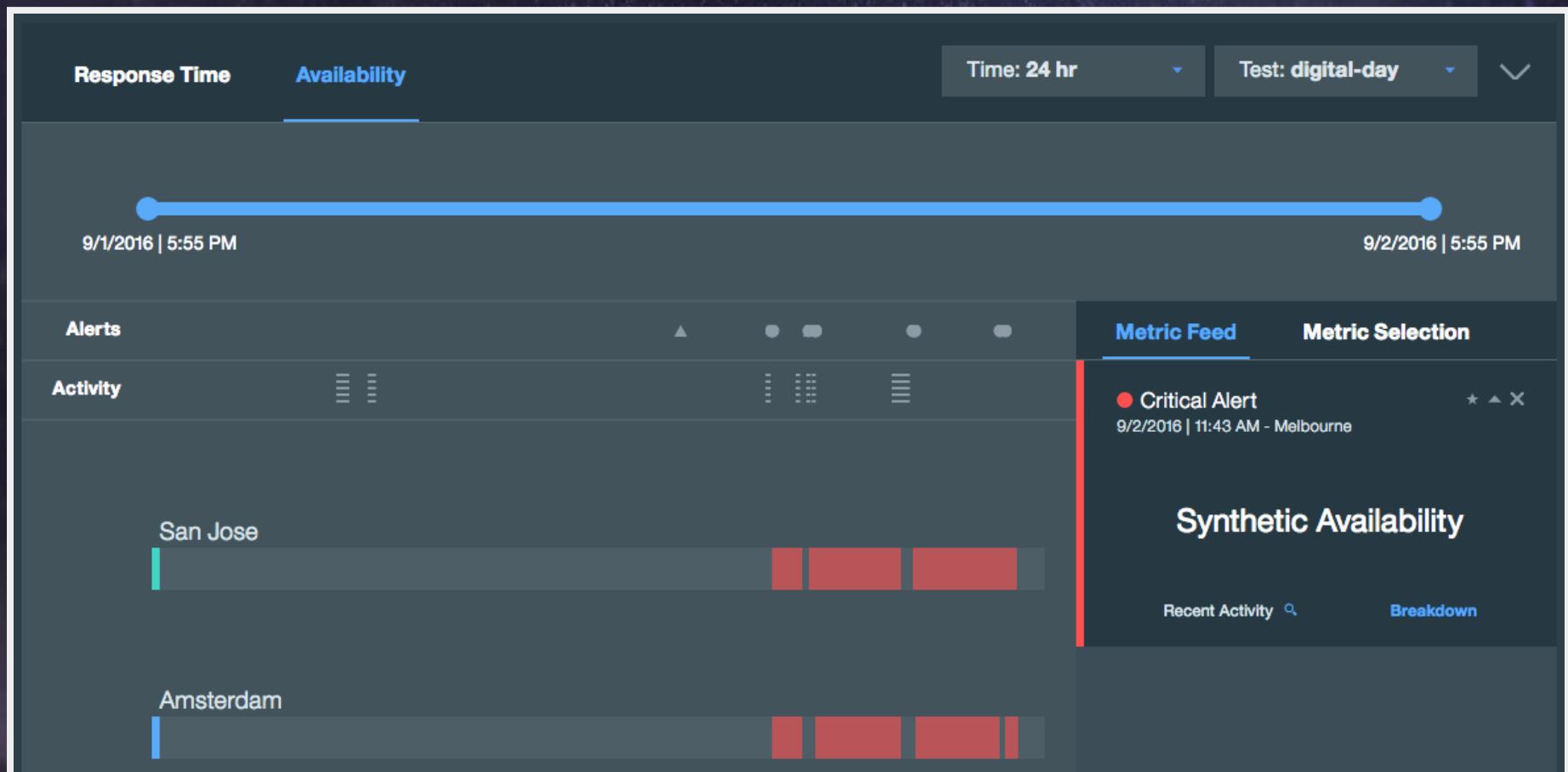
- Tests executed all over the world



- Custom health checks



## • Critical Alerts



# EXTRAS

## SLACK

- Integrate Slack inside your Pipeline
- Plugin, in beta

 Slack

With Slack, you can send notifications from your Build and Deploy pipeline. The Slack integration beta feature is not created by, affiliated with, or supported by Slack Technologies, Inc. [Create an account at slack.com.](#) [Learn more.](#)

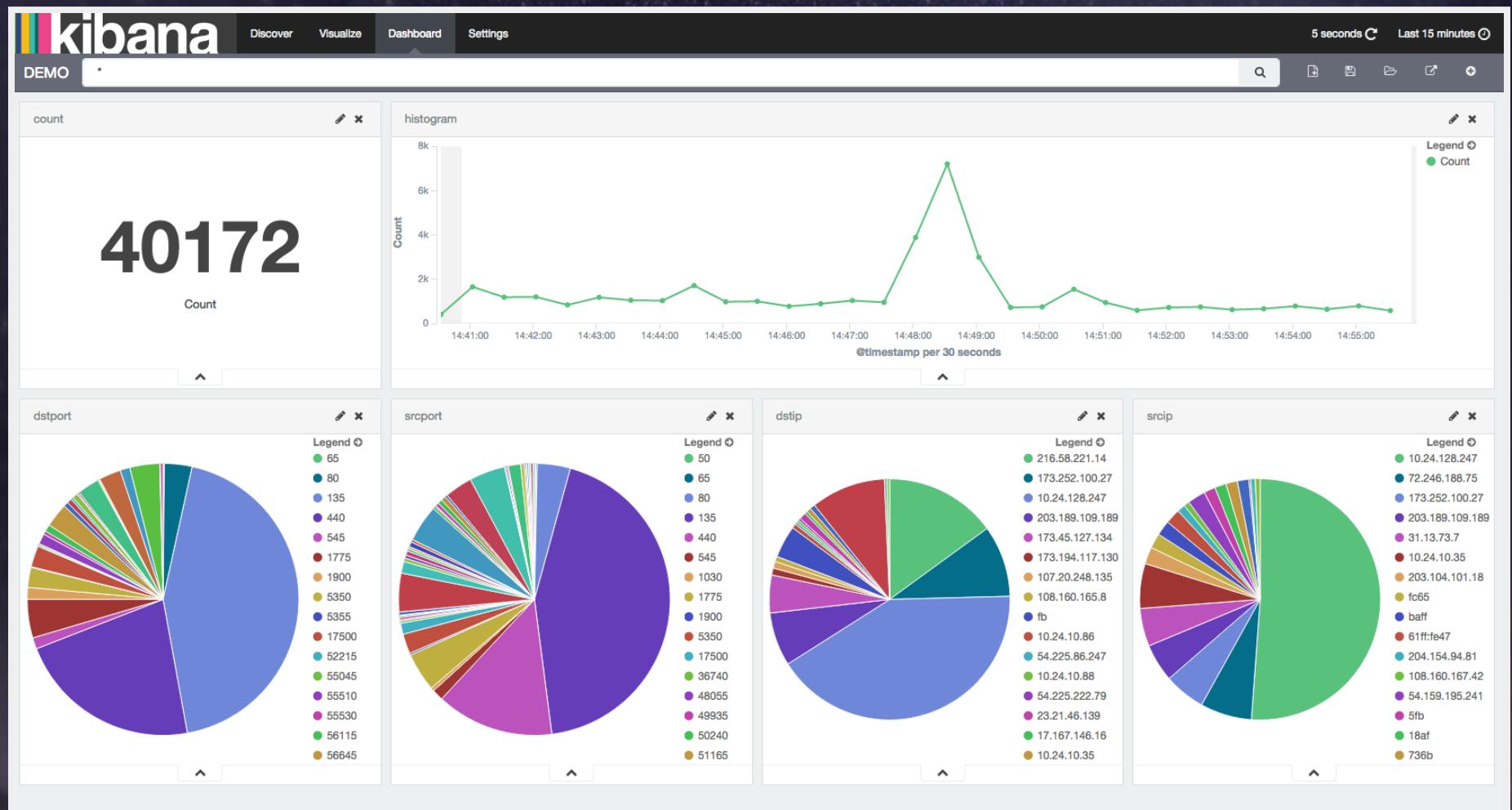
API authentication token [i](#)

Slack channel [i](#)

# KIBANA

*Create a custom dashboard to display, in a simple or creative manner, the logs for the containers/apps that run in a space. ([Docs...](#))*

- Access: <https://logmet.bluemix.net>
- Login, select Kibana 4
- Customize Dashboards, charts and searches
- Custom data (you'll need some magic)



# STOP... DEMO TIME



# **DEMO 1:**

## **ROUTING, AUTO SCALING, LOAD TEST**

# **DEMO 2:**

## **EDIT CODE, DEBUG**

# **DEMO 3:**

## **PIPELINE, QUALITY GATE, BLUE / GREEN DEPLOYMENT**

# DEMO 4:

## MONITORING, LOGS

# THANKS

- This presentation is at github:
  - <https://github.com/sidharta/bluemix-devops-slides>