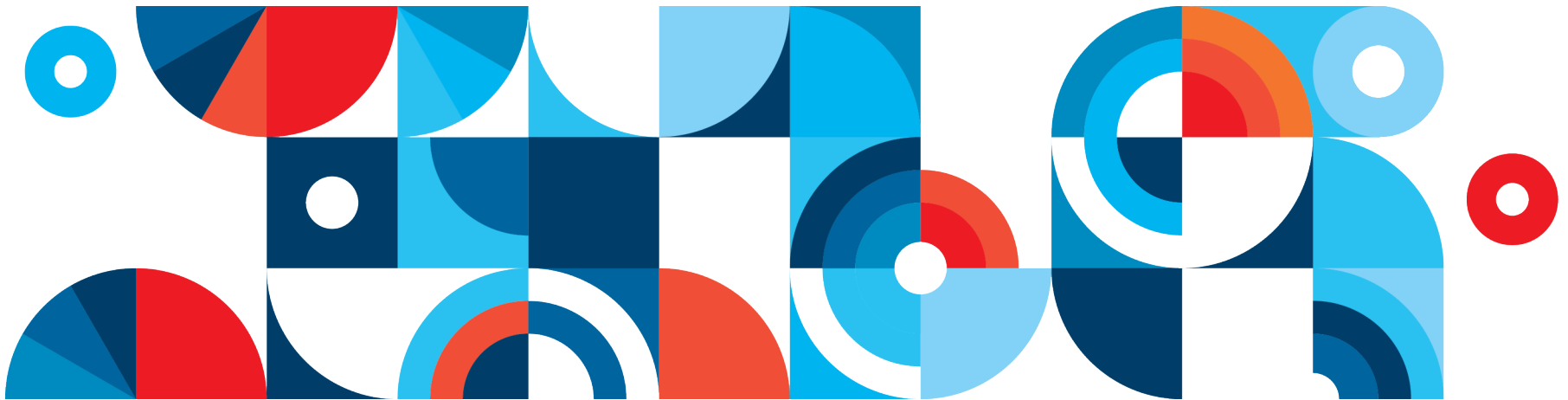


# Bluemix Introduction and Practices

**A platform where developers can act like kids in a sandbox - except this box is enterprise-grade.**

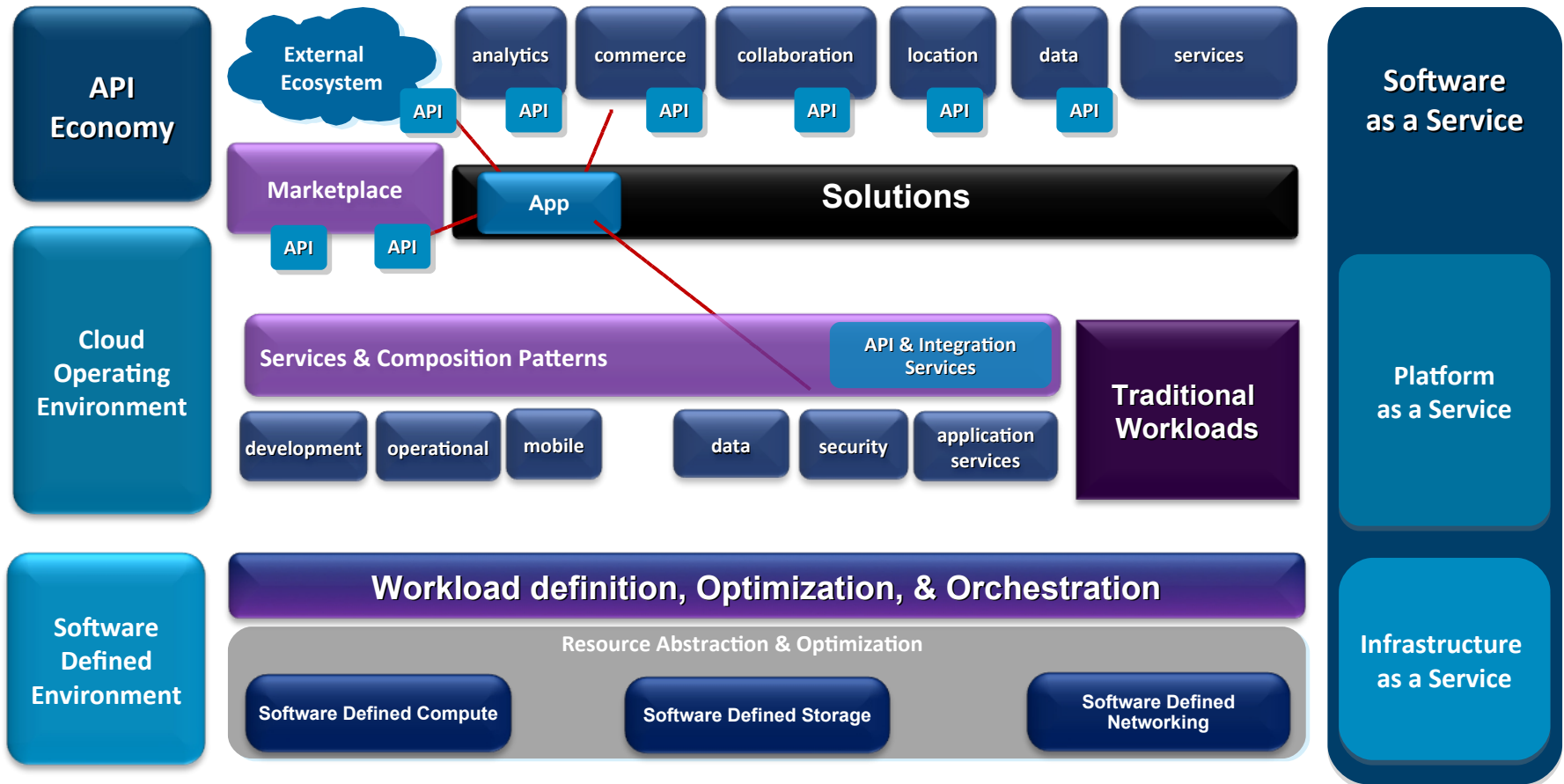


Jacky Mao -- GBS Innovation Center - Architect

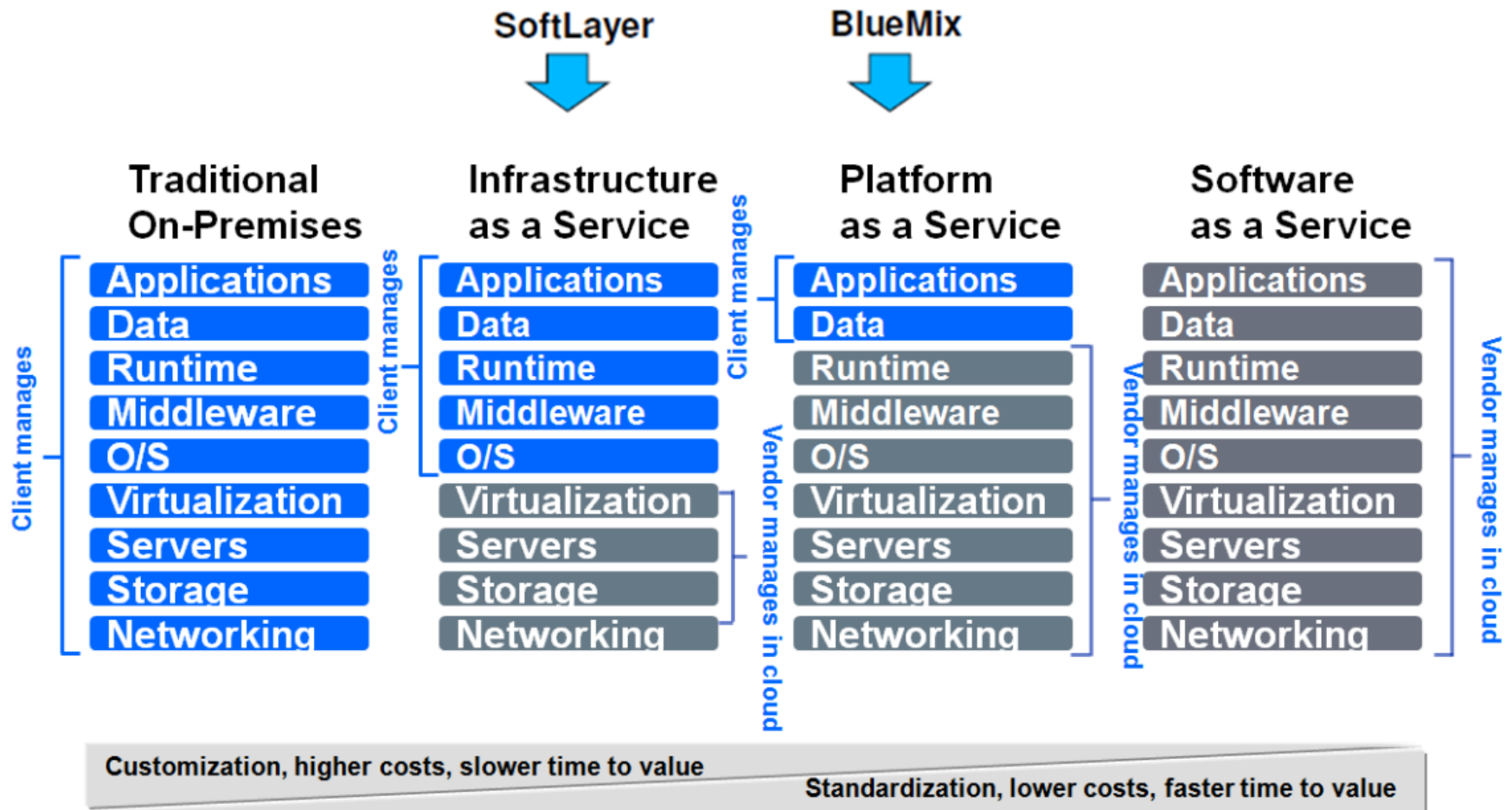
# Agenda

- **1. IBM Cloud Services**
  - ❖ 1.1 IBM Next Generation Cloud Environment
  - ❖ 1.2 IBM-provided cloud services models
  - ❖ 1.3 Why not just use IaaS?
- **2. Introducing IBM Bluemix**
  - ❖ 2.1 Bluemix Architecture
  - ❖ 2.2 Innovation is fueled by Open standards for Bluemix
  - ❖ 2.3 What can Bluemix Deliver?
  - ❖ 2.4 Scaling and Monitoring in Bluemix
  - ❖ 2.5 Which services can Bluemix offer?
- **3. Bluemix Management**
  - ❖ 3.1 Bluemix management - Dashboard
  - ❖ 3.2 Bluemix management - APP dashboard
  - ❖ 3.3 Bluemix management - Runtime
  - ❖ 3.4 Bluemix management - Files and Logs
  - ❖ 3.5 An example to add Rules service
- **4. Bluemix DevOps Services**
- **5. Practice tips**
- **6. Bluemix environments**
- **Appendix: Cloud Foundry**

# 1.1 IBM Next Generation Cloud Environment



## 1.2 IBM-provided cloud services models



## 1.3 Why not just use IaaS?

- It might be just as easy to get started at the IaaS layer if you use a prebuild image
- Over time though the maintenance of this image increases the cost
  - OS updates, security updates, new versions of libraries, DNS and networking changes, configuration and maintenance of other services like DBs etc.
- At the PaaS layer all of this cost disappears! The platform takes care of it for you!

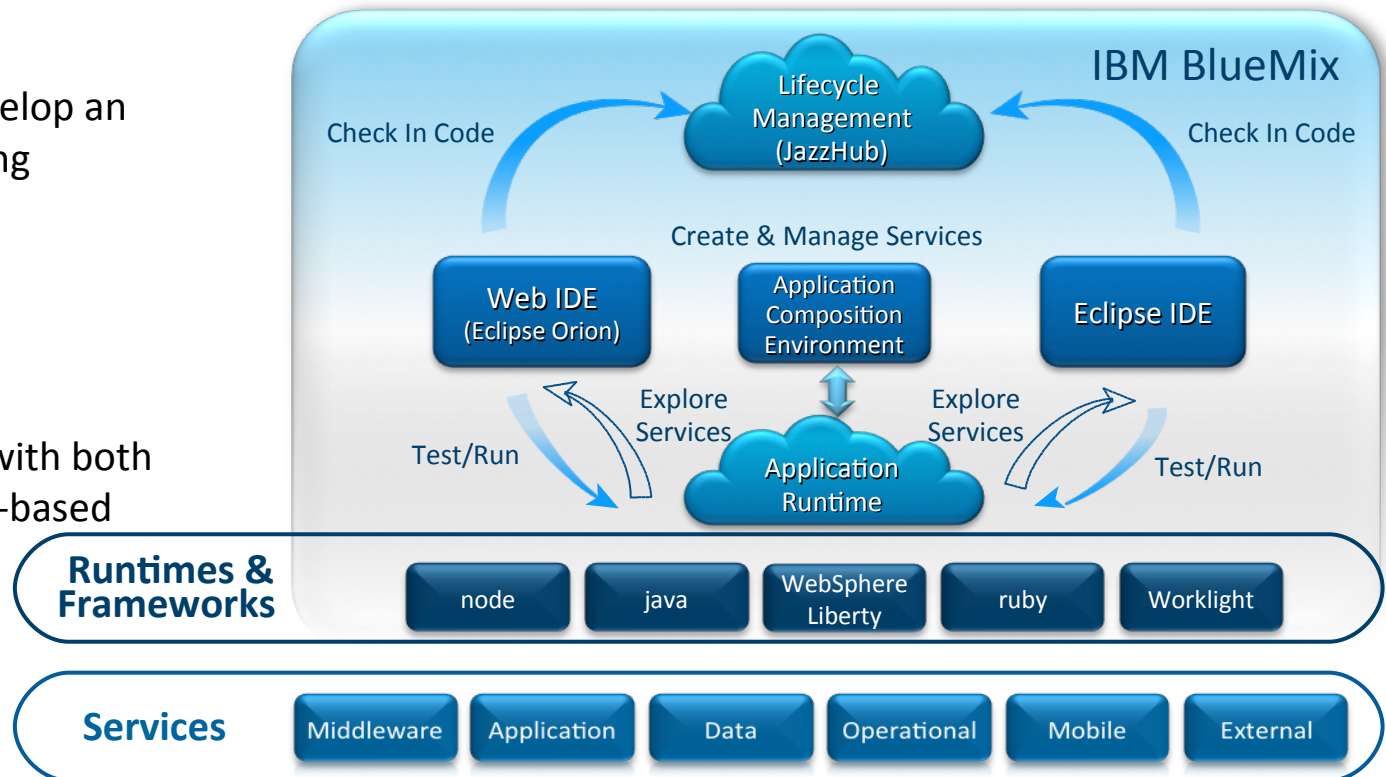
### 1.3.1 Benefits of using BlueMix:

- Save time by just worrying about the code and not the infrastructure
- Quickly get your app in the hands of your users – deploying your app is a matter of running a single command
- Easily add functionality to your application using IBM and partner provided services
- Use the languages, runtimes, and frameworks that you are most familiar with

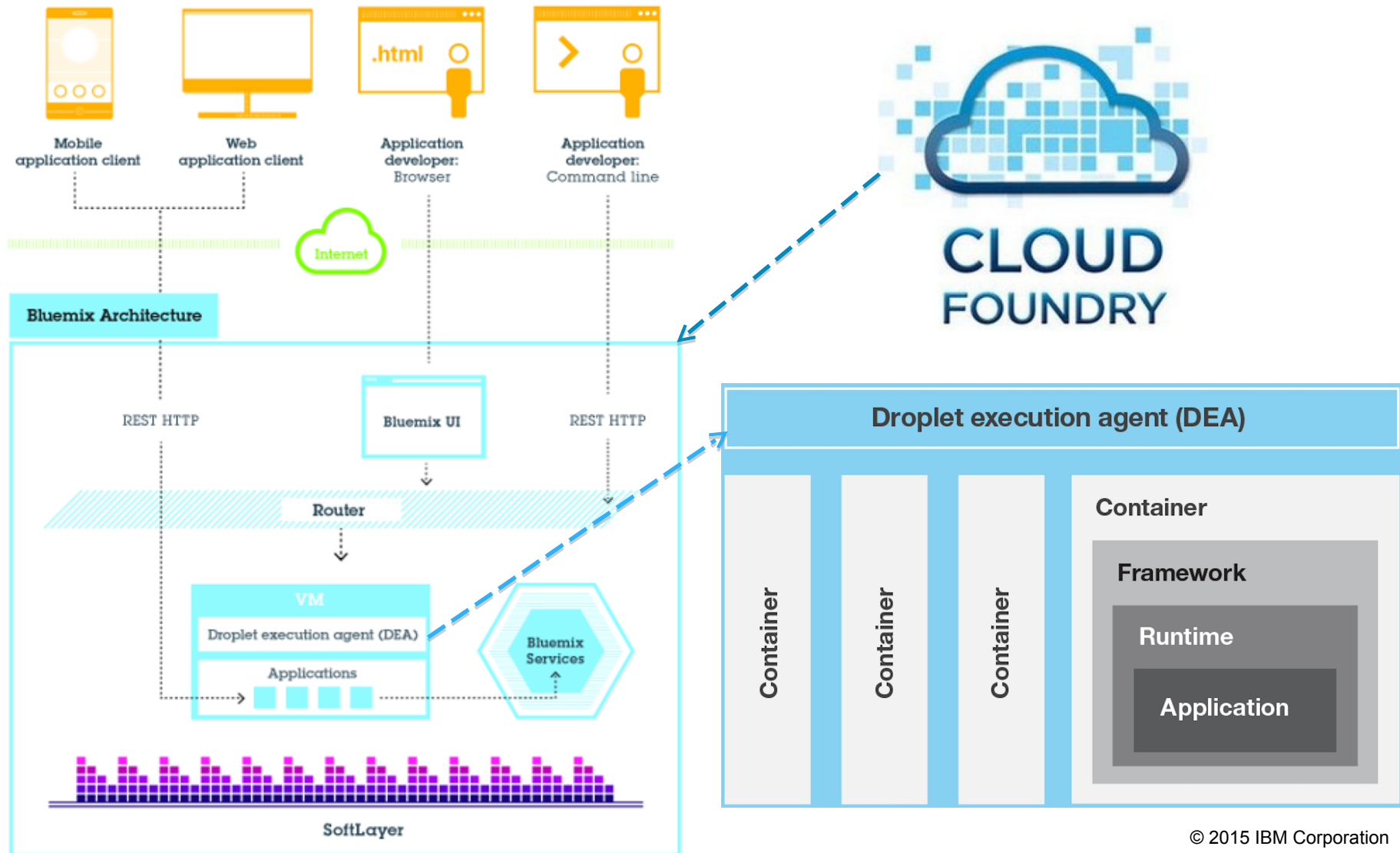
## 2 Introducing IBM Bluemix

Bluemix is IBM's new PaaS solution that combines the power of Cloud Foundry with popular languages and IBM SaaS.

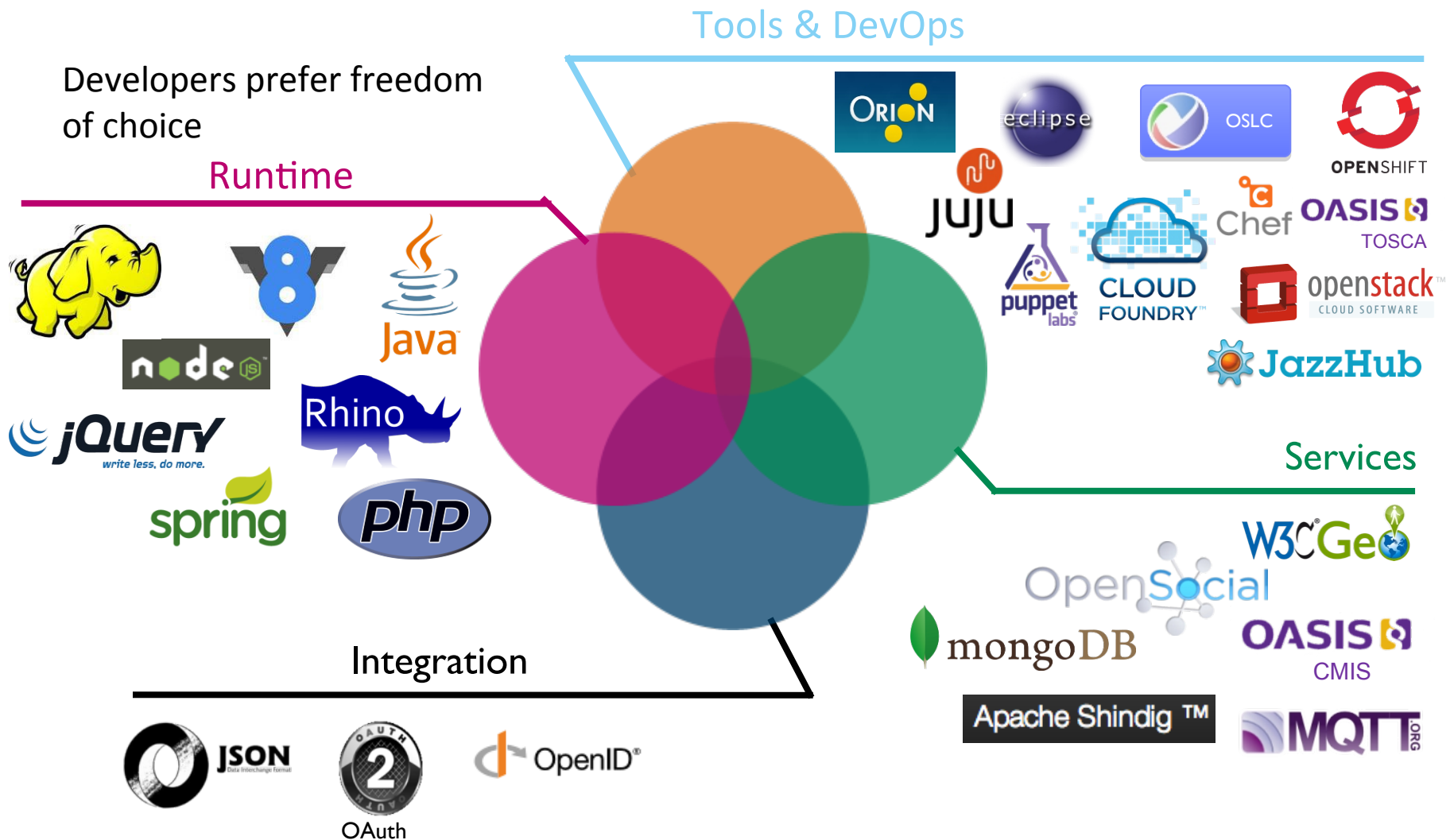
- IBM initiative to develop an open Cloud Operating Environment
- Runs on **SoftLayer**
- Integrated DevOps with both Browser and Eclipse-based tools



## 2.1 Bluemix Architecture



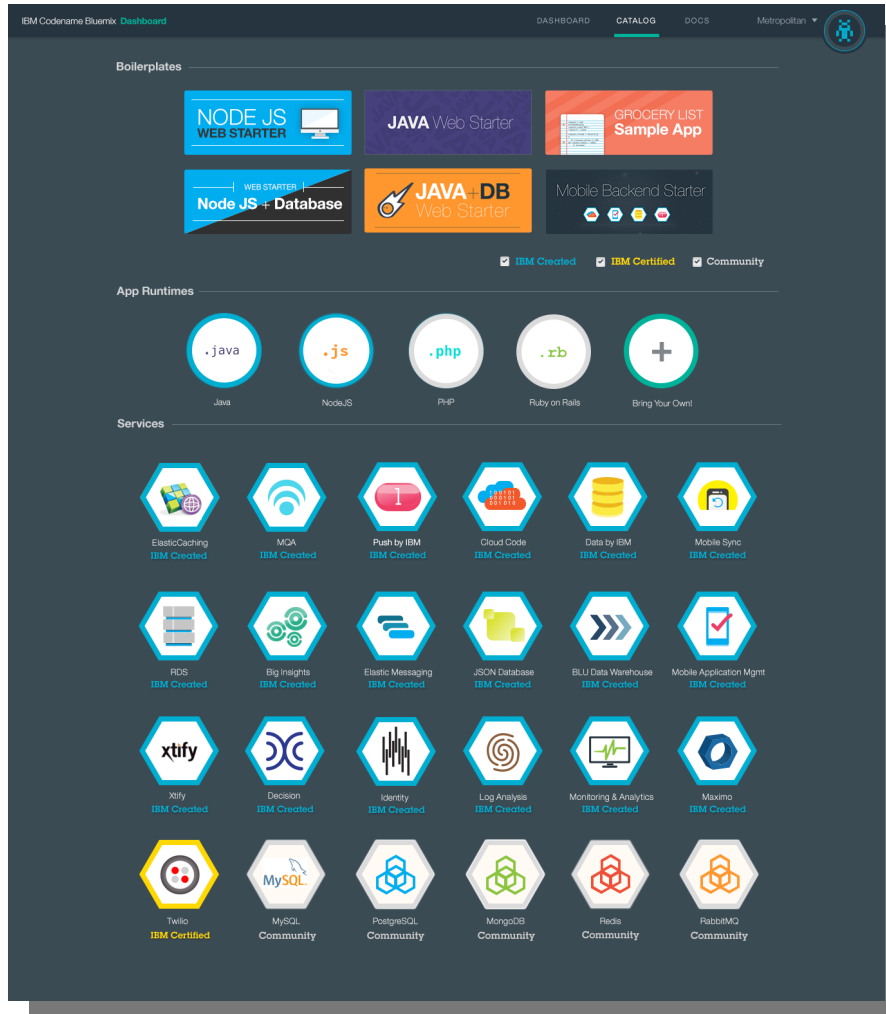
## 2.2 Innovation is fueled by Open standards for Bluemix





## 2.3 What can Bluemix Deliver?

----Delivering a Composable Services development environment



### Run Your Apps

The developer can choose any language runtime or bring their own. Just upload your code and go.

### DevOps

Development, monitoring, deployment and logging tools allow the developer to run the entire application

### APIs and Services

A catalog of open source, IBM and third party APIs services allow a developer to stitch together an application in minutes.

### Cloud Integration

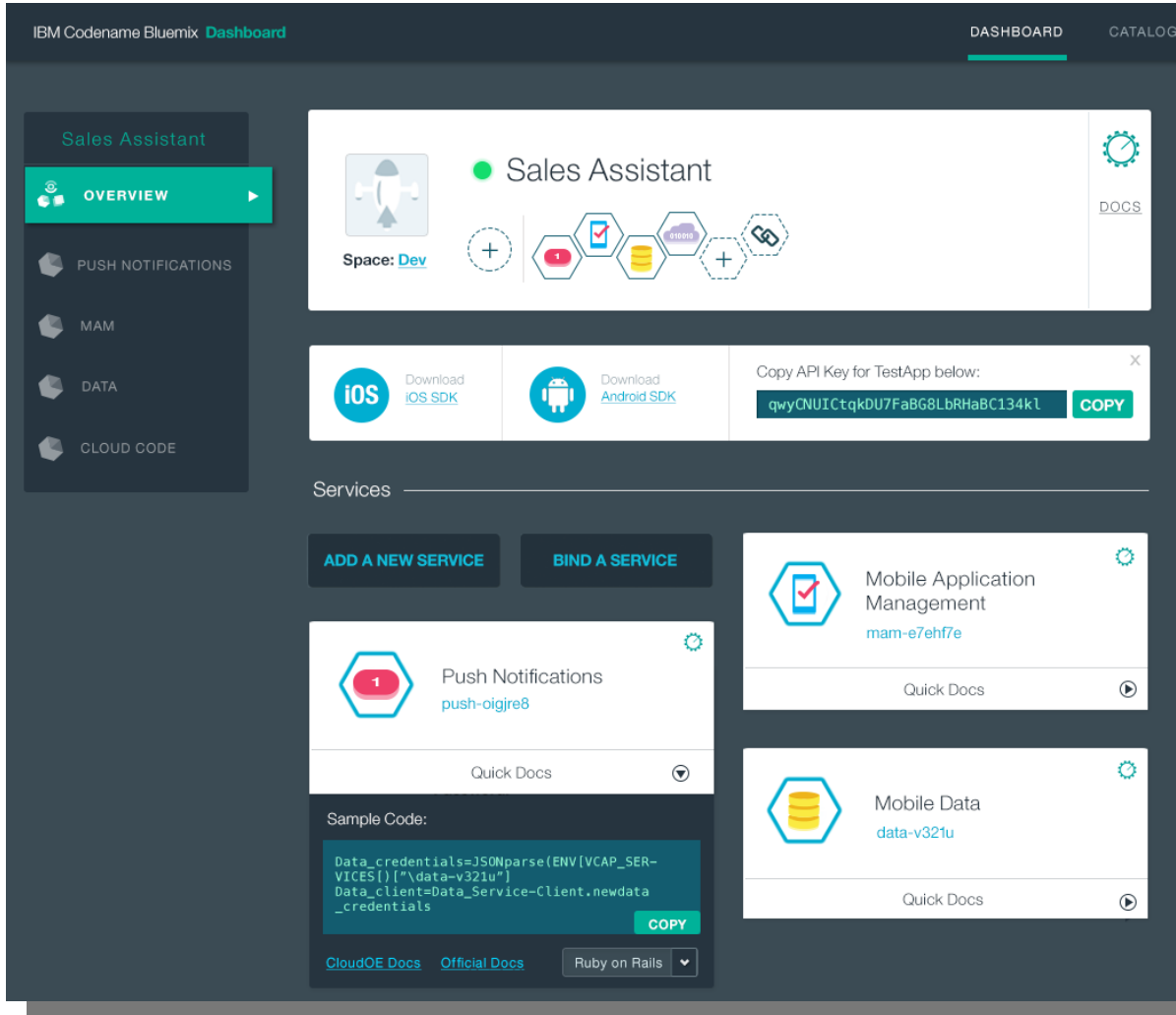
Build hybrid environments. Connect to on-premises systems of record plus other public and private clouds. Expose your own APIs to your developers.

### Extend SaaS Apps

Drop in SaaS App SDKs and extend to new use cases (e.g., Mobile, Analytics, Web)

## 2.4 Scaling and Monitoring in Bluemix

Fully integrated environment for deploying and managing your application



### Single Dashboard

Single view of application health, usage and status

### Health and Monitoring

Integrated monitoring and diagnostics with the ability to add on features such as code level tracing

### Scaling

Ability to scale the application by adding new runtime instances

## 2.5 Which services can Bluemix offer?

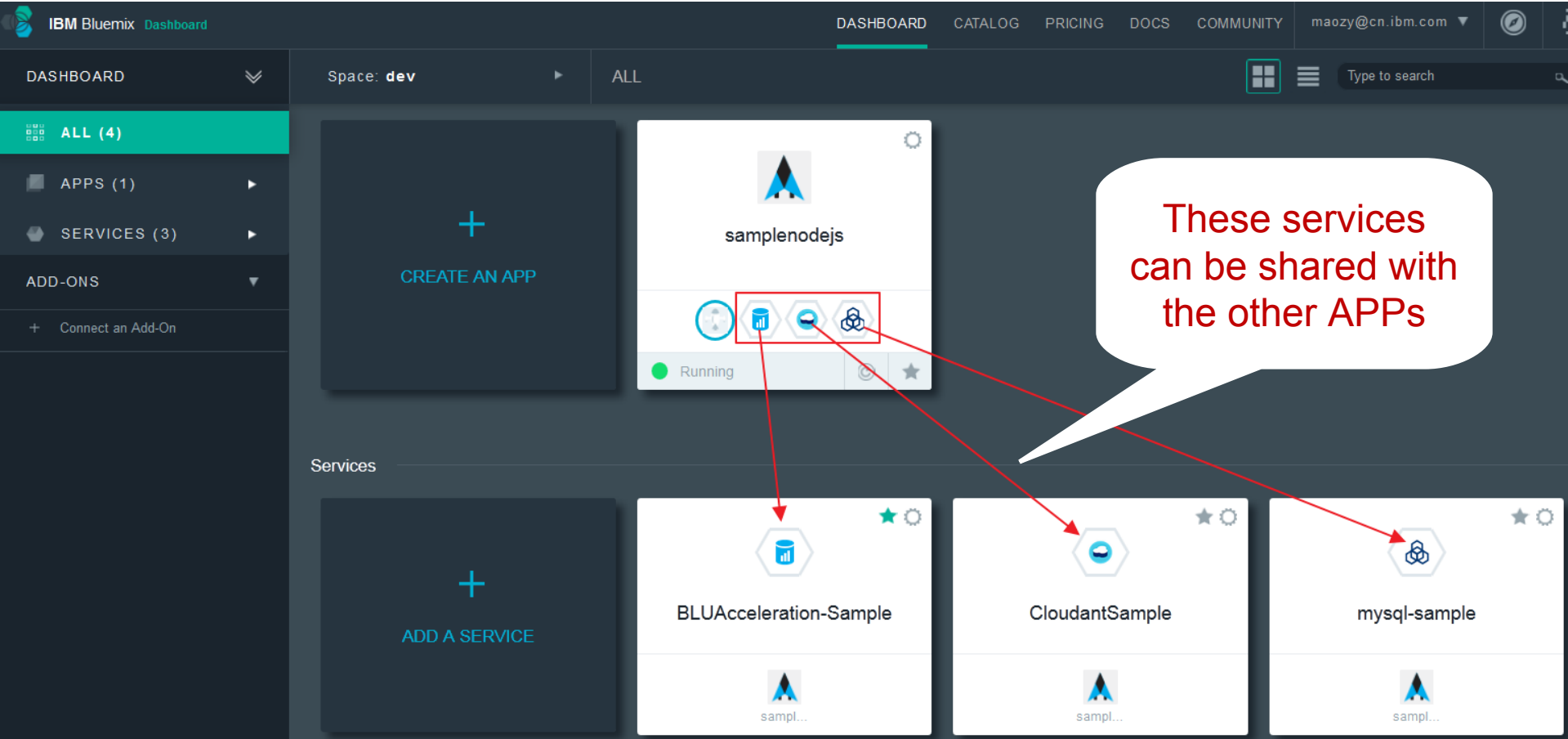
The service marketplace is defined as the aggregate catalog of services and plans advertised to a Cloud Foundry instance by all registered brokers.

The IBM BlueMix Services are the main differentiator against other Cloud Foundry PaaS Offerings such as Pivotal.

Integrate and Share is the mission.



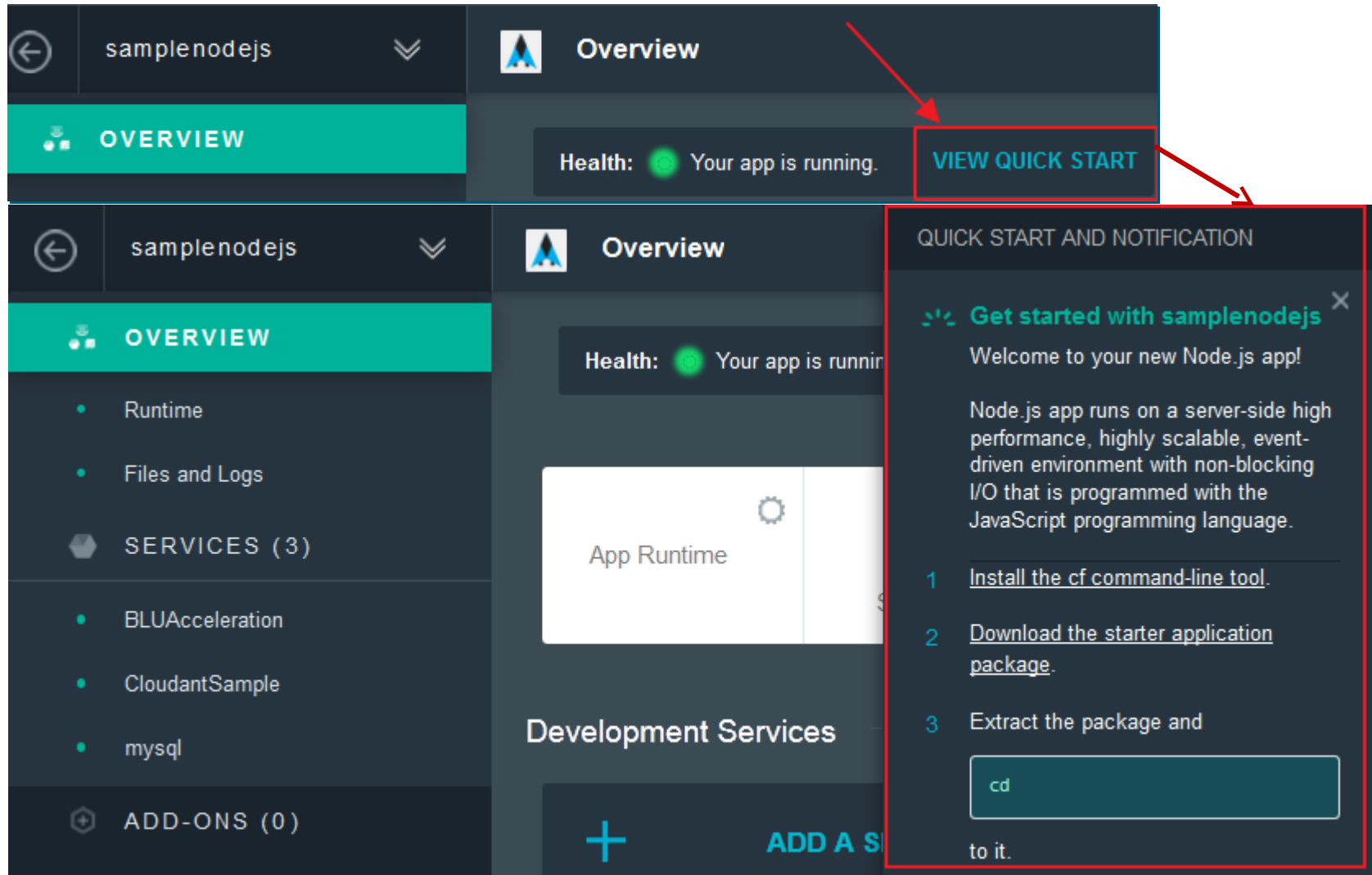
## 3.1 Bluemix management - Dashboard



The screenshot displays the IBM Bluemix Dashboard interface. The top navigation bar includes links for DASHBOARD, CATALOG, PRICING, DOCS, and COMMUNITY, along with a user profile dropdown for 'maozy@cn.ibm.com'. The left sidebar shows a navigation menu with 'DASHBOARD', 'ALL (4)', 'APPS (1)', 'SERVICES (3)', and 'ADD-ONS'. The main content area is divided into two sections: 'Space: dev' and 'ALL'. The 'Space: dev' section features a large 'CREATE AN APP' button. The 'ALL' section displays a list of services. The first service card, 'samplenejs', is highlighted with a red box around its service dependencies (BLUAcceleration-Sample, CloudantSample, and mysql-sample). A speech bubble points to these dependencies with the text: 'These services can be shared with the other APPs'. Below the 'samplenejs' card, there are three service cards: 'BLUAcceleration-Sample', 'CloudantSample', and 'mysql-sample', each with a 'saml...' button below it.

## 3.2 Bluemix management - APP dashboard

---View Quick Start for this app



The image displays two screenshots of the Bluemix management interface for an application named 'samplencodejs'.

**Top Screenshot:** Shows the 'Overview' page. The left sidebar has a teal 'OVERVIEW' tab selected. The main content area shows 'Health: ● Your app is running.' and a 'VIEW QUICK START' button. A red arrow points from this button to the bottom screenshot.

**Bottom Screenshot:** Shows the 'QUICK START AND NOTIFICATION' panel. It contains the following text:

**Get started with samplencodejs** ✕

Welcome to your new Node.js app!

Node.js app runs on a server-side high performance, highly scalable, event-driven environment with non-blocking I/O that is programmed with the JavaScript programming language.

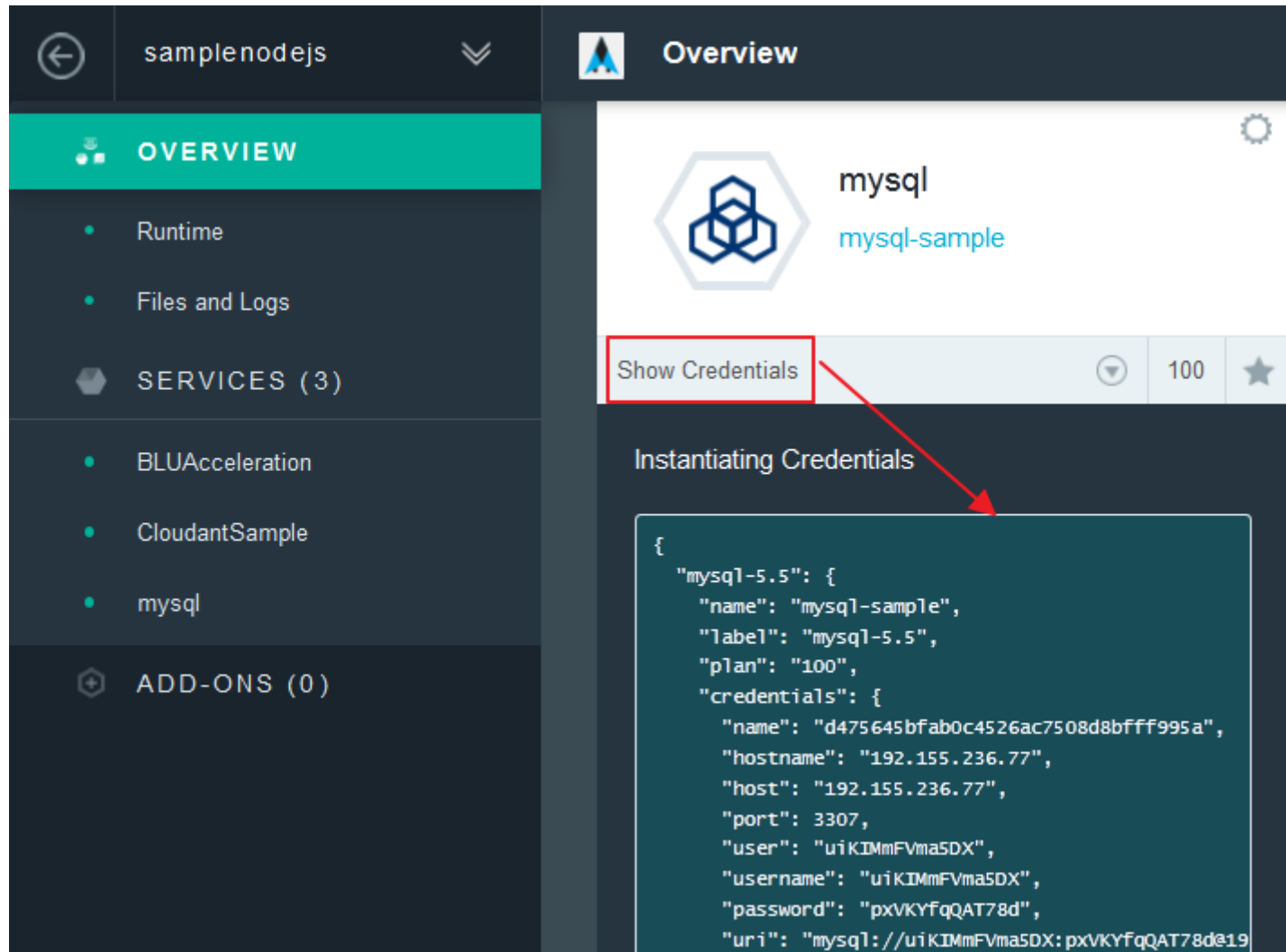
- 1 [Install the cf command-line tool.](#)
- 2 [Download the starter application package.](#)
- 3 Extract the package and

`cd`

to it.

## 3.2 Bluemix management - APP dashboard

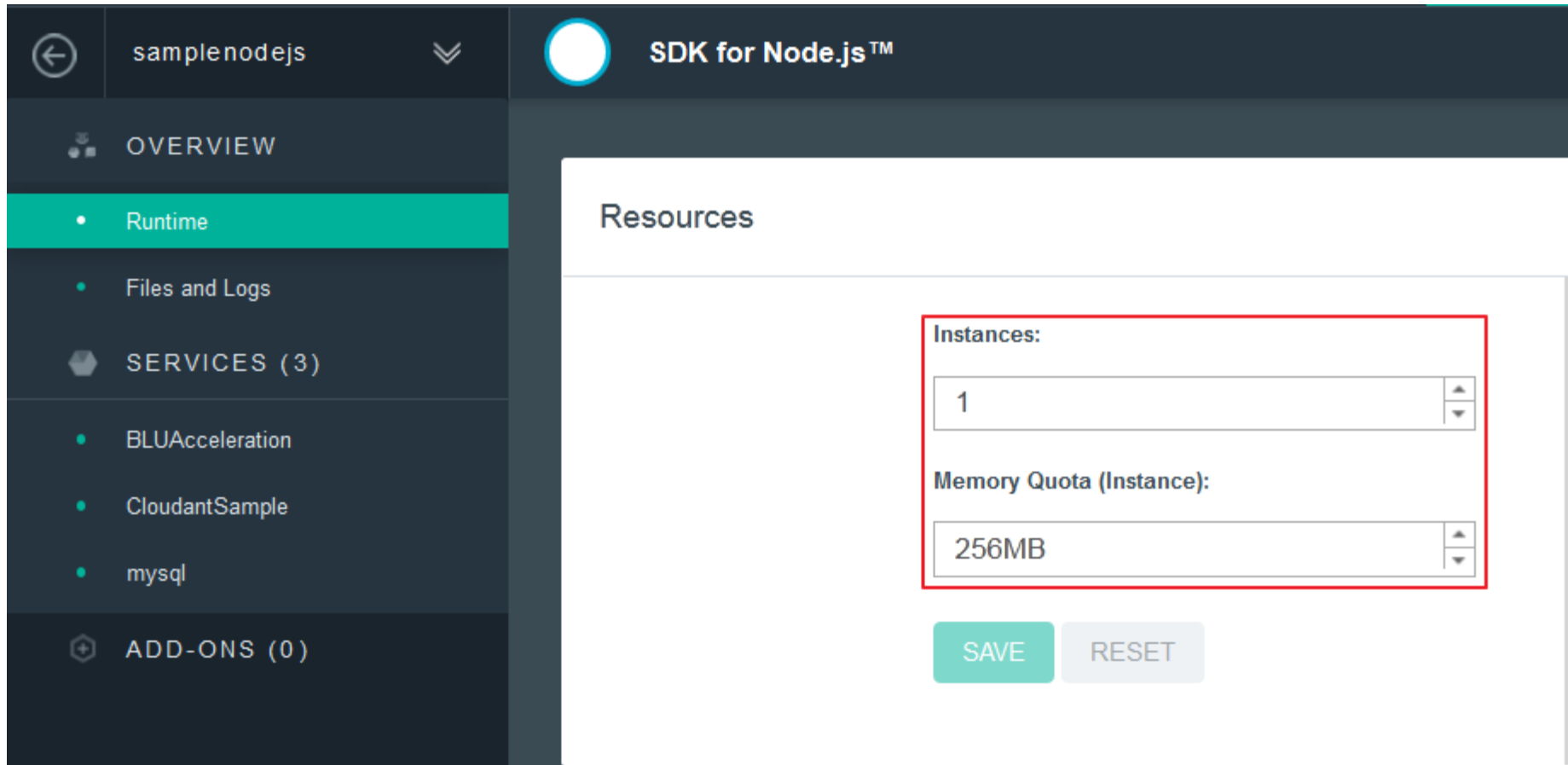
### ----Show service credentials



The screenshot shows the Bluemix management dashboard for a service named 'mysql'. The left sidebar contains a navigation menu with 'OVERVIEW' selected, followed by 'Runtime', 'Files and Logs', 'SERVICES (3)' (listing 'BLUAcceleration', 'CloudantSample', and 'mysql'), and 'ADD-ONS (0)'. The main panel shows the 'mysql' service details, including a 'Show Credentials' button (highlighted with a red box and an arrow pointing to the credentials display), a dropdown menu, a '100' value, and a star icon. Below this, the 'Instantiating Credentials' section displays a JSON object with the following details:

```
{
  "mysql-5.5": {
    "name": "mysql-sample",
    "label": "mysql-5.5",
    "plan": "100",
    "credentials": {
      "name": "d475645bfab0c4526ac7508d8bffff995a",
      "hostname": "192.155.236.77",
      "host": "192.155.236.77",
      "port": 3307,
      "user": "uiKIMmFVma5DX",
      "username": "uiKIMmFVma5DX",
      "password": "pxVKYfqQAT78d",
      "uri": "mysql://uiKIMmFVma5DX:pxVKYfqQAT78d@192.155.236.77:3307/"
    }
  }
}
```

## 3.3 Bluemix management - Runtime



The screenshot displays the IBM Bluemix console interface for managing a service. The left sidebar shows the navigation menu with the following sections:

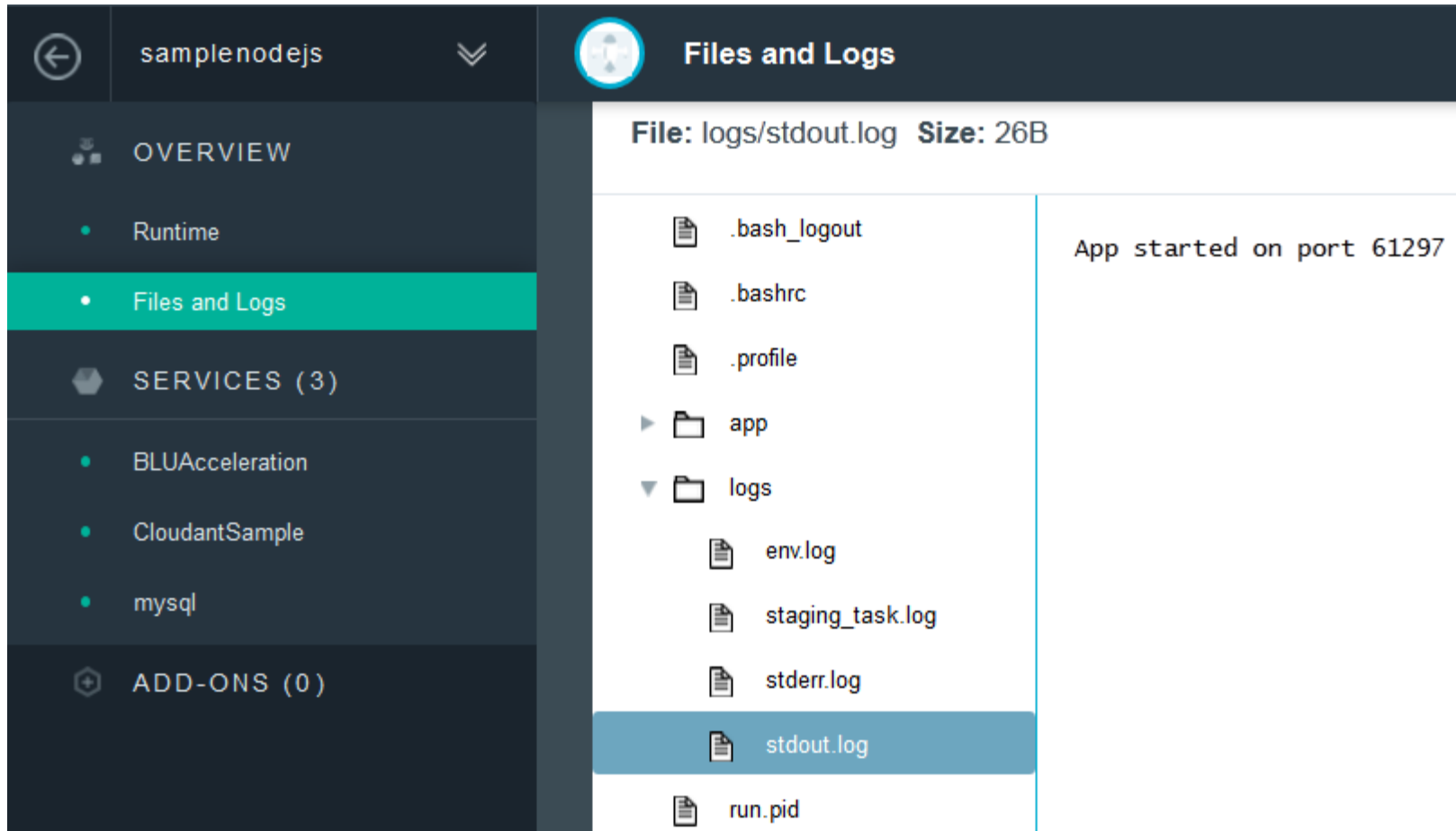
- samplenodejs** (selected)
- OVERVIEW**
  - Runtime (highlighted)
  - Files and Logs
- SERVICES (3)**
  - BLUAcceleration
  - CloudantSample
  - mysql
- ADD-ONS (0)**

The main content area is titled **SDK for Node.js™** and shows the **Resources** configuration for the selected service. The configuration is enclosed in a red box and includes:

- Instances:** A numeric input field set to **1**.
- Memory Quota (Instance):** A text input field set to **256MB**.

Below the configuration fields are two buttons: **SAVE** (green) and **RESET** (grey).

## 3.4 Bluemix management - Files and Logs



The screenshot shows the Bluemix management console interface. On the left is a dark sidebar with navigation options: OVERVIEW, Files and Logs (highlighted in teal), SERVICES (3), and ADD-ONS (0). The main area is titled 'Files and Logs' and shows the file structure for 'logs/stdout.log' (Size: 26B). The file list includes .bash\_logout, .bashrc, .profile, app, logs (expanded), env.log, staging\_task.log, stderr.log, stdout.log (highlighted), and run.pid. The content of stdout.log is displayed on the right: 'App started on port 61297'.

← samplenodejs ▾

**Files and Logs**

**File:** logs/stdout.log **Size:** 26B

- Runtime
- **Files and Logs**
- SERVICES (3)
  - BLUAcceleration
  - CloudantSample
  - mysql
- ADD-ONS (0)

File list:

- .bash\_logout
- .bashrc
- .profile
- ▶ app
- ▼ logs
  - env.log
  - staging\_task.log
  - stderr.log
  - stdout.log**
- run.pid

App started on port 61297



## 3.5 An example to add Rules service:

---Step#1. Select catalog and chose Rules service



## 3.5 An example to add Rules service:

---Step#2.Select App, Plan and input name and then click button CREATE

DASHBOARD


CATALOG


PRICING

DOCS

COMMUNITY

zhanggdc@cn.ibm.com ▼






Enables developers to spend less time recoding and testing when the business policy changes. The Rules service minimizes your code changes by keeping business logic separate from application logic.

Pick a plan

Pricing for country: 

United States ▼

Plan	Features	Price
✓ free		Free

 Free service plan (1 instance max)

TERMS

Add Service

App:

firstSample

firstSample.stage1.... ▼

Name:

Rules-pg

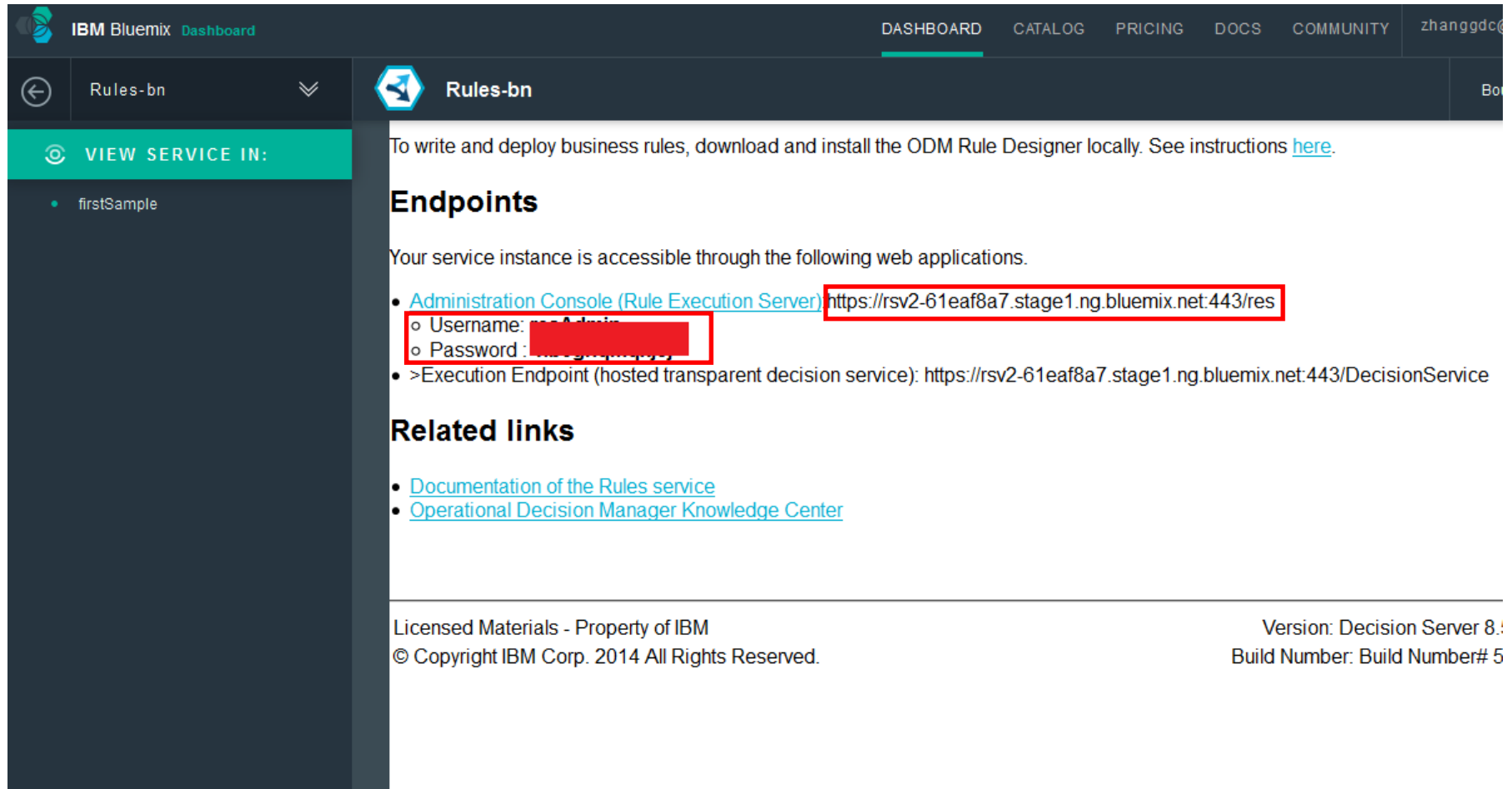
Selected Plan:

free ▼

CREATE

## 3.5 An example to add Rules service:

---Step#3. Page included instance information will be displayed after new instance has been created.



The screenshot shows the IBM Bluemix Dashboard with the 'Rules-bn' service instance selected. The left sidebar shows the 'VIEW SERVICE IN:' section with a 'firstSample' link. The main content area displays the 'Endpoints' section, which includes a list of endpoints and their details. The 'Administration Console (Rule Execution Server)' endpoint is highlighted with a red box, showing its URL, username, and password. The 'Execution Endpoint (hosted transparent decision service)' is also listed. Below the endpoints, there are 'Related links' for documentation and knowledge center. At the bottom, there is a footer with license information and version/build numbers.

IBM Bluemix Dashboard

DASHBOARD CATALOG PRICING DOCS COMMUNITY zhanggdcc

Rules-bn

VIEW SERVICE IN:

- firstSample

To write and deploy business rules, download and install the ODM Rule Designer locally. See instructions [here](#).

### Endpoints

Your service instance is accessible through the following web applications.

- Administration Console (Rule Execution Server) <https://rsv2-61eaf8a7.stage1.ng.bluemix.net:443/res>
  - Username: [\[redacted\]](#)
  - Password: [\[redacted\]](#)
- >Execution Endpoint (hosted transparent decision service): <https://rsv2-61eaf8a7.stage1.ng.bluemix.net:443/DecisionService>

### Related links

- [Documentation of the Rules service](#)
- [Operational Decision Manager Knowledge Center](#)

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Version: Decision Server 8.1  
Build Number: Build Number# 5

## 3.5 An example to add Rules service:

---Step#4.Login into admin console with url, user, password in instance page.

https://rsv2-61eaf8a7.stage1.ng.bluemix.net/res/login.jsf


ost Visited IBM IBM w3 meeting w3 L&K signTool developerworks w3 IBM Liquid Portal | Sig... w3 displayMyHoursPlan HACKI



### Sign in to the Rule Execution Server console

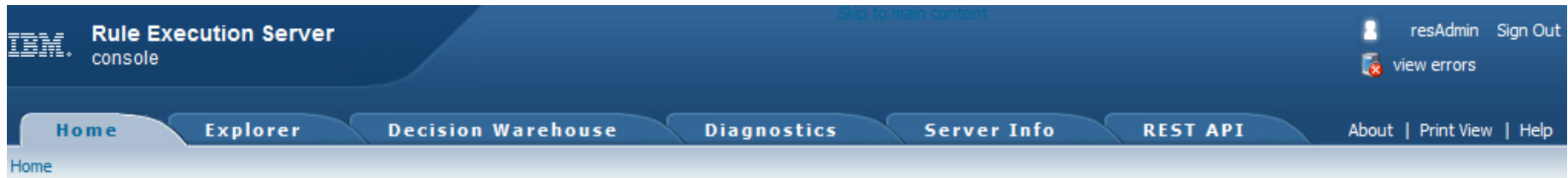
User Name

Password

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## 3.5 An example to add Rules service:

---Step#5. RuleApp can be deployed in this admin console.



### Welcome to the Rule Execution Server console

<a href="#">Explorer</a>	Use the Explorer to deploy, browse, and modify RuleApps.
<a href="#">Decision Warehouse</a>	Search and view decision traces.
<a href="#">Diagnostics</a>	Run the server diagnostics to verify installation.
<a href="#">Server Info</a>	View server configuration information and logged events.
<a href="#">REST API</a>	Access the test tool for the resource management REST API. Use this tool to format and send requests, and to view responses.

## 4. What is IBM Bluemix DevOps Services

IBM® Bluemix™ DevOps Services is software as a service (SaaS) on the cloud that supports continuous delivery.

IBM Bluemix DevOps Services provides these capabilities:

- Agile planning, through the Track & Plan service
- A Web IDE for editing and managing source control
- Source control management (SCM), through Git, Jazz SCM, or GitHub
- Automated builds and deployments, through the Delivery Pipeline service

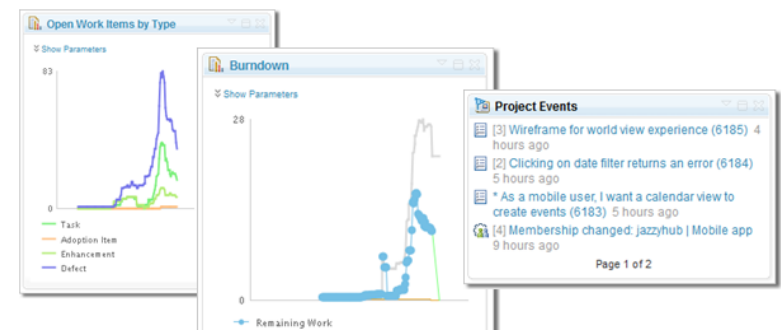
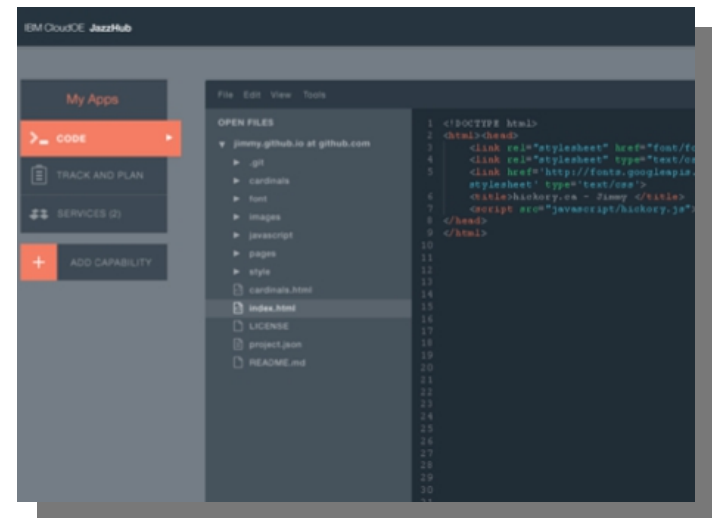


# 4.1 DevOps Experience

Continuous Integration, Agile Project Planning and Integrated IDEs

## An Integrated Developer Experience

- DevOps Solution in the cloud for developing applications.
- Integrated task tracking, agile planning, source control with auto deploy
- Complementary mobile quality and application performance monitoring
- Use your favorite tools or work from the Web IDE
- Continuous Integration: Automate builds, unit and integration testing and deployment to the Cloud using Jenkins and Rational Team Concert



## 5 Practice tips

### 5.1. Migration tips:

- Dynamic file system, so you can not write persistent content into file
- Custom buildpack can fix some dependency libraries, but it is not strong
- The IPs for some services are for internal usage in CIO Bluemix
- You can build the access bridge to CIO Bluemix with Cloud Integration Service in SWG Bluemix

### 5.2. Node.js modules management(cf command reference)

```
package.json x
1 |{
2   "name": "NodejsStarterApp",
3   "version": "0.0.1",
4   "description": "SaaS nodejs
5   "dependencies": {
6     "express": "3.4.7",
7     "ldapjs" : "0.7.1"
```

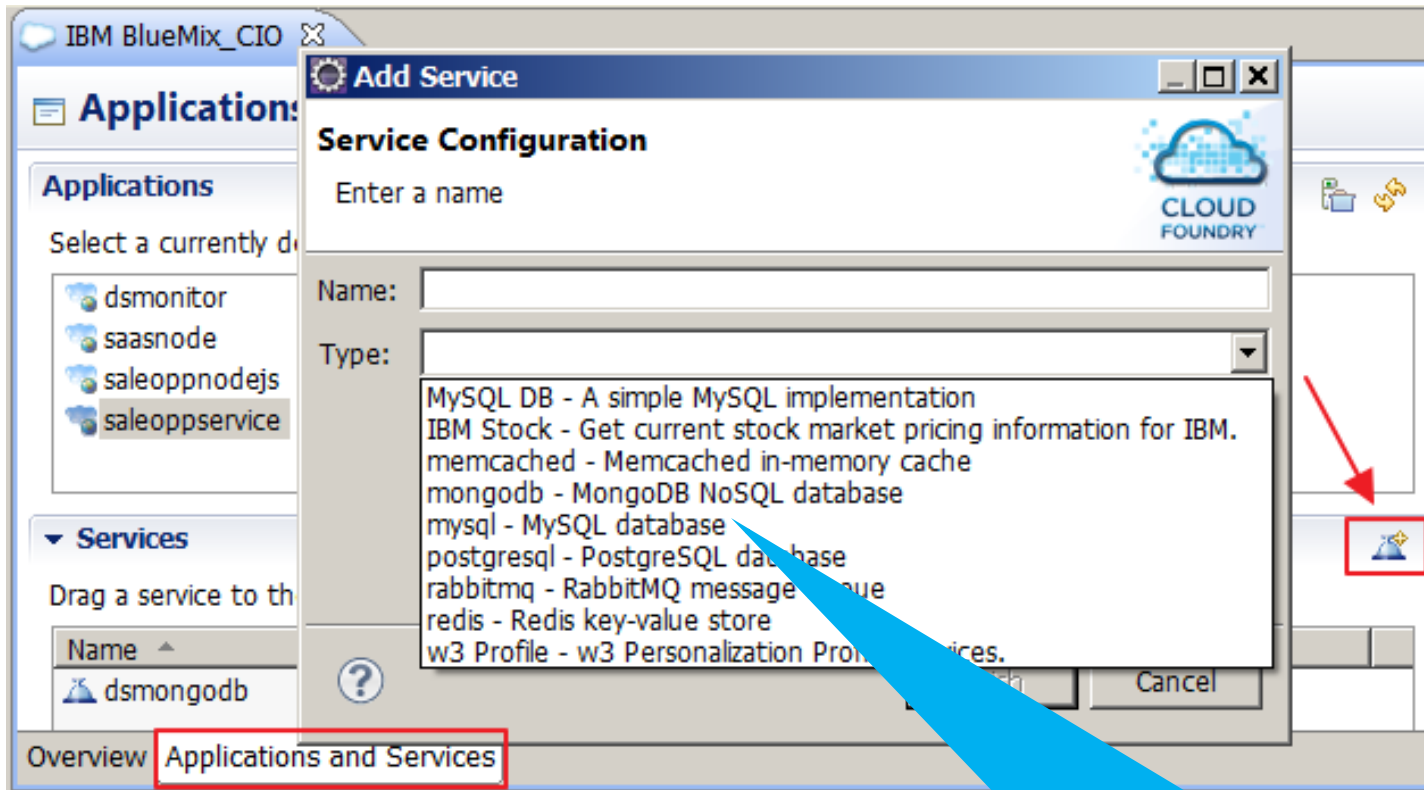
If the module version for different OS are not same, you can:

1. Add the module version information into package.json file as the left shown.
2. Remove the module files from node\_modules .
3. Add -b parameter to specify the custom buildpack if need. e.g.: -b <https://github.com/ibmdb/db2nodejsbuildpack>



## 5 Best practices - continued

### 5.3. Add service by Bluemix Eclipse plugin(you can get it in eclipse marketplace)



If there is no UI to add service node such as CIO Bluemix, you can use Bluemix plugin to do it remotely.

## 6. Bluemix environments

CIO Bluemix: <http://ace.ciopaas1.innovate.ibm.com/>

SWG Bluemix: <http://console.ng.bluemix.net/>

Stage Bluemix: <https://console.stage1.ng.bluemix.net/>

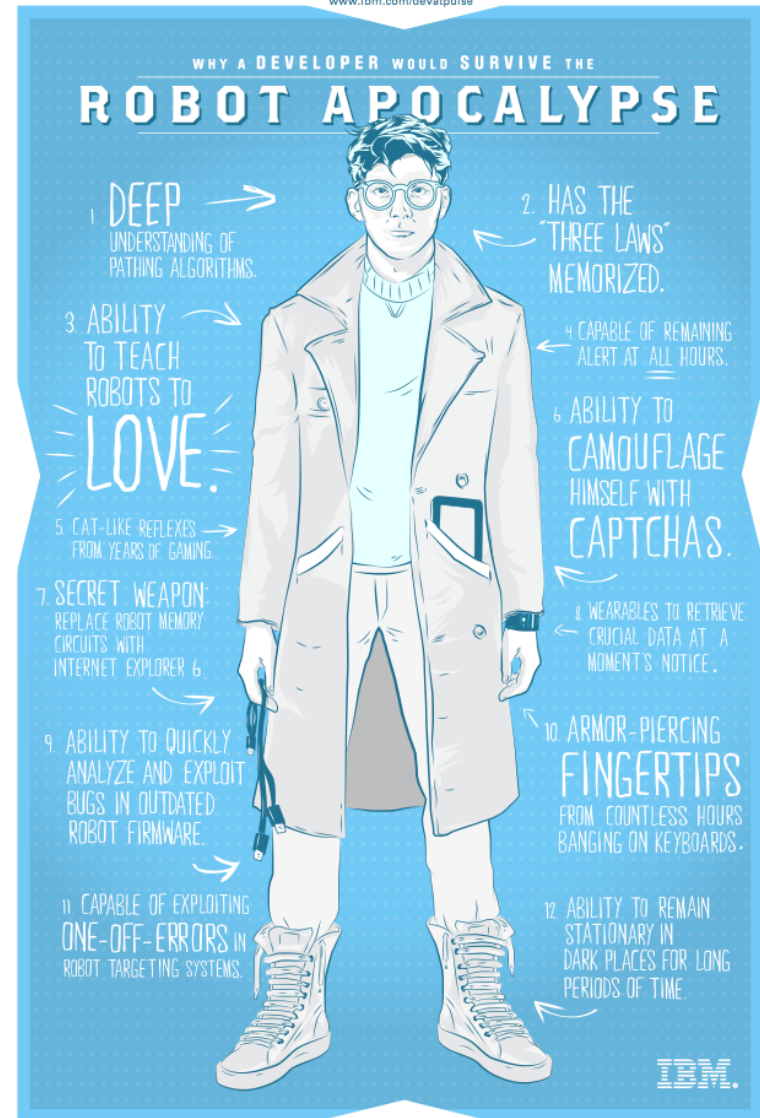
Difference among them:

Features	CIO	SWG	Stage
Stability	Good	Good	Bad
Diversity	Bad	Good	Good
Zone	Blue	Red	Red
Cost	Free	Charge	Free

# Thanks!

The next billion dollar idea starts with a single developer.

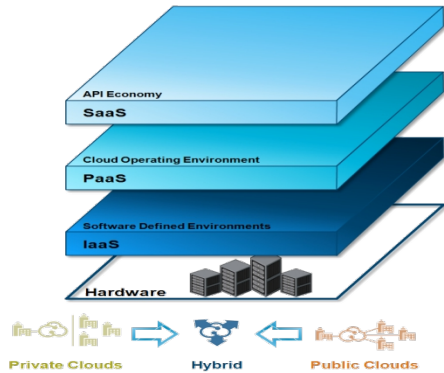
That developer starts with a single line of code



★ DEV@PULSE / A DEVELOPER HAPPENING / FEBRUARY 24-25 / HAKKASAN, LAS VEGAS

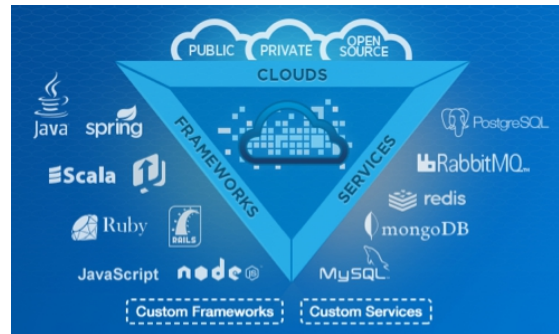
# Appendix: Cloud Foundry

# Why Cloud Foundry?



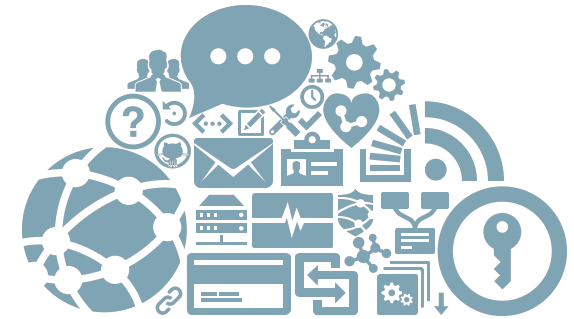
## Open Cloud Platform

There is an increasing appetite for cloud-based mobile, social and analytics applications from line-of-business executives - drives the need for a more open cloud development platform



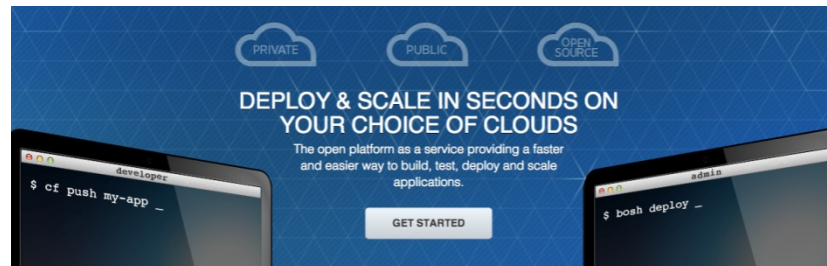
## Meets Developer's Needs

Focus on app development, not provisioning VMs, databases, messaging servers, etc  
Agile development model  
Deploy and scale in seconds

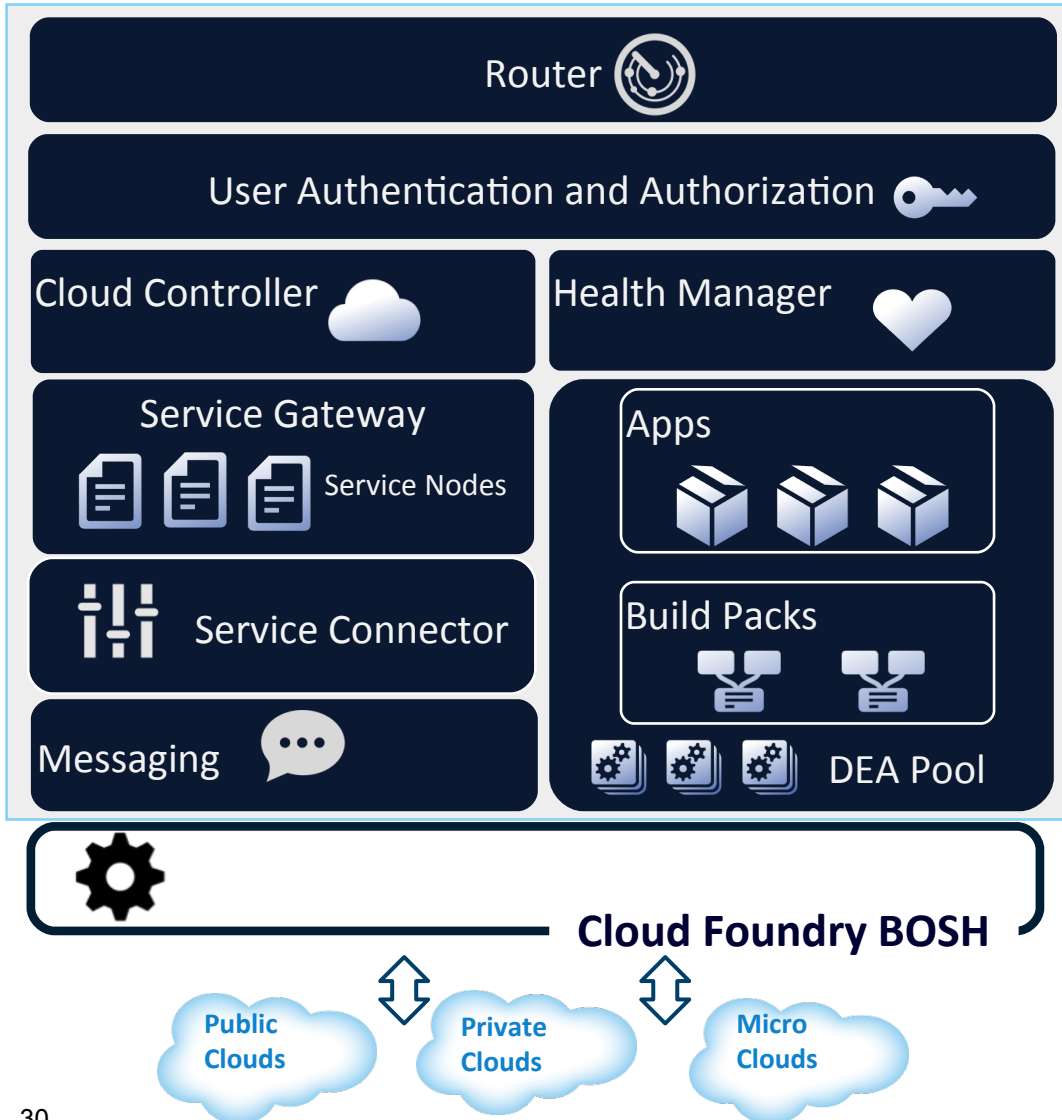


## Compelling Community

Cloud Foundry has a compelling community and emerging ecosystem as well as a mature set of capabilities and robustness



# Cloud Foundry Components



## Cloud Foundry PaaS

Cloud Foundry services registry and runtime management layer. Components are dynamically discoverable and loosely coupled, exposing health through HTTP endpoints so agents can collect state and act on it.

**Application Execution (DEA)**  
The Droplet Execution Agent manages application instances, tracks started instances, and broadcasts state messages.