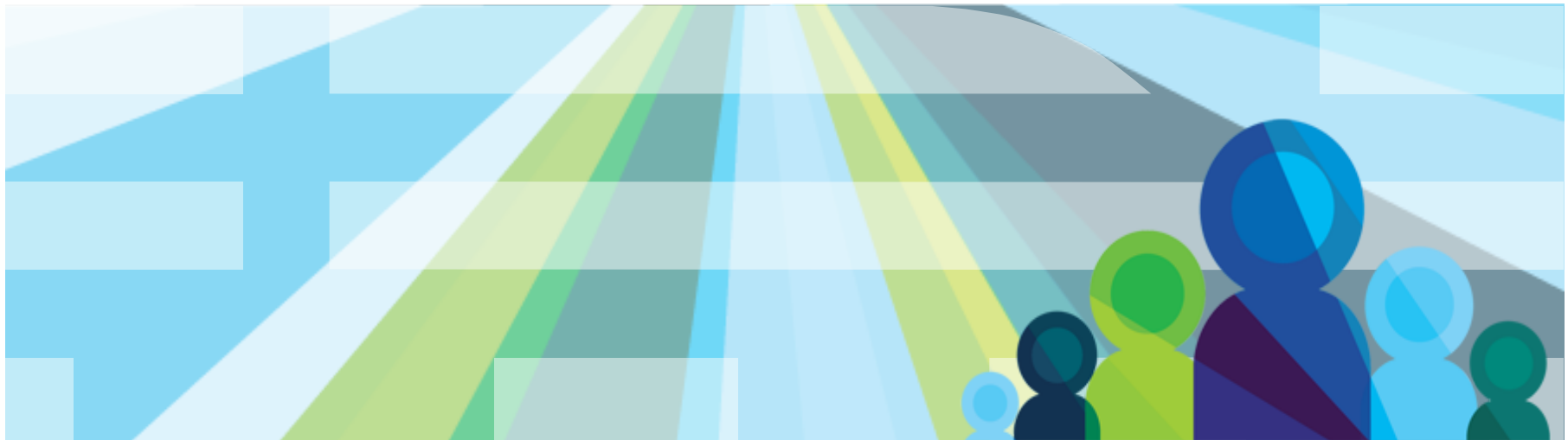
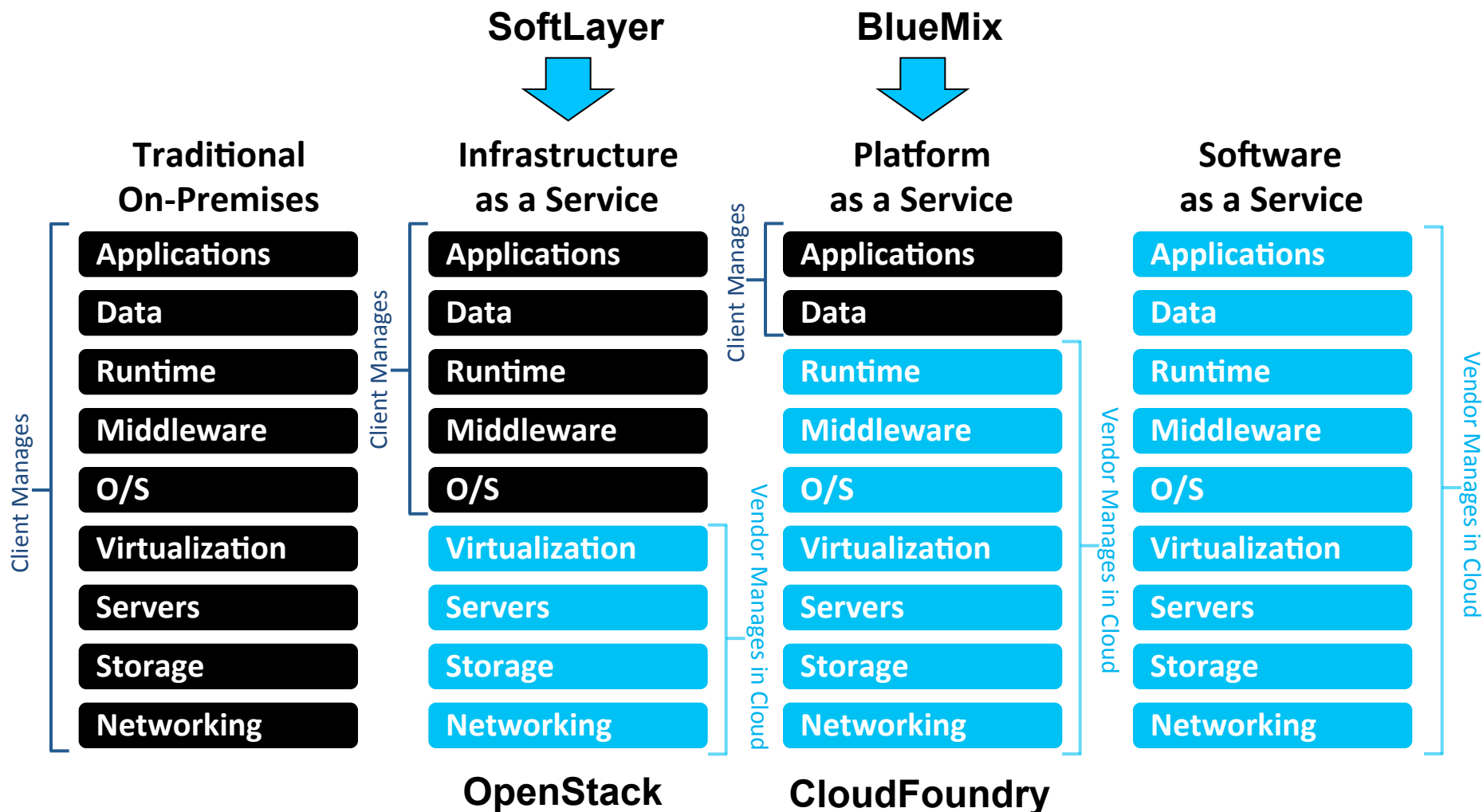


# Lesson 1: BlueMix Overview & UI Dashboard



# Cloud Service Models



Customization; higher costs; slower time to value

Standardization; lower costs; faster time to value

# SoftLayer's Infrastructure changes the definition of cloud

Competitive Cloud Mandates

...all resources are **virtualized**.

...all resources are **shared**, at every granular level.

## Think Differently ....

With SoftLayer, neither is mandated, opening up cloud computing to new applications and use cases

... **virtualization** is a choice with a flexible set of options.

... resources can be **shared**, **dedicated**, or **mixed**.



# SoftLayer IaaS – More than virtual machines

- Virtual Machines
  - Public (Shared Hardware)
  - Private (Dedicated Hardware)
- Bare Metal (Physical) Machines
  - Built to specification
  - Standard Builds
- Private Cloud
  - Dedicated hardware
  - Customer Managed Hypervisor
- Networking
  - Firewalls
  - VPNs
  - Routers
  - Load Balancers
- Storage
  - Local
  - Network-Attached Storage
  - iSCSI Storage Area Network
  - Dedicated iSCSI
  - Build-Your-Own
  - ObjectStorage (OpenStack)



## Evolution of BlueMix

### Business Problems

- “I am losing talented developers because they don’t have access to the tools they want to use”
- “It’s not that my developers lack the skills to manage infrastructure, it’s that I don’t want them to. I need them writing code for the business”
- “I am nervous we are spending time and money integrating things that should naturally fit together”
- “My average developer has 250 open change requests from the business. That is a lot of business value we need to deliver”
- “I am not confident that the platform is secure as I integrate into existing systems”



## Evolution of BlueMix (continued)

### Developer Problems

- Spending time installing middleware keeps me from coding
- Sifting through pages of docs diminishes desire to use a new technology.
- Accessing data between different apps often requires writing custom data layers and routines to share, sync, and manage data.
- Creating API integrations is difficult when working with on-premise data.
- Setting up a productive development for a developer



## Evolution of BlueMix (continued)

- **Inefficiency and delay** in managing the application development process in disparate, heterogeneous environments
- **Limited adaptability** in managing disparate infrastructures to handle multiple application developments across the lifecycle
- **Lack of predictability and scaling** for the future, when transitioning from individual development environments to QA and production



# BlueMix Value to Developers

- <2 Mins: from idea to search to coding via Integrated developer tools.  
[E.g. Polling app in 2 mins](#)
- Everything you need to write modern mobile apps are pre-integrated and preconfigured
- Self service to start, scale and make money!

**Simplicity & Speed**

- BlueMix Framework and Services are built based on Open standard
- Use what you already use: MongoDB, NodeJS
- Need something more, find it in Marketplace!

**Open & Flexible**

- Best in class security, support and reliability, loved by Fortune 500 companies.
- Reuse your existing business services to create new composable apps integrating with what you already have.

**Brand trust & integration**





# Why BlueMix?

- Speed – Time-to-Value
  - A. Fast—increase velocity of IT service contribution to business from application development to infrastructure deployment and monitoring
  - B. Improved—deploy high value-generating applications quickly instead of spending excessive time in scripting and debugging
- Agility – Operational Efficiency
  - A. Adaptable—scale environments elastically based on business demand
  - B. Extensible—embrace and transform legacy environments to a platform approach
- Predictability – Reduced Risk and Cost
  - A. Improve application performance and availability
  - B. De-risk and separate concerns of application development and operations

## Why BlueMix? (Cont'd)

- BlueMix is a composable environment built on open standards
- BlueMix is an open, integrated and flexible cloud-centric platform
- BlueMix changes the way developers work - Move quickly, see results fast.
- BlueMix leverages API's and SDK's that can quickly and easily be incorporated with the latest technology
- BlueMix Supports fit-for-purpose programming models (polyglot) and services.
- BlueMix Embeds manageability of services and applications.
- BlueMix Provides optimized and elastic workloads.
- BlueMix Enable continuous availability.

We're just getting started.

Register at: <http://www.bluemix.net>

Please put  
**'BlueMixDays'**

in the reason field when registering.



# BlueMix UI Dashboard

Main menu

IBM Codename Bluemix **Dashboard**

DASHBOARD

CATALOG

DOCS

Citibank Personal



Jane Smith  
Logout

**Getting Started Guide** ×

Welcome to IBM Codename Bluemix!

To get started, you can compose an application or add a service [from our catalog](#). To learn more, visit our [documentation](#).

[Browse Catalog](#) ▶

1:52 pm

Space A

ALL (0)

APPS (0)

SERVICES (0)



MEMORY: 0GB / 7GB



SERVICES: 0 / 50

## Applications

Looks like you don't have any apps yet.  
Click below to start creating!

+ Create an application

## Services

Looks like you don't have any services yet.  
Click below to start creating!

+ Create a service



# Catalog - Delivering Composable Services for building an 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

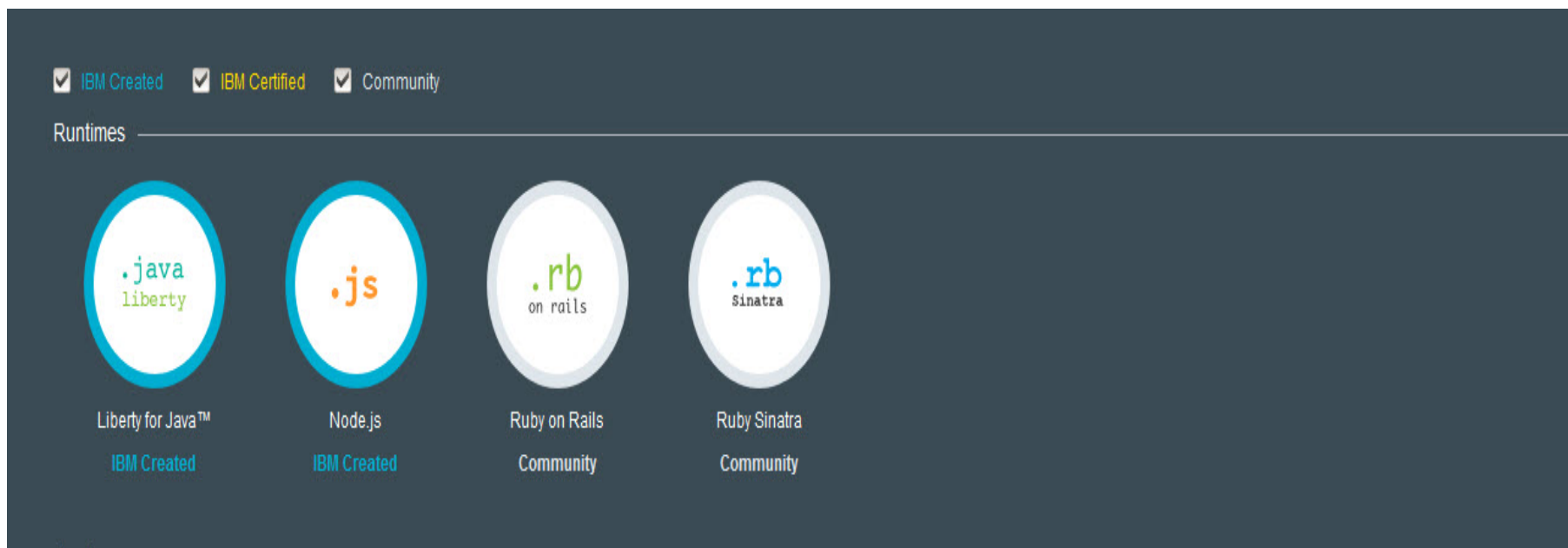
Build hybrid environments. Connect to on-premises systems of record plus other public and private clouds. Expose your own APIs to your developers.

## Extend SaaS Apps

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

# App Runtimes

Runtimes in the BlueMix represent different buildpacks that are provided. Each runtime is an application with a starter application code deployed, and a starter application is a template so that you can use it directly with the existing buildpack from BlueMix user interface.



The screenshot shows the BlueMix Runtimes selection interface. At the top, there are three filter checkboxes:  IBM Created,  IBM Certified, and  Community. Below the filters, the word "Runtimes" is displayed. Four runtime options are shown in a row, each with a circular icon and associated text:

- Liberty for Java™**: Icon with ".java" and "liberty". Category: IBM Created.
- Node.js**: Icon with ".js". Category: IBM Created.
- Ruby on Rails**: Icon with ".rb" and "on rails". Category: Community.
- Ruby Sinatra**: Icon with ".rb" and "sinatra". Category: Community.

# Services

A service is a piece of code that BlueMix hosts. And the service offers a piece of functionality for applications to use. BlueMix provides a set of pre-defined services

that you can use directly:

Services



BLUAcceleration  
IBM Created



Cloud Integration  
IBM Created



Cloudant  
IBM Created



CloudCode  
IBM Created



DataCache  
IBM Created



Decision  
IBM Created



ElasticMQ  
IBM Created



JazzHub DevOps  
IBM Created



JSONDB  
IBM Created



LogAnalysis  
IBM Created



MAM  
IBM Created



MapReduce  
IBM Created



MobileData  
IBM Created



MobileQualityAssurance  
IBM Created



Push  
IBM Created



SessionCache  
IBM Created



SQLDB  
IBM Created



SSO  
IBM Created



Geocoding  
IBM Certified



Reverse Geocoding  
IBM Certified



Travel Boundary Service  
IBM Certified



Twilio



Validate Address



mongodb



mysq



postgres



rabbitmq



redis

# Applications on your dashboard

The dashboard displays a sidebar on the left with a dropdown menu set to 'dev'. Below it are sections for 'ALL (10)', 'APPS (4)', and 'SERVICES (6)'. The 'APPS (4)' section lists: myupload-vellanki, SimpleSentimentAnalysis..., vellanki-mobileservices, and vellanki1-twitter\_influence... The main area features three summary cards: 'MEMORY: 2.188GB / 8GB' with a gauge, a green checkmark icon, and 'SERVICES: 7 / 20' with a gauge. Below these is an 'Add an application' button. The application grid contains four cards, each with a rocket icon and a gear icon. The first card is partially visible, showing 'vellanki1-twitter influenc...' and 'vellanki1-twitter\_influence\_analy...'. The second card is 'SimpleSentimentAnalysis...' with URL 'SimpleSentimentAnalysis-349bd...'. The third card is 'myupload-vellanki' with URL 'myupload-vellanki.nq.bluemix.net'. The fourth card is 'vellanki-mobileservices' with URL 'cc-30e8f45d-8a0a-4f1f-9af8-57...'. Each card includes a status indicator (green dot) and the text 'Your app is running great!'. The 'Mobile' card also features a 'Mobile' icon and a stack of service icons including '.js', 'API', 'DB', 'Queue', and 'Auth'.



# Organizations, Spaces , Users and Domains

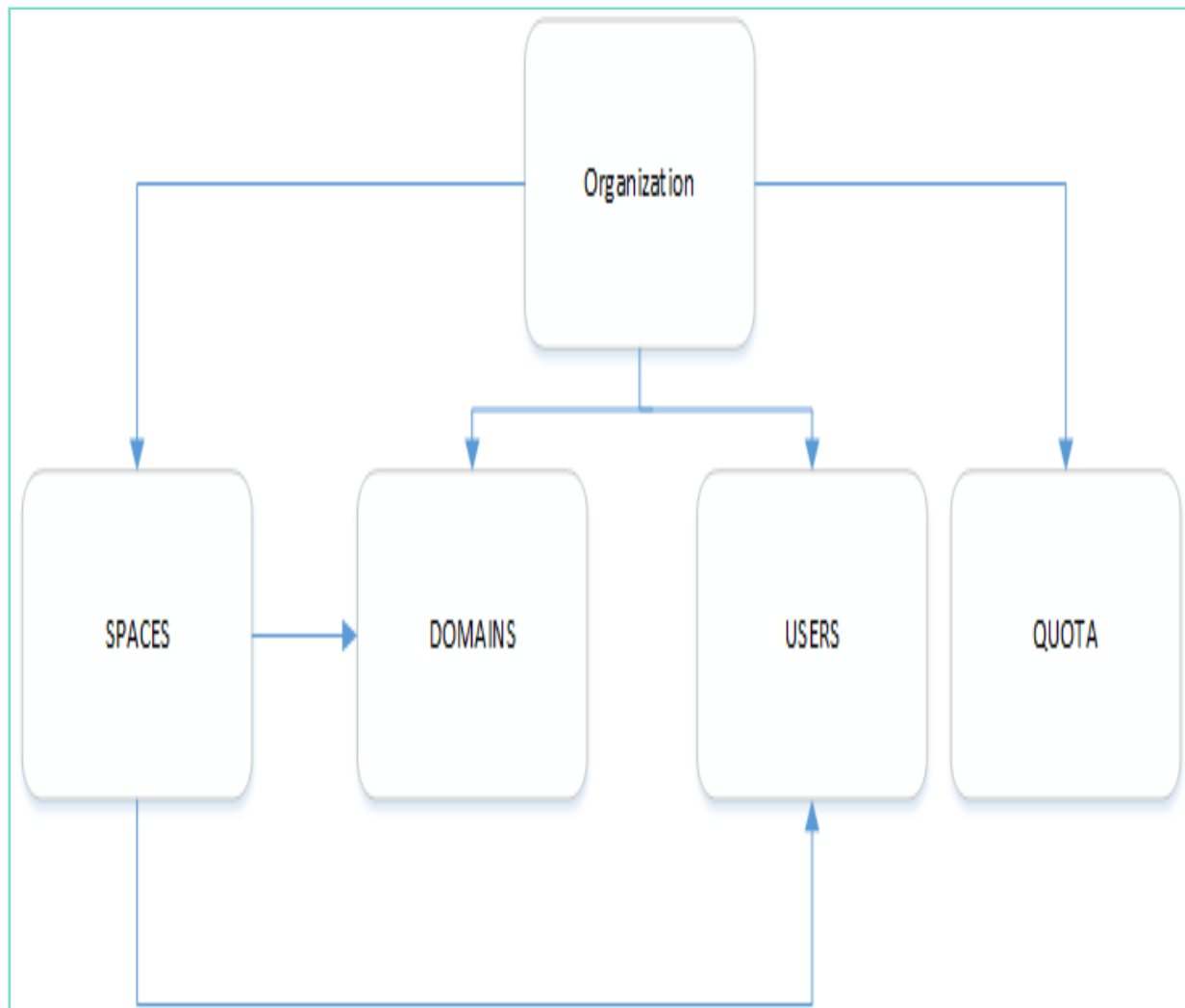
- **Organizations**

**Users**

**Domains**

**Spaces**

**Quota**



# Organizations

An organization is defined by the following items:

## **Spaces -**

Spaces provide a mechanism to collect related applications, services, and the users that can collaborate on the resources. An organization can contain multiple spaces. All application and service creation within BlueMix must be associated with a space.

## **Users -**

A user must be assigned to an organization to be granted permission to the spaces within the organization.

## **Domains -**

Domains provide the route on the Internet that is allocated to the organization. A route has a sub-domain and a domain. A sub-domain is typically the application name. A domain might be a system domain, or a custom domain that is the personally registered for your application.

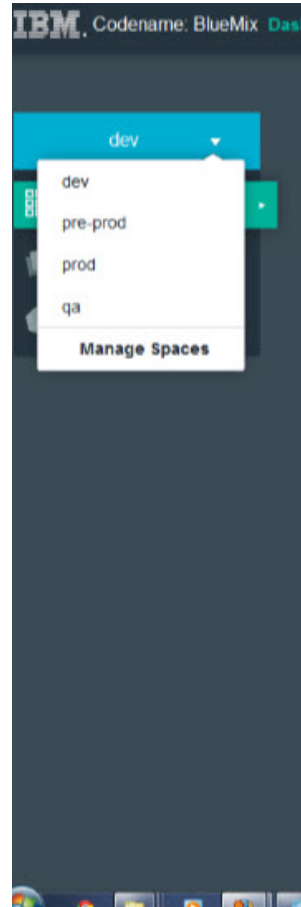


## Quota -

Quota represents the resource limits for the organization. Quota defines the number of services and the amount of memory that can be allocated for use by the organization. Any application or service in a space of the organization contributes to the usage of the quota. The quota is assigned when organizations are created.



# Spaces



# Users

IBM Codename: BlueMix Organizations DASHBOARD CATALOG DOCS bala.vellanki@us...

bala.vellanki@us.ibm.com

Last refresh: 10s

- ▼ bala.vellanki@us.ibm.com
  - dev
  - pre-prod
  - prod
  - qa

Organization:  Create a new space

USERS DOMAINS QUOTA

ADD USER

USERNAME	MANAGER	BILLING MANAGER	AUDITOR	
bala.vellanki@us.ib...	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
bkvellanki@gmail.c...	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

SAVE RESET

# Domains

bala.vellanki@us.ibm.com

Last refresh: 3m

- ▼ bala.vellanki@us.ibm.com
  - dev
  - pre-prod
  - prod
  - qa

Organization:

[Create a new space](#)

USERS

DOMAINS

QUOTA

System Domain: ng.bluemix.net

[ADD DOMAIN](#)

CUSTOM DOMAINS

ACTIONS

parnterapps.blumix.net



partners.vellanki.net



# Quota

bala.vellanki@us.ibm.com

Last refresh: 3m

▼ bala.vellanki@us.ibm.com

- dev
- pre-prod
- prod
- qa

Organization:

[Create a new space](#)

USERS   DOMAINS   **QUOTA**

MEMORY:	SERVICES:	PLAN	PRICE
2.188GB / 8GB	7 / 20	free	Free



# Buildpacks

- A buildpack is a collection of scripts responsible for preparing your code for execution on the target PaaS. A buildpack can gather the framework and runtime dependencies of an application, and package them with the application into a droplet that can be deployed to the cloud.
- IBM created buildpacks in BlueMix
  - Liberty Built-in
  - Node.js Built-in



## Buildpacks – Cont'd

### External buildpacks

- There are also external buildpacks that are provided by the Cloud Foundry community. For detailed information of external buildpacks,.
- If you want to use the built-in Cloud Foundry buildpacks to overwrite the IBM built-in buildpacks, you must specify the URL with the *-b* option on the *cf push* command. For example, use the Cloud Foundry built-in Java buildpack with *cf push my\_app -b https://github.com/cloudfoundry/java-buildpack*, and use the Cloud Foundry built-in Node.js buildpack with *\$ cf push my\_app -b https://github.com/cloudfoundry/heroku-buildpack-nodejs.git*.
- External buildpacks are not supported by IBM, and you might need to contact the Cloud Foundry community for support.

BuildPack	Description	Preinstalled?	Runtime	Version(s) *->default	Frameworks
IBM Node.js	IBM's hardened, supported version of Node	Y	Node.js		
IBM Liberty Buildpack	IBM's Java Buildpack	Y	Liberty Web		
CF Ruby	Ruby Buildpack		Ruby	1.8.7 1.9.2 1.9.3* 2.0	Rack, Rails, Sinatra
CF Java	Java Buildpack		Java	OpenJDK 1.6, 1.7*, 1.8	
			Groovy	1.5-.x>2.1.x*	
			Tomcat	6.0.x-7.0.x*	
			Spring Boot	0.5	
			Play	0.7.1	
CF Node	Node.js			Many 0.4.7-0.10.6 0.10.latest*	npm
Other community Buildpacks	There are many buildpacks available on github. Some are widely used and maintained and others are very limited		Go, Clojure, PHP, .Net ....		



# Monitoring and Logs

- OVERVIEW
- RUNTIME
- Files and Logs
- MONGODB



### Resources

Instances:

Memory Quota (Instance):

SAVE RESET

Memory Quota	Current	After
Total:	8.000GB	--
Other Apps:	1.687GB	--
This App:	512.0MB	512.0MB
Per Instance:	512.0MB	512.0MB
Instances:	1	1
Available:	5.812GB	5.812GB

### Instance Details

● 1 of 1 instances running

Instance	State	CPU	Memory Usage	Disk Usage	Start Time
0	Running	1.0%	161.0MB / 512MB	264.1MB / ...	Mar 10, 2014, 2:49:06 PM

# Monitoring and Logs

vellanki1-twitter\_influence...

- OVERVIEW
- RUNTIME
- Files and Logs**
- MONGODB



Runtime

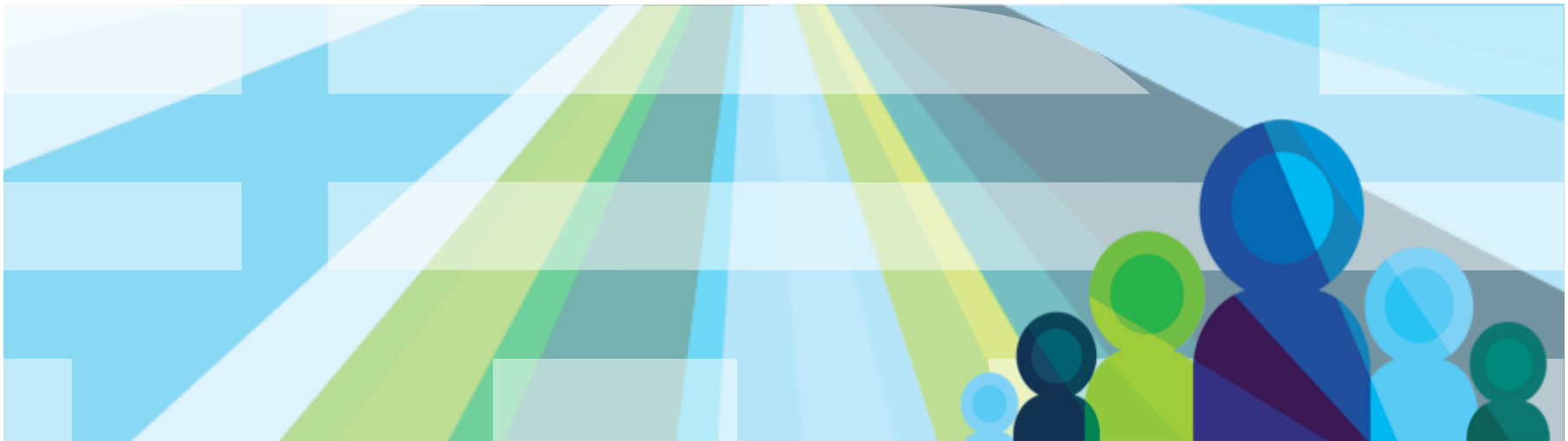
## Files and Logs

File: /logs/env.log Size: 1.3K

<ul style="list-style-type: none"><li>.bash_logout</li><li>.bashrc</li><li>.profile</li><li>app</li><li>droplet.yml</li><li>logs<ul style="list-style-type: none"><li><b>env.log</b></li><li>messages.log</li><li>staging_task.log</li><li>stderr.log</li><li>stdout.log</li></ul></li></ul>	<pre>TMPDIR=/home/vcap/tmp VCAP_APP_PORT=63679 USER=vcap VCAP_APPLICATION={"instance_id":"3b8c586149fa425188c0d714a4dd1ee4","instance_ PATH=/bin:/usr/bin PWD=/home/vcap VCAP_SERVICES={"mongodb-2.2":[{"name":"mongodb-ksd4g","label":"mongodb-2.2", SHLV=1 HOME=/home/vcap/app PORT=63679 VCAP_APP_HOST=0.0.0.0 DATABASE_URL= MEMORY_LIMIT=512m _=/usr/bin/env</pre>
--	--



# Lesson 2: BlueMix Architecture



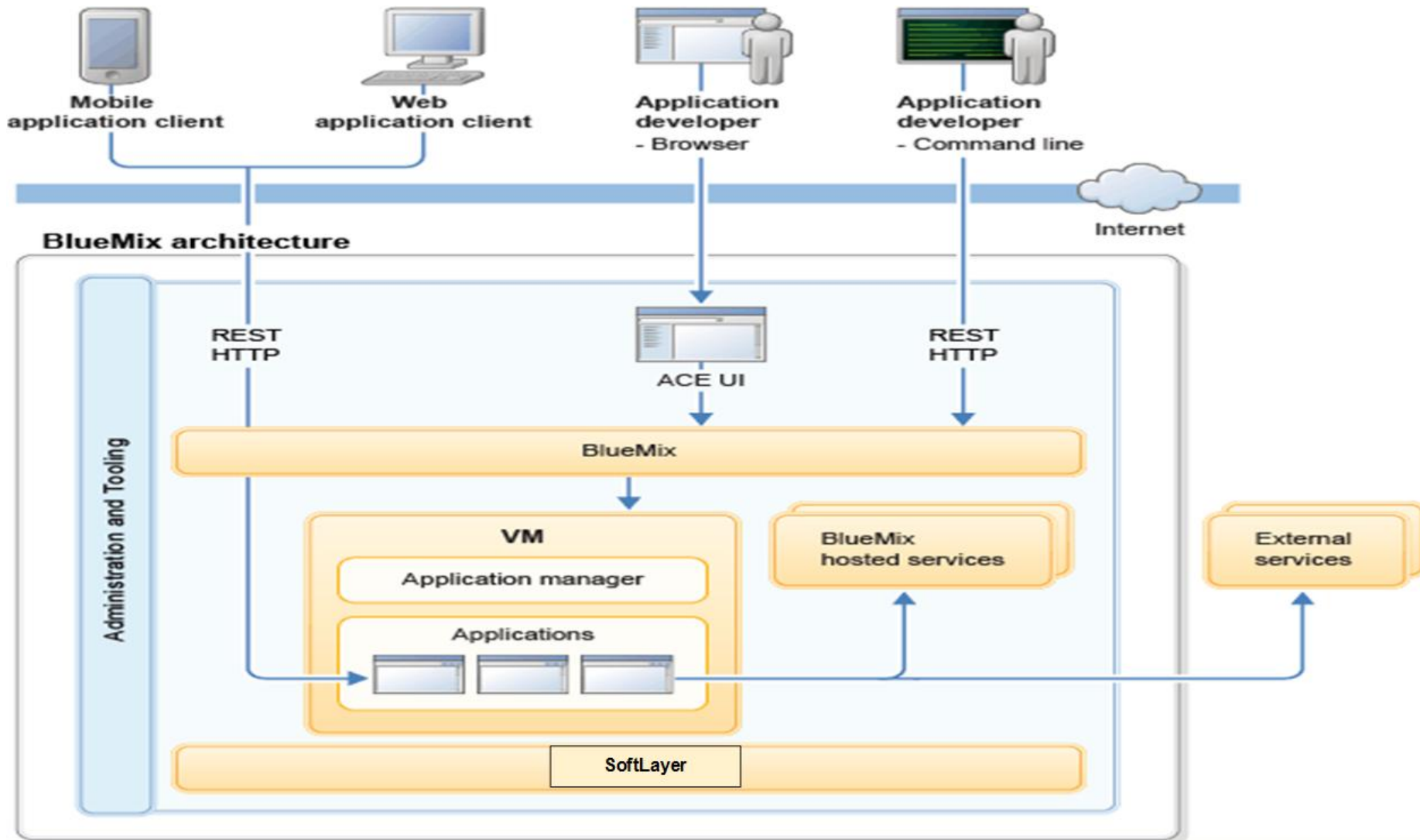
## Lesson 2 - BlueMix Architecture

### What is Blue Mix?

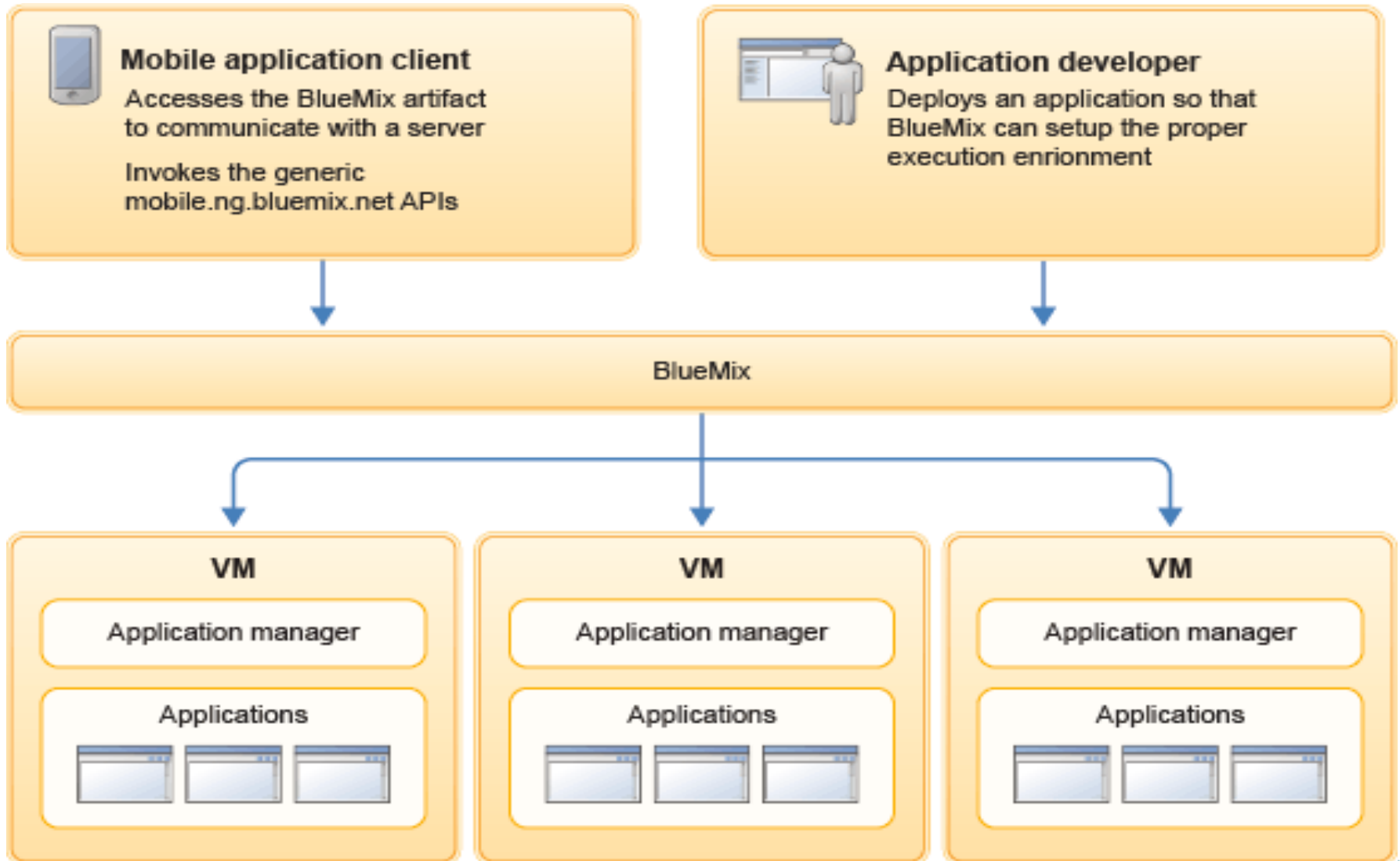
1. BlueMix is an implementation of IBM's Open Cloud Architecture, leveraging [Cloud Foundry](#) to enable developers to rapidly build, deploy, and manage their cloud applications, while tapping a growing ecosystem of available services and runtime frameworks.
2. IBM will provide services and runtimes into the ecosystem based on our extensive software portfolio.
3. For developers, this meant that we wanted a system that would significantly reduce the time needed to create the application, to provision it, allow for flexible capacity in terms of storage, but also bandwidth and processing power, and which would handle the back-end infrastructure needs without requiring the developer to spend their valuable time doing so.



# BlueMix Architecture – High Level

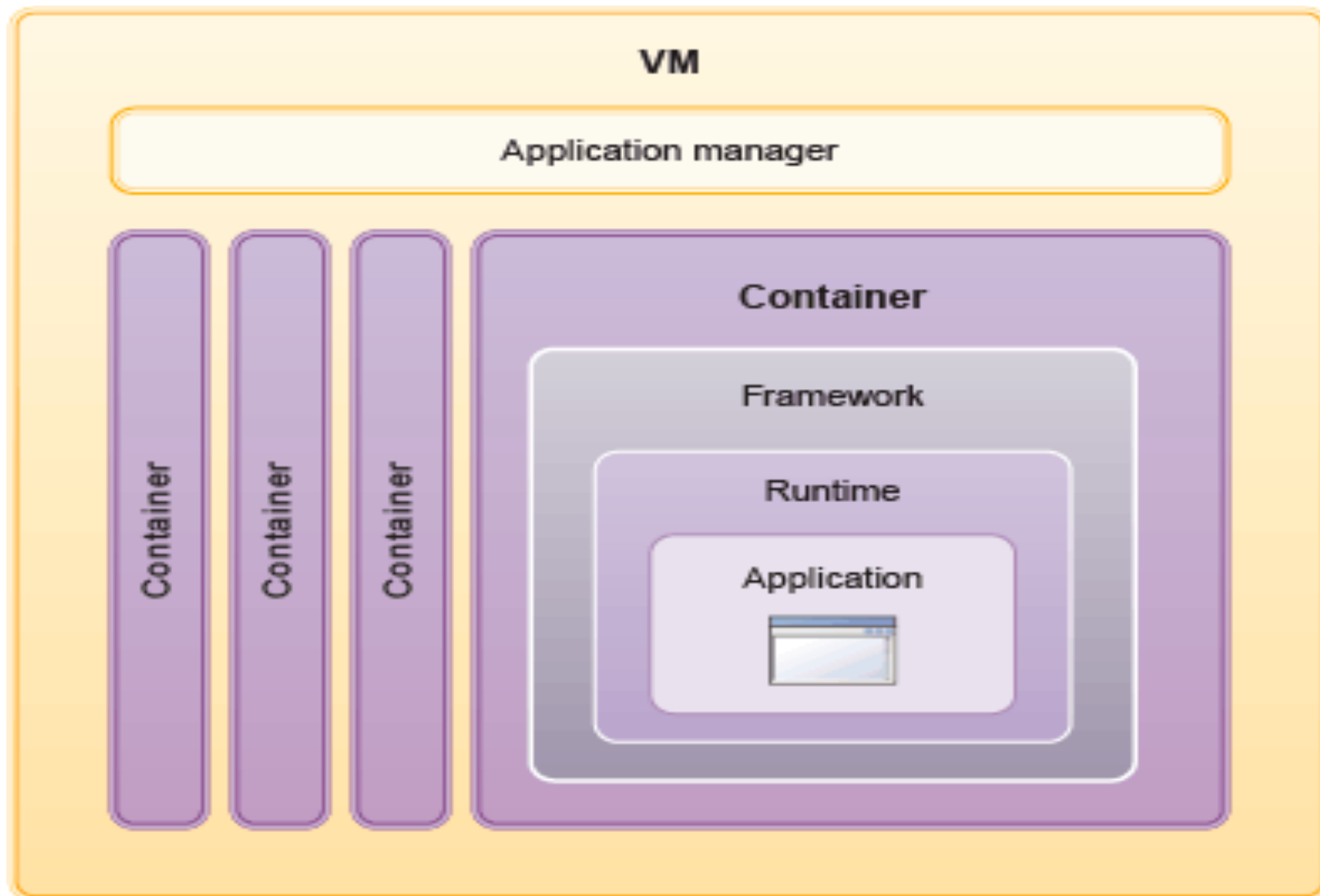


# BlueMix Architecture – How it works

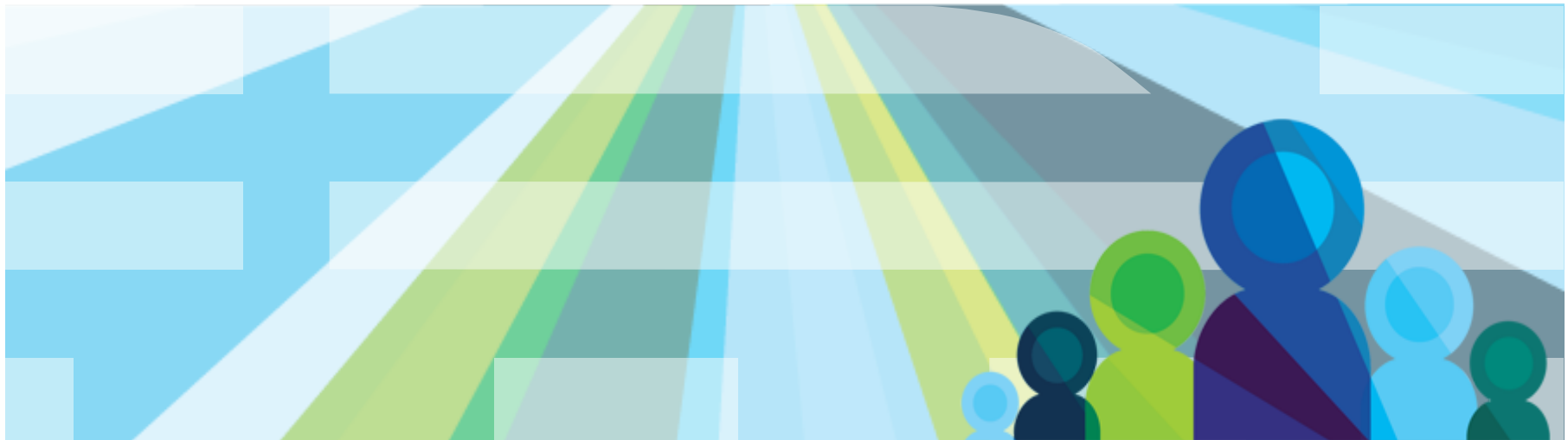




# BlueMix Architecture – How it works (Cont'd)



# Lesson 3: DevOps Services for BlueMix



## What is DevOps Services for BlueMix?

DevOps Services for BlueMix is an end-to-end solution in the cloud providing an open, integrated rapid development experience that scales.



## What is DevOps Services for BlueMix?

DevOps Services for BlueMix is an end-to-end solution in the cloud providing an open, integrated rapid development experience that scales.



# IBM BlueMix DevOps Services

*An Open, Integrated Rapid Development Experience that Scales*

## 1. A Premier DevOps Service for IBM Cloud Platform

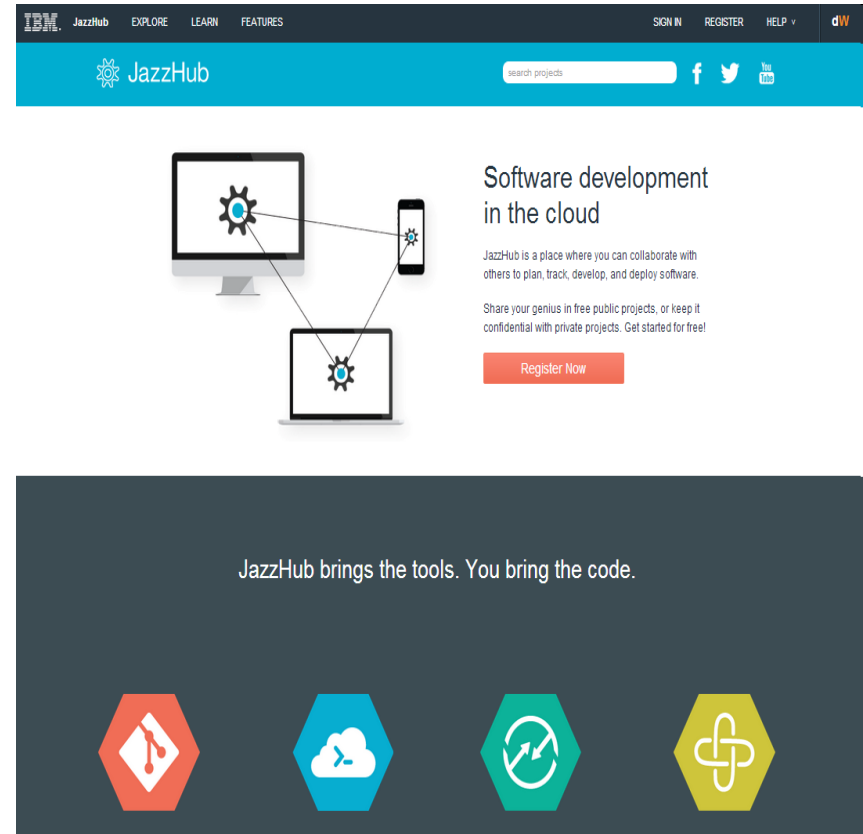
- A. Promotes incremental frictionless adoption of DevOps Services for BlueMix

## 2. An Integrated Developer Experience

- A. End-to-end DevOps Solution in the cloud for developing applications.
- B. Integrated task tracking, agile planning, source control with auto deploy
- C. Complementary mobile quality and application performance monitoring
- D. Use your favorite tools or work from the Web IDE
- E. Free public and fee-based private projects (free for now now)

## 3. Scalable, secure, enterprise-ready

- A. Runs on SoftLayer Infrastructure



# DevOps Services available today



## Mobile Quality Assurance

Instrument apps to capture tester and live-user experiences, including context-aware crash log and in-app bug reports, in-app user feedback and insightful and streamlined quality metrics.



## Git Hosting

Integrated Git hosting, with deployment via Git push and auto deployment from Git repositories.



## Deployment Automation

Single stage Continuous Deployment



## Monitoring and Analytics

Application Performance Monitoring and Management



## Web IDE

Web IDE — scripted languages. Eclipse - Simplified client setup



## Agile Development

Adds IBM tooling and service for agile planning and tracking with the cloud platform.



# Get productive with BlueMix DevOps Services **in minutes**

1. Register at [www.jazzhub.com](http://www.jazzhub.com)

2. Answer a few questions

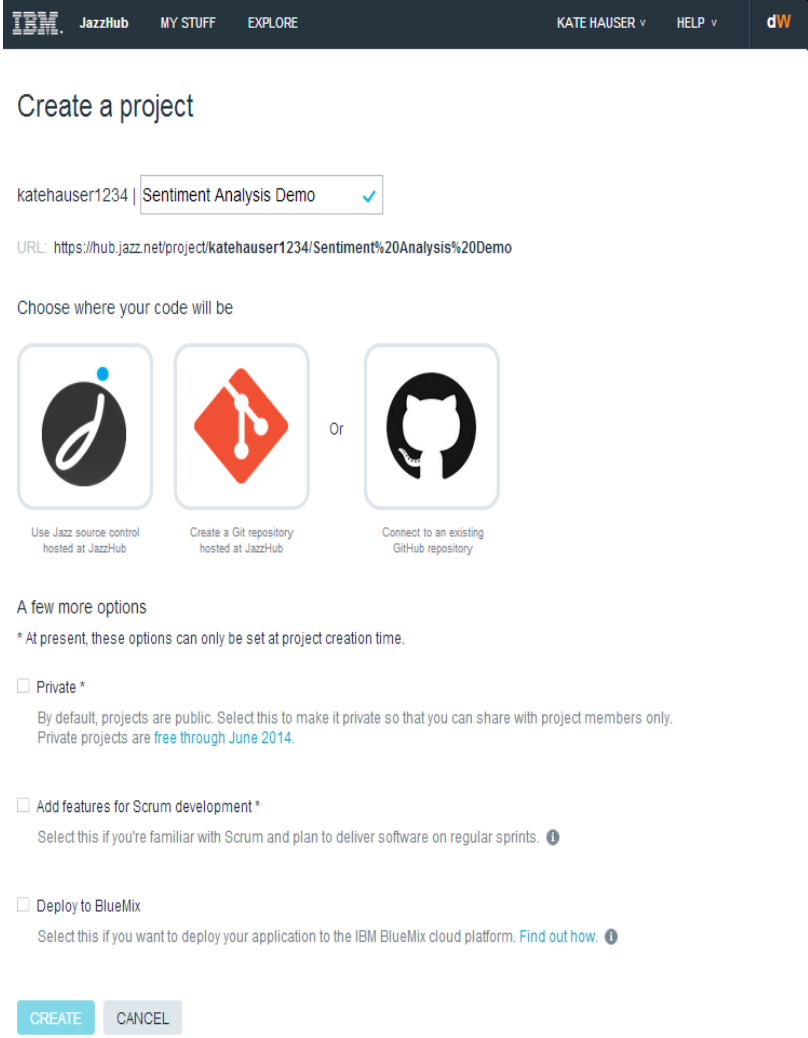
A. Which SCM (Git, GitHub, Jazz SCM)?

B. Do you want your project to be public or private?

C. Do you want to practice agile software development?

D. Do you want to deploy on IBM BlueMix?

3. Start coding

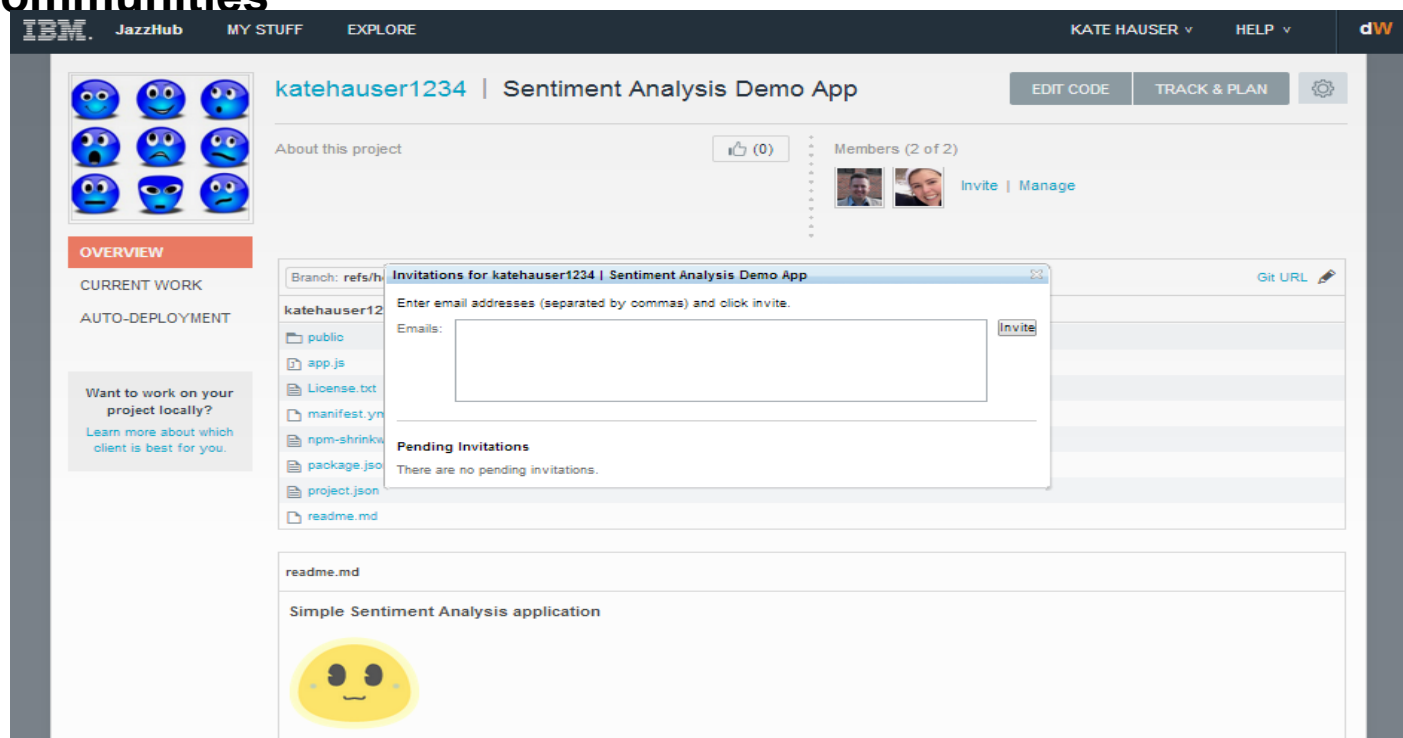


The screenshot shows the 'Create a project' form in the IBM JazzHub interface. At the top, there is a navigation bar with the IBM logo, 'JazzHub', 'MY STUFF', 'EXPLORE', and user information 'KATE HAUSER v' and 'HELP v'. The main form area is titled 'Create a project'. It includes a text input field for the username 'katehauser1234' and a dropdown menu for the project name 'Sentiment Analysis Demo' with a checkmark. Below this is the project URL: 'https://hub.jazz.net/project/katehauser1234/Sentiment%20Analysis%20Demo'. The next section is 'Choose where your code will be', featuring three options: 'Use Jazz source control hosted at JazzHub' (with a Jazz logo icon), 'Create a Git repository hosted at JazzHub' (with a Git logo icon), and 'Connect to an existing GitHub repository' (with a GitHub logo icon). Below these options is the text 'A few more options' and a note: '\* At present, these options can only be set at project creation time.' There are three checkboxes: 'Private \*' (with a note: 'By default, projects are public. Select this to make it private so that you can share with project members only. Private projects are free through June 2014.'), 'Add features for Scrum development \*' (with a note: 'Select this if you're familiar with Scrum and plan to deliver software on regular sprints. i'), and 'Deploy to BlueMix' (with a note: 'Select this if you want to deploy your application to the IBM BlueMix cloud platform. Find out how. i'). At the bottom of the form are two buttons: 'CREATE' and 'CANCEL'.



# Collaborate seamlessly on public or private projects

1. Easily invite team members
2. Access from anywhere
3. Built for collaboration from the ground up
4. Choose who sees your project, and how you engage with broader communities



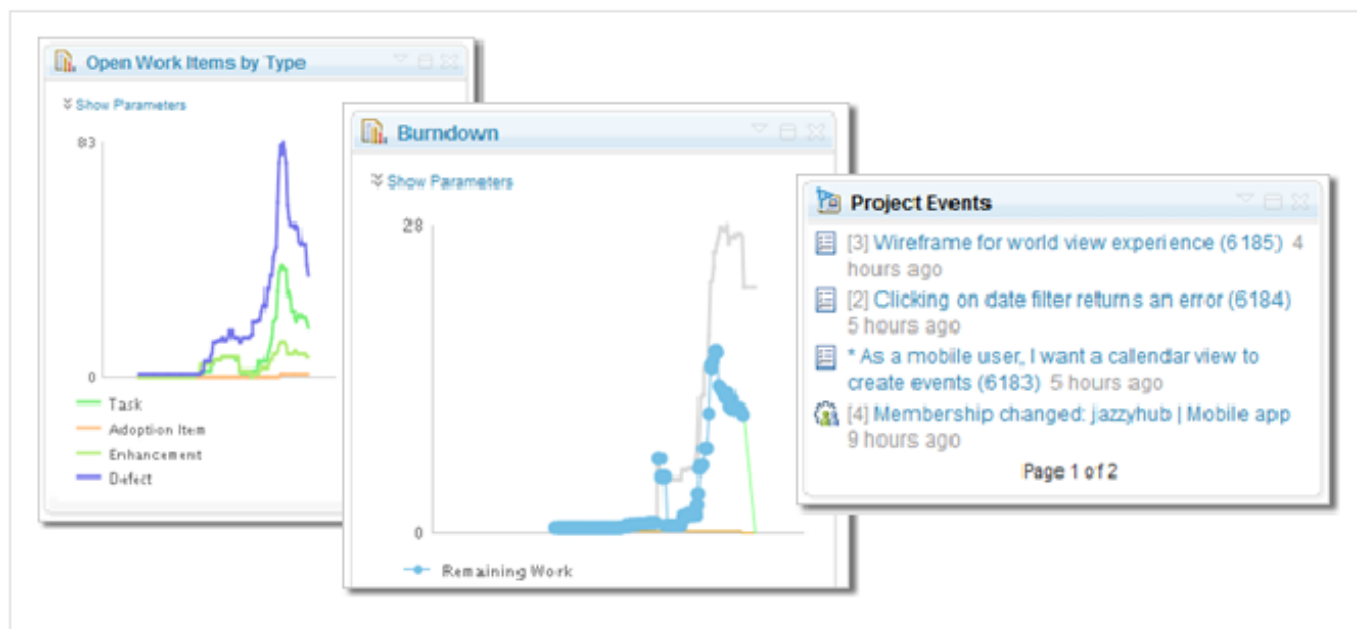
The screenshot displays the IBM JazzHub interface for a project named "Sentiment Analysis Demo App" by user "katehauser1234". The interface includes a navigation bar with "IBM", "JazzHub", "MY STUFF", "EXPLORE", "KATE HAUSER", "HELP", and "dW". The project page shows a grid of emoji avatars, a sidebar with "OVERVIEW", "CURRENT WORK", and "AUTO-DEPLOYMENT", and a main content area with "About this project", "Members (2 of 2)", and a file list. An "Invitations" dialog box is open, prompting the user to "Enter email addresses (separated by commas) and click invite." Below the dialog, it states "Pending Invitations: There are no pending invitations." The project description at the bottom reads "Simple Sentiment Analysis application" and features a yellow smiley face emoji.





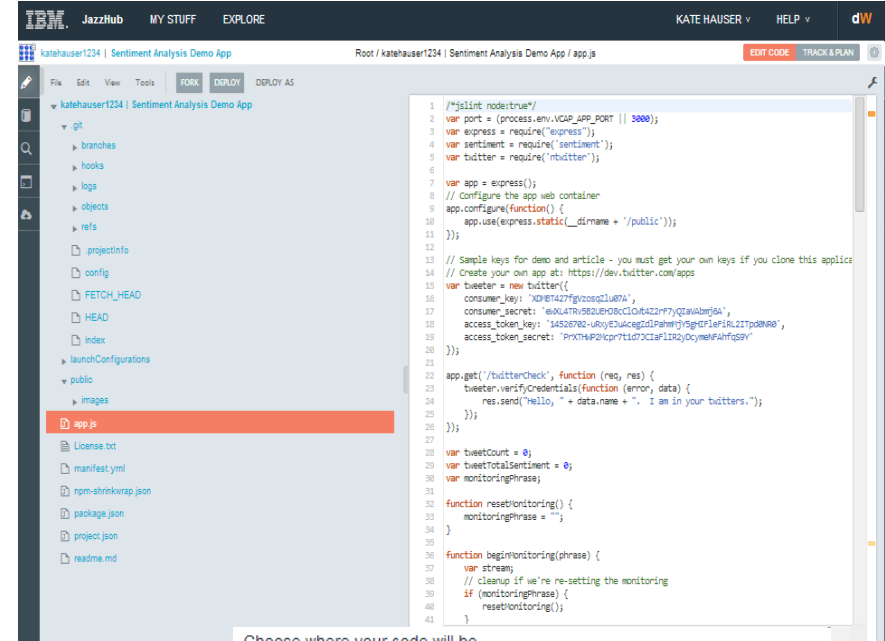
# Agile development in the Cloud is easy with BlueMix DevOps Services for BlueMix

1. Built-in agile process support
2. Work items to track and plan project activities
3. Agile tools for the product backlog, releases, and sprints.
4. Dashboard charts for project status



# Choose how you code with BlueMix DevOps Services

- 1. Browser-based Integrated Development Environment
- 2. Full support for local development with Eclipse or Visual Studio
- 3. Built-in support for Jazz Source Control
- 4. Hosted Git repository
- 5. Got GitHub? No problem



Choose where your code will be



Use Jazz source control hosted at JazzHub



Create a Git repository hosted at JazzHub

Or



Connect to an existing GitHub repository

Copy and paste URL (<https://github.com/username/project-name.git>)

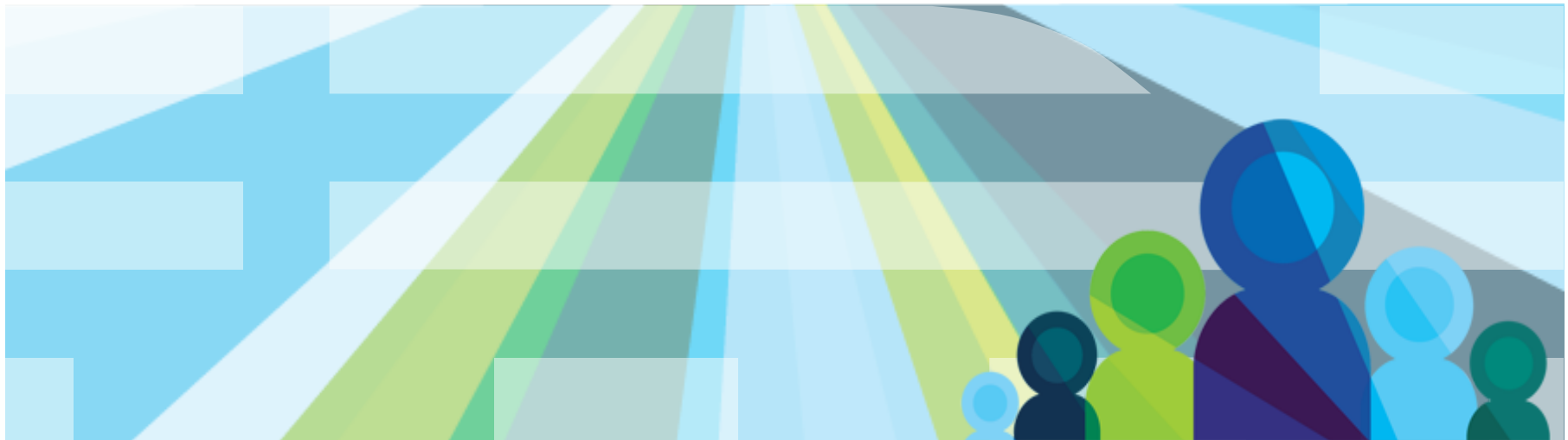


Leverage the power of social coding. With public projects, it's easy to learn and share work with a broader audience.

The screenshot displays the IBM JazzHub 'Explore' page. The navigation bar includes 'IBM', 'JazzHub', 'EXPLORE', 'LEARN', 'FEATURES', 'SIGN IN', 'REGISTER', 'HELP', and 'dw'. A 'CREATE PROJECT' button is visible in the top right. The main content area is divided into three columns:

- Trending:**
  - srich | JazzHub:** An IBM project focused on improving JazzHub. Our purpose is to gather feedback, bug reports, ideas, and... Likes (55) Members (43) **561** activities
  - rschoon | Jazz In Flight:** Jazz In Flight - Examples for Jazz extensions, automation, customization and other fun stuff This project... Likes (40) Members (41) **73** activities
  - joelennon | polls:** Likes (30) Members (3) **9** activities
  - simewton | godev:** Godev is a web-based IDE for the Go programming language. Check out the project dashboard for more information: <https://hub.jazz.net/ccm01/web/projects/simewton%20%20godev#action=com.ibm.team.dashboard.viewDashboard> Likes (23) Members (2) **604** activities
- Most Active:**
  - markw | SBTSDK:** Likes (6) Members (25) **730** activities
  - lerch | ClubUMLSpring2014:** ClubUML Spring 2014 Semester (CSYE7945) Likes (1) Members (15) **620** activities
  - simewton | godev:** Godev is a web-based IDE for the Go programming language. Check out the project dashboard for more information: <https://hub.jazz.net/ccm01/web/projects/simewton%20%20godev#action=com.ibm.team.dashboard.viewDashboard> Likes (23) Members (2) **604** activities
  - srich | JazzHub:** An IBM project focused on improving JazzHub. Our purpose is to gather feedback, bug reports, ideas, and... Likes (55) Members (43) **561** activities
- JazzHub Activity:**
  - John Kellerman created a new project called [kellman | JKsLatestNodeApp](#) 5 minutes ago
  - John Kellerman created a new project called [kellman | JKsSentimentalApp](#) 10 minutes ago
  - Kamil Jezek created a new project called [kjezek | sf-bugreports-analysis](#) This project analyses sourceforge.net and... 1 hour ago
  - Jerome Clyde Bulanadi created a new project called [jeromebulanadi | jeromejavawebstarter](#) 2 hours ago
  - Mattias Mohlin created a new project called [mattias | BlueMix/WebApp](#) 2 hours ago
  - Wim Tobback created a new project called [tobback | nodejstest](#) 3 hours ago
  - Pankaj Dhoolia created a new project called [pdhoolia | helloWorld](#) 3 hours ago
  - Rui Sousa created a new project called [drummer | inicial](#) 5 hours ago
  - Rui Sousa created a new project called [drummer | LifeGest](#) 5 hours ago

# Lesson 4: Register a Service in BlueMix



## Lesson 4 - Registering Services in BlueMix

# WORK IN PROGRESS...

### Why Register a Services?

1. BlueMix offers pay-as-you-go *cloud services* for cloud platform *services*.
2. BlueMix helps service providers go to market more quickly, efficiently, and effectively.
3. BlueMix assists service providers by providing cloud monetization strategies and actionable business and technology planning



## Registering Services in BlueMix

1. To register a service with BlueMix, you must define service metadata, create service image assets, and issue the command line utility [cloud-cli](#).
2. Two types of service can be registered with BlueMix, a regular Bluemix service that exists within Bluemix, and a 'User Provided' service that is provisioned outside of Bluemix.

### Service Metadata

There are two parts to the metadata defined for a service: metadata that is used to define the BlueMix service, and metadata specific to the UI.

- **BlueMix service metadata**
  - BlueMix Service metadata is defined in a JSON file.
- **BlueMix user interface service metadata**
  - The UI specific metadata is specified under the 'metadata' attribute. This metadata affects the display of the service in the BlueMix user interface



## BlueMix User Provided Service Instance - Service metadata

The following example shows the BlueMix metadata for the Sample service. In this example, the Sample service is classified as being of service type "sample", and it is categorized under a hierarchy of "Sample" → "Foundation Services" → "Services"

For 'User Provided' services, there can be only one plan. The 'url' value must be a valid URL, but it is never referenced, so it can be anything. The 'token' and 'timeout' values are not used.

```
{
  "label" : "Sample Service",
  "provider" : "ace",
  "url" : "http://1.2.3.4",
  "description" : "A sample hello world service. Instructional use only, not for use in
production.",
  "version" : "0.1",
  "info_url" : "http://www.ibm.com",
  "token" : "MySampleService",
  "timeout" : 57,
  "plans" : [ {
    "name" : "free",
    "free" : true,
    "public" : false,
    "description" : "This is a free service plan for the Sample service",
    "visibilities" : [ {"organization_name" : "MyOrganizationName"} ]
  } ]
}
```



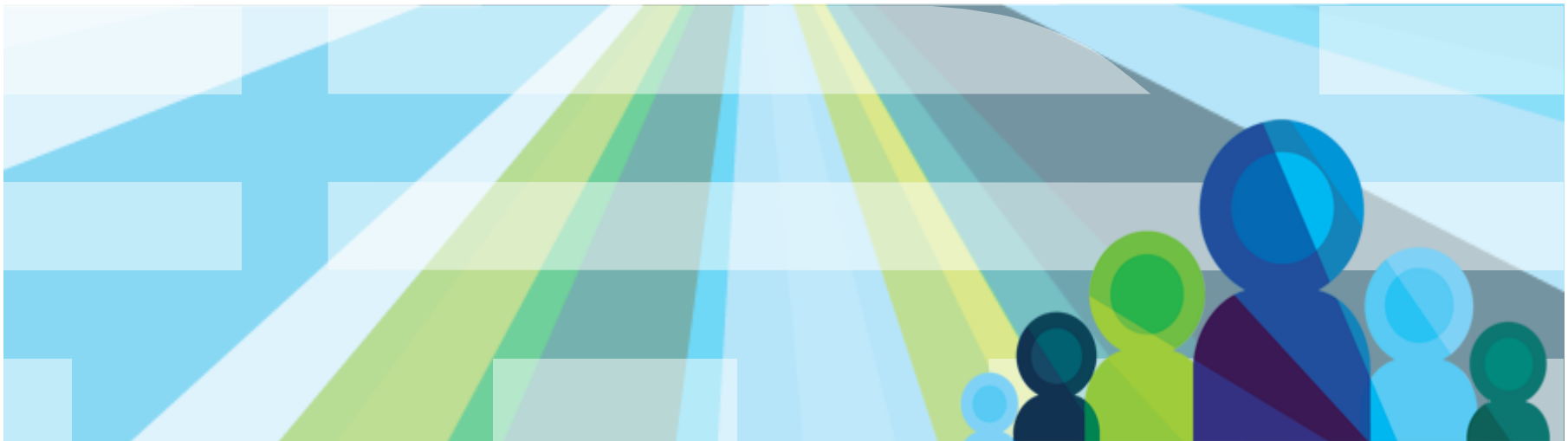
# BlueMix User Provided Service Instance - User Interface service metadata

```
{
  ---
  "metadata": {
    "featuredDescription": "A user provided service. Instructional use only, not for use in
production.",
    "isFeatured": false,
    "docURL": "http://www.yourserver.com:7080/doc/Sample/RESTApi.html",
    "userDefinedService" :
    {
      "parameters" : [
        {
          "name": "host",
          "type" : "text",
          "value" : "example.com",
          "readonly": true,
          "hidden": true
        },
        {
          "name": "userid",
          "displayname" : "User id",
          "type" : "text",
          "description": "The user id that will be used to access the service.",
          "invalidmessage" : "Not a valid email address" ,
          "pattern" : "^[_A-Za-z0-9-\\+]+(\\.[_A-Za-z0-9-]+)*@[A-Za-z0-9-]+(\\.[_A-Za-z0-9-]+)*
(\\.[A-Za-z]{2,})$",
          "placeholder" : "email@example.com"
        },
        {"name": "password", "type" : "password"},
        {"name": "description"}
      ]
    }
  }
}
```





# Lesson 5: Cloud Foundry



## Lesson 5 – Cloud Foundry

This lesson provides an overview of the PaaS, Open PaaS, & Cloud Foundry

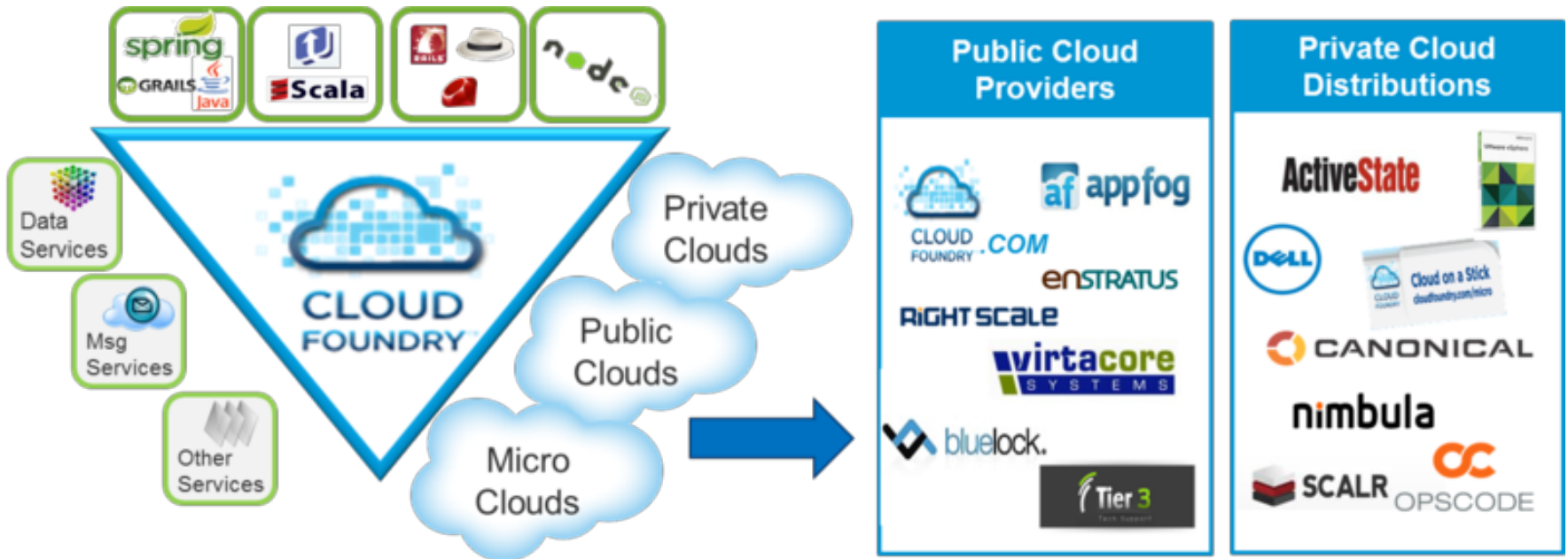
Topics in this lesson include:

- What is Cloud Foundry?
- Cloud Foundry Architecture and Application Staging
- Cloud Foundry CLI



# What's Cloud Foundry?

An open platform-as-a-service (**PaaS**). The system supports **multiple** frameworks, **multiple** application infrastructure services and deployment to **multiple** clouds.



*Making Multi-Cloud a Reality*



# Languages/Frameworks/Service

## ❖ Multi-Language

Ruby, Java, Scala, Node.js, Erlang, Python, PHP..

## ❖ Multi-Framework

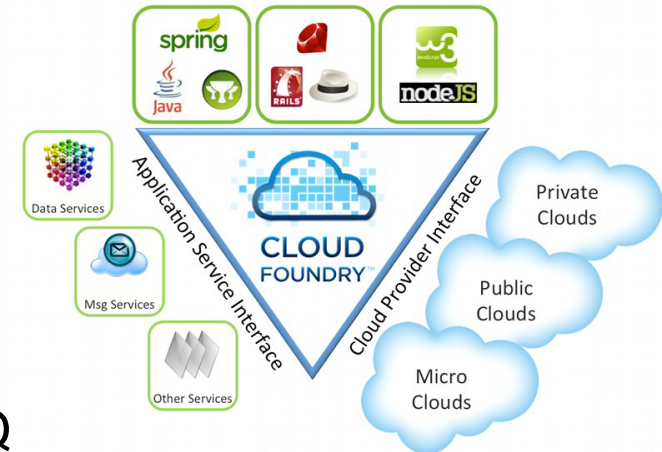
Rails, Sinatra, Spring, Grails, Express, Lift

## ❖ Multi-Services

MySQL, Postgres, MongoDB, Redis, RabbitMQ

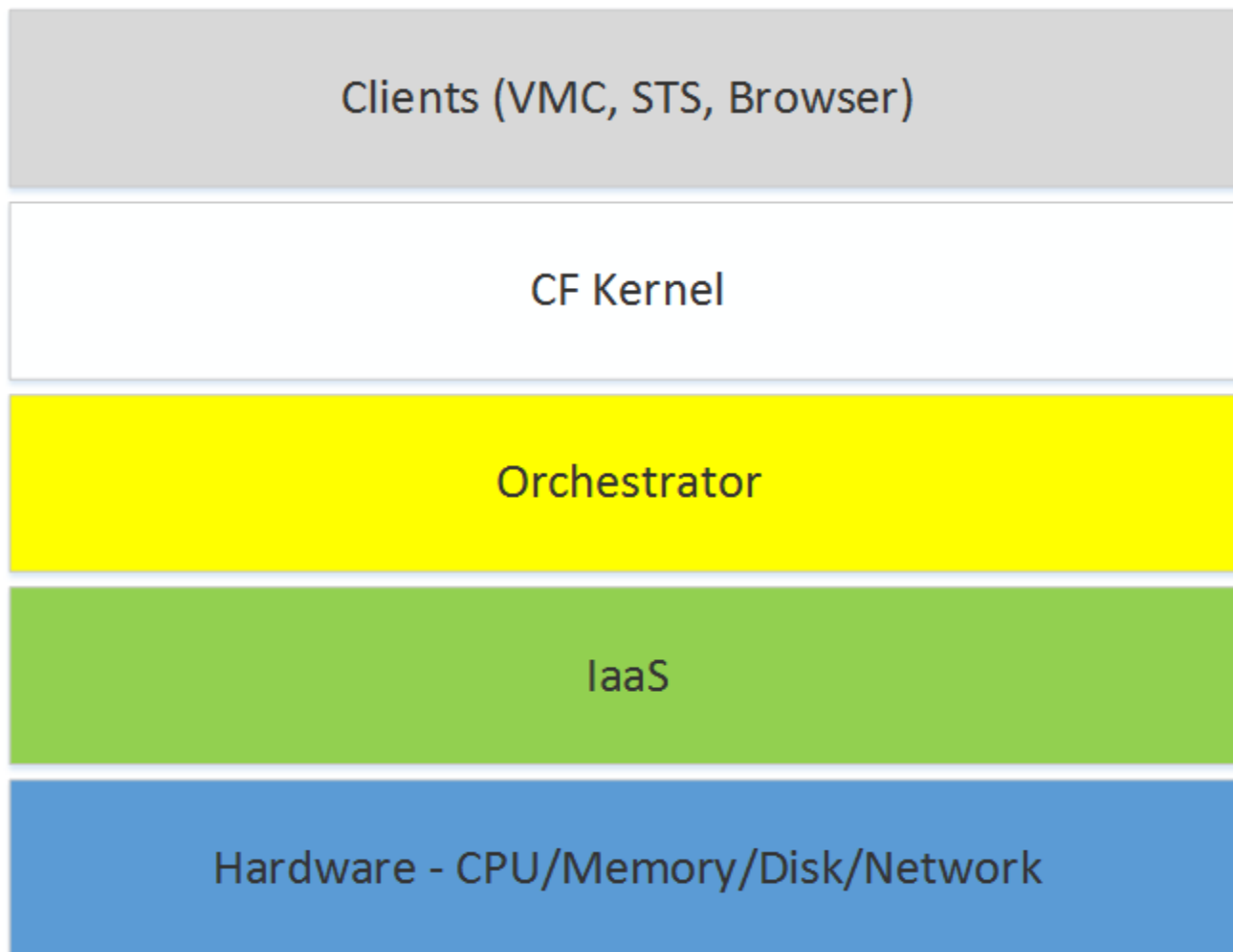
## ❖ Multi-Cloud, Multi-iaaS

Public Cloud, MicroCloud, Private Cloud

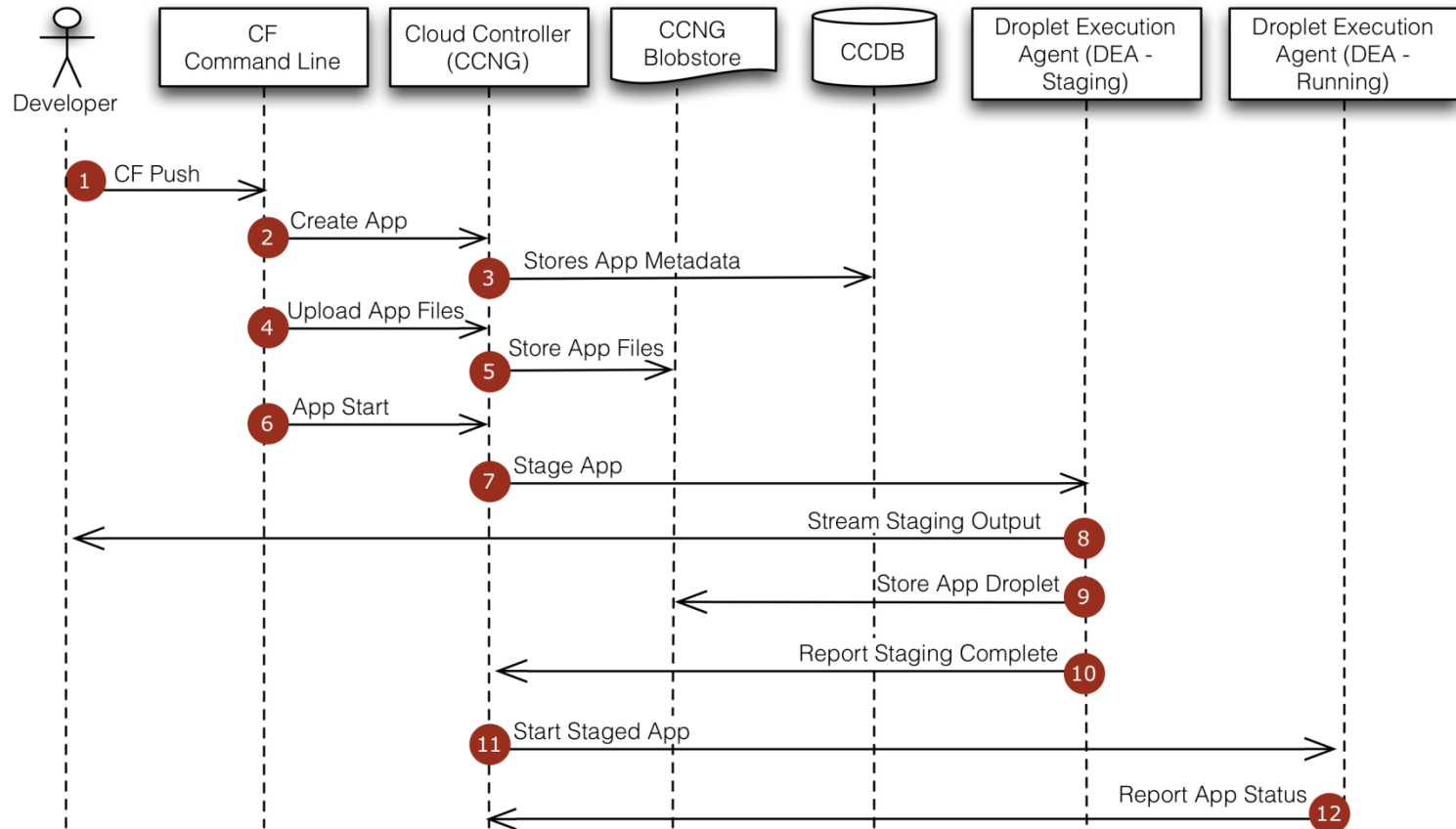


# Cloud Foundry Architecture - High Level

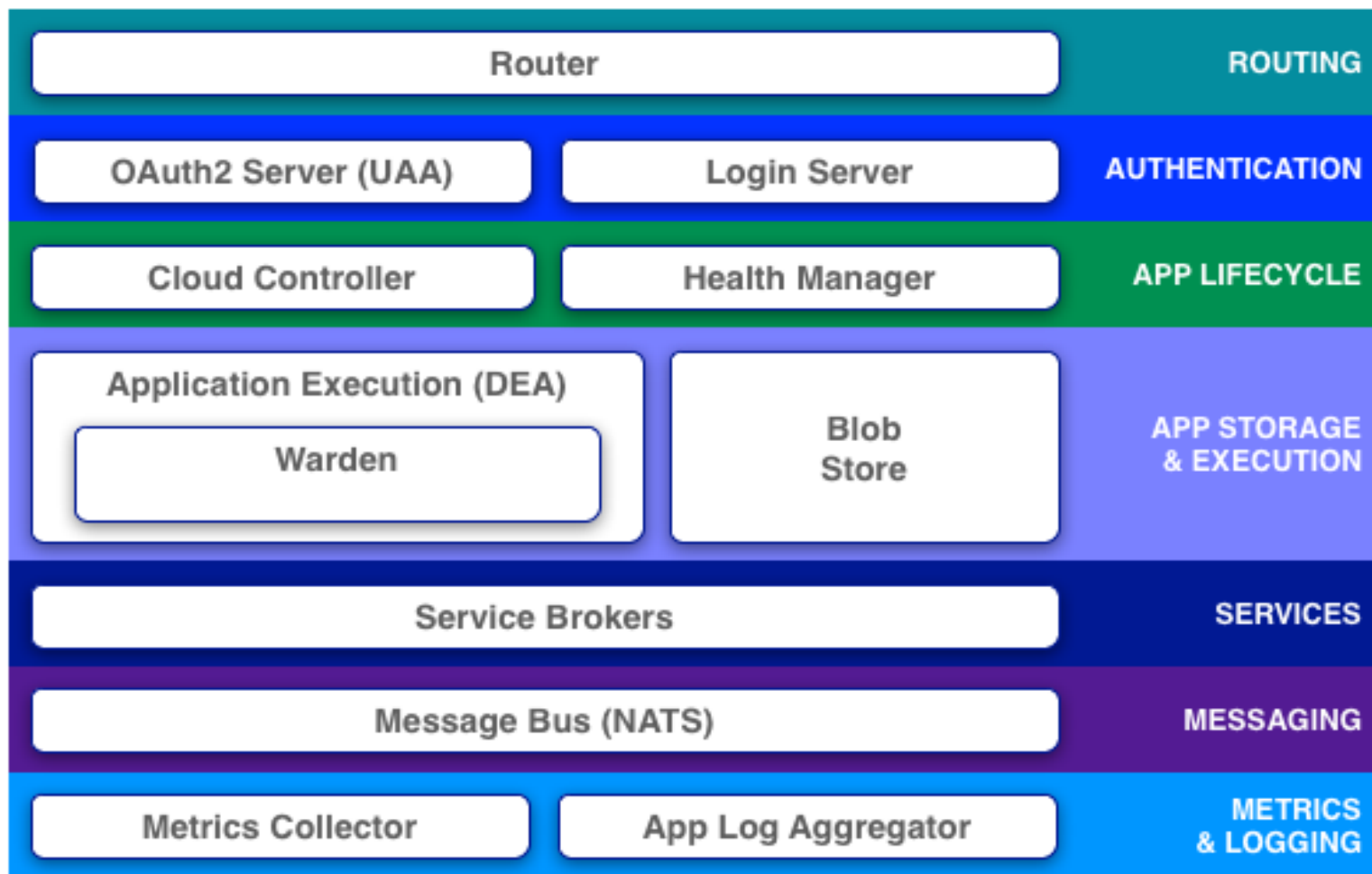
## High Level



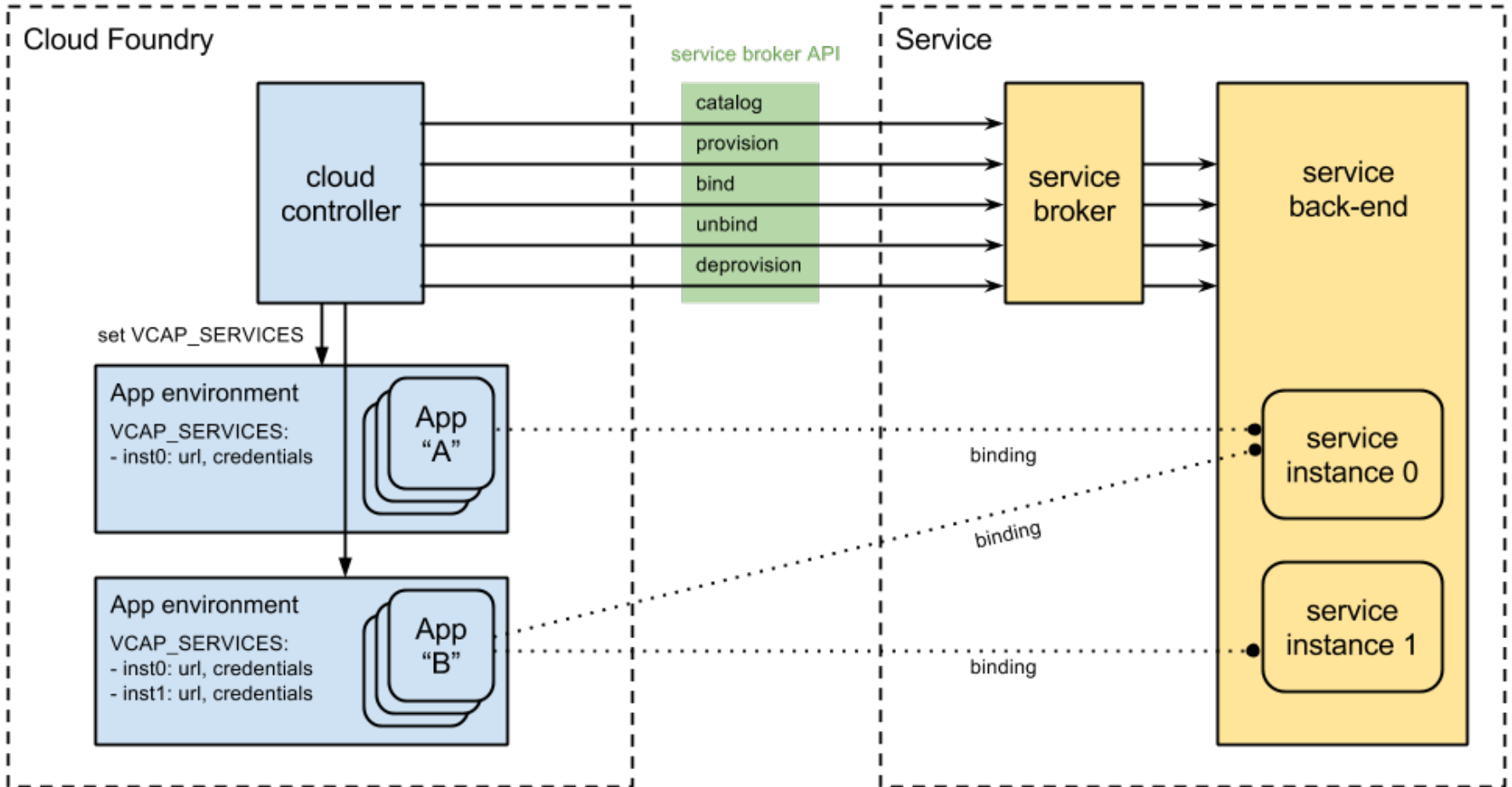
# Cloud Foundry - Application Staging



# Cloud Foundry Architecture – CF Kernel Internal

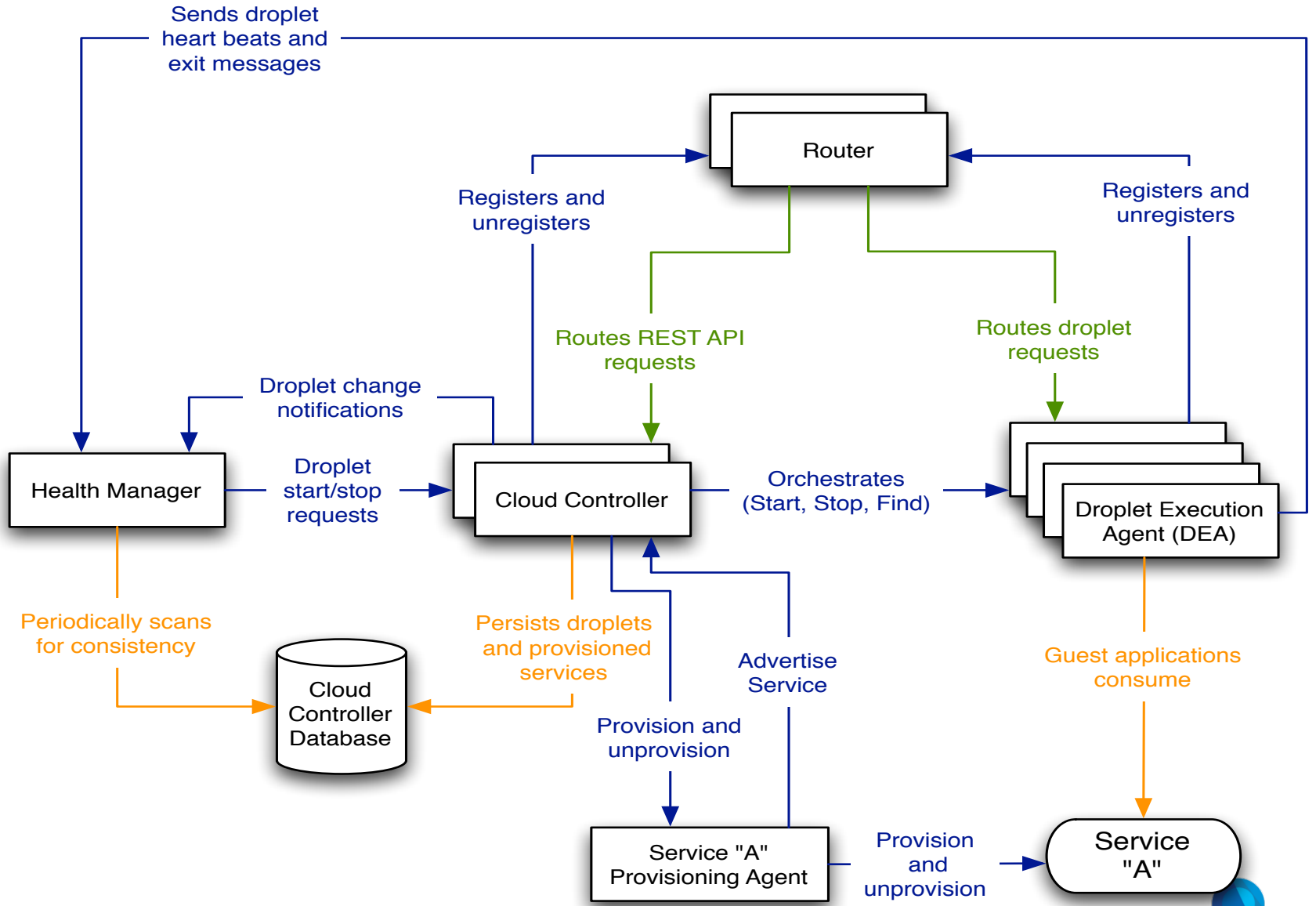


# Cloud Foundry - Services





# CF Flow



## BlueMix - Cloud Foundry CLI (Command Line Interface)

- `cf` is Cloud Foundry's command line interface.
- Used to deploy and manage applications running on most Cloud Foundry based environments
- `cf go` binary for your OS in github

### Important CF CLI Calls

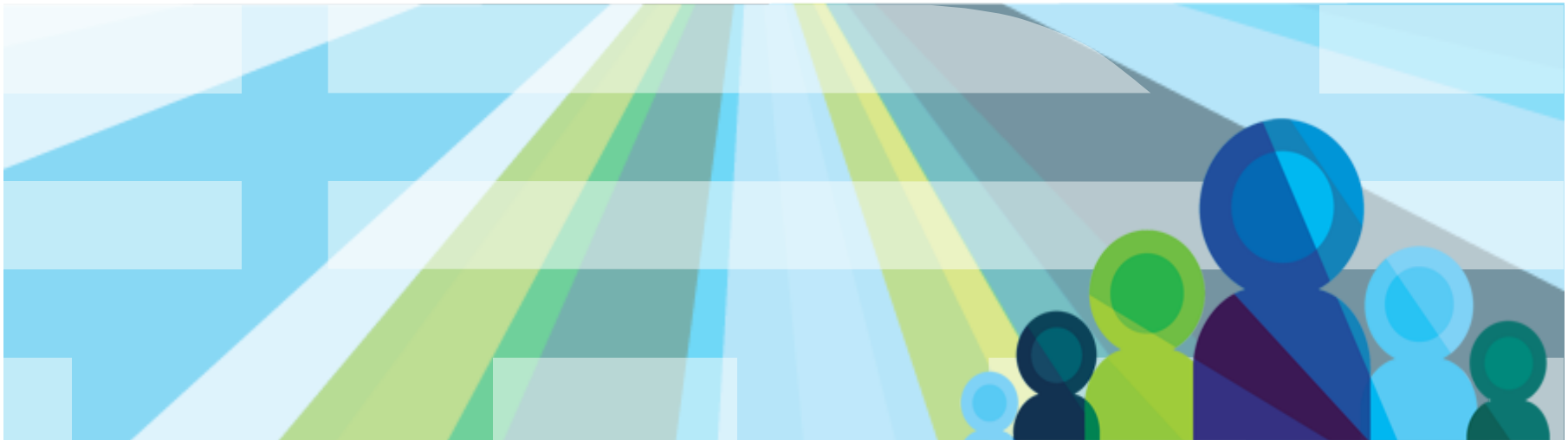
- `cf login user-id`
- `cf push my-new-app`
- `cf create-service my-service`
- `cf bind-service my-service my-new-app`



## Is BlueMix, Cloud Foundry?

BlueMix is based on the Cloud Foundry open source paas, it is more than just a hosted Cloud Foundry offering. IBM is embracing the open source and extending with additional capabilities such as GUI and services that represent the breadth of the IBM portfolio.

# Lesson 6: Maximize BlueMix



# BlueMix Services Scope

Dec Beta 1

Feb Beta 2

June GA+

\* = 3<sup>rd</sup> party

## ▪ Web

- Java (IBM Liberty)
- Ruby (CF\*)
- PHP (CF\*, Zend PHP\*)
- JavaScript (JS\*, Node.js)
- Tomcat (CF\*)
- Redis (CF\*)
- Caching (IBM eXtreme Scale)

## ▪ Mobile

- Data API (IBM NoSQL with SDK)
- Push Notification (IBM)
- Cloud Scripts (IBM)
- Mobile Application Management (IBM)
- Mobile Data Sync (IBM)
- Mobile Quality Management (IBM)

## ▪ Data management

- MongoDB (CF\*)
- MySQL (CF\*)
- SQL (IBM DB2)
- Data API (IBM NoSQL with SDK)
- PostgreSQL (CF\*)
- NoSQL (IBM NoSQL)
- Object Store (IBM/SL)
- Data Snapshot, Backup, Recovery (IBM)
- Cloudant\*

## ▪ Application Services

- Rabbit MQ (CF\*)
- Log Analytics (IBM 20/20)
- Application Performance (IBM Application Performance Management)
- Messaging (IBM Elastic Messaging)
- Source Control Repo (Git & JazzHub)
- Integration Service (IBM Cast Iron)
- Workflow Service (IBM BPM)
- Rules Service (IBM Decision Mgmt)
- SendGrid\*
- Flow\*



# BlueMix Future Content

- Marketing
  - Commerce (EZCommerce)
  - Digital Marketing & Analytics (Tealeaf, Coremetrics, Xtify, Unica)
- Security
  - Secure Transactions (Trusteer)
  - Access (IBM Access Management)
  - AppScan (IBM AppScan)
- Watson
  - Watson Q&A
- Social
  - Workforce Management (Kenexa)
  - Social Analytics, Integration, & Content
- Dev & Test
  - Agile Project Management (JazzHub)
  - Team Collaboration (JazzHub)
  - Continuous Delivery (UrbanCode)
  - Quality/Testing
- Big Data & Analytics
  - Hadoop\*
  - BigInsights
  - Streams
  - Reporting & Charting (Cognos)
  - Predictive Analytics (SPSS)
- M2M
  - MessageSight
  - Internet of Things
- Media
  - Object Store (SoftLayer)
  - Media Transcoding
  - Content Delivery Network (SoftLayer)
- Smart Infrastructure
  - Asset Management (IBM Maximo)

# Differentiators

## Differentiate BlueMix from Amazon Web Services, Microsoft Azure, Heroku, Openshift?

1. BlueMix has the whole package: scalability, performance, and wide range of services, including 37 services
2. Open platform with IBM services and third party services built on top of open source
3. Proven IBM on premise solutions available as service
4. IBM unique services: such as Decision Services (business rules), and Watson (future)
5. IBM leading services: such as DevOps, Monitoring and Analytics
6. High performance and scalability with SoftLayer
7. Full support and consultation

## BlueMix Support

BlueMix developerWorks Community -

<https://www.ibmdev.com/community/profile/bluemix/>

Need Help? Use the BlueMix developerWorks Forum -

<https://www.ibmdev.com/forums/?community=bluemix>

BlueMix Events - <https://www.ibmdev.com/events/>

BlueMix DevOps Services – <https://www.jazzhub.com>





# Lesson 7: Security



## Complying with industry and regulatory standards

In this topic, you will learn about SoftLayer's industry and regulatory compliance.



# Industry and regulatory compliance



- Service Organization Control (SOC) 2
  - SoftLayer have an unqualified SOC 2 Type II report for all data centers.
  - Audits security, availability, process integrity, privacy and confidentiality.
  - Report available to customers and their auditors via NDA.

- Safe Harbor
  - Certification demonstrates that SoftLayer provides adequate privacy protection as defined by the Directive.



## Industry and regulatory compliance (cont.)



- Payment Card Industry Data Security Standard (PCI-DSS)
  - SoftLayer is a PCI Level 3 compliant merchant for its handling of PCI regulated data.
  - This certification is not transferable to customer workloads.



- Federal Information Security Management Act (FISMA)
  - SoftLayer is working towards FISMA compliance in select data centers.



- Health Insurance Portability and Accountability Act (HIPAA)

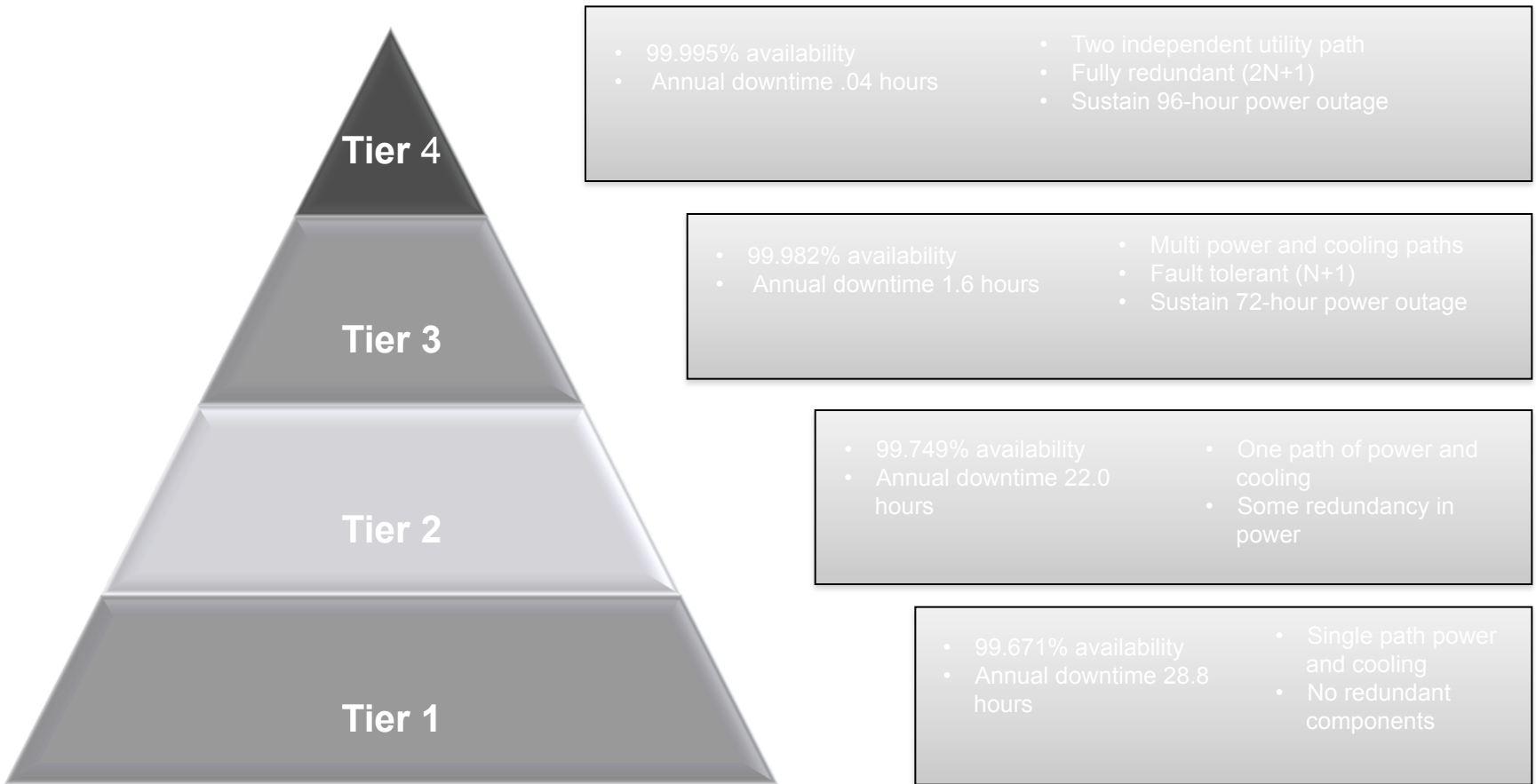
## Industry and regulatory compliance (cont.)



- Cloud Security Alliance (CSA)
  - SoftLayer have published a self-assessment in the CSA Security, Trust and Assurance Registry (STAR).
- SoftLayer expects to be eligible for CSA-STAR Certification and Attestation since they have an existing SOC 2 Type II assessment from a third party.
- CSA-STAR Continuous certificate is still under development by CSA.

# Securing the data centers

SoftLayer data centers are Tier 3 data centers.



## Securing the data centers (cont.)

### Data center and server room security

- Data centers located only in facilities with controlled access and 24- hour security.
- No server room doors are public-facing.
- Server rooms are staffed 24 x 7.
- Unmarked entry and exit doors into server rooms.
- Digital security video surveillance is used in the data center and server rooms
- Biometric security systems are used throughout the data center.
- Server room access strictly limited to SoftLayer employees and escorted contractors or visitors.
- Barcode-only identification on hardware; no customer markings of any type on the servers themselves.



## Securing the data centers (cont.)

### Operational security

- Engineers and technicians trained on internal industry standard policies and procedures, and audited yearly.
- Geographic redundancy for all core systems for disaster recovery and business continuity.
- Two-factor authentication for Customer Portal access adds greater server security.
- All data removed from re-provisioned machines with drive wipe software approved by the US Department of Defense.
- Ongoing PCI DSS compliance for SoftLayer's own handling of credit card information.
- Current SSAE 16 SOC1 report, with no exceptions noted.





# Questions?

