



# IBM Bluemix

## Hands on Workshop

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<http://www.bluemix.net>



# LearningBluemix



微信号: IBMBluemix

IBM Bluemix 及相关云平台或者云技术的学习心得、收获和体会。

IBM Bluemix  
[www.bluemix.net](http://www.bluemix.net)



# Old Times.

Hands on Workshop  
Section 0 - Review

# 你是否曾经或者正在经历这样的痛苦？

- ◆ 不停的安装各种运行时，容器以及繁杂的第三方依赖包
- ◆ 安装并配置一切必须的服务（数据库，移动服务等）
- ◆ 将所需的服务与应用进行关联，配置端口/IP/防火墙等
- ◆ 建立动态路由以及负载均衡机制
- ◆ 保证从底层到应用层各个层次的高可用性
- ◆ 确保日志的完整收集和高效分析
- ◆ 日常要做好应用的性能监控
- ◆ 保证应用可以根据负载的大小进行灵活的伸缩
- ◆ 最后，不断的重复着开发》测试》上线 的轮回



传说中，凤凰是人世间幸福的使者，每五百年，它就要背负着积累于人世间的所有不快和仇恨恩怨，投身于熊熊烈火中自焚，以生命和美丽的终结换取人世的祥和和幸福。在肉体经受了巨大的痛苦和轮回后它们才能获得更美好的躯体得以重生。



# Bluemix works with the new IT.

Hands on Workshop  
Section 1 - Technical Advantage

# The app revolution



Fundamentally changing the way we interact with technology.

## Apps are everywhere

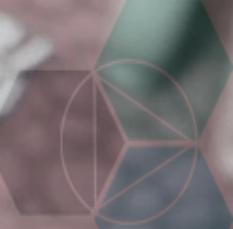
The quantity and usefulness of web and mobile apps has led to an “**app revolution**” among consumers and businesses alike.

## Experience matters

Customers and employees now expect a **delightful** and **seamless** experience across all interactions with a business.

## Cloud makes it possible

Apps today can be stitched together quickly with pre-built assets. Cloud makes the **API economy** possible.

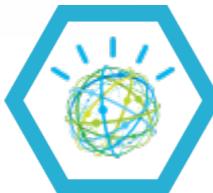




# 云上的应用开发

开发人员的期望不断演化

快速部署  
秒级



混合云  
部署



有用的  
APIs



从失败中  
快速抽身



持续集成



多种工具  
选择

任何语言



移动支持



只关注  
代码



**IBM Bluemix**  
[www.bluemix.net](http://www.bluemix.net)



# 混合云是IT未来的发展趋势

扩展（不是替换）已有的解决方案

优势：已存在的内部IT设施，完全可定制化，几乎没有限制

核心 IT



优势：IT基础设施由服务提供商管理，大部分可定制化的云产品

基础设施即服务



优势：简单、用户体验好、方便使用

软件即服务



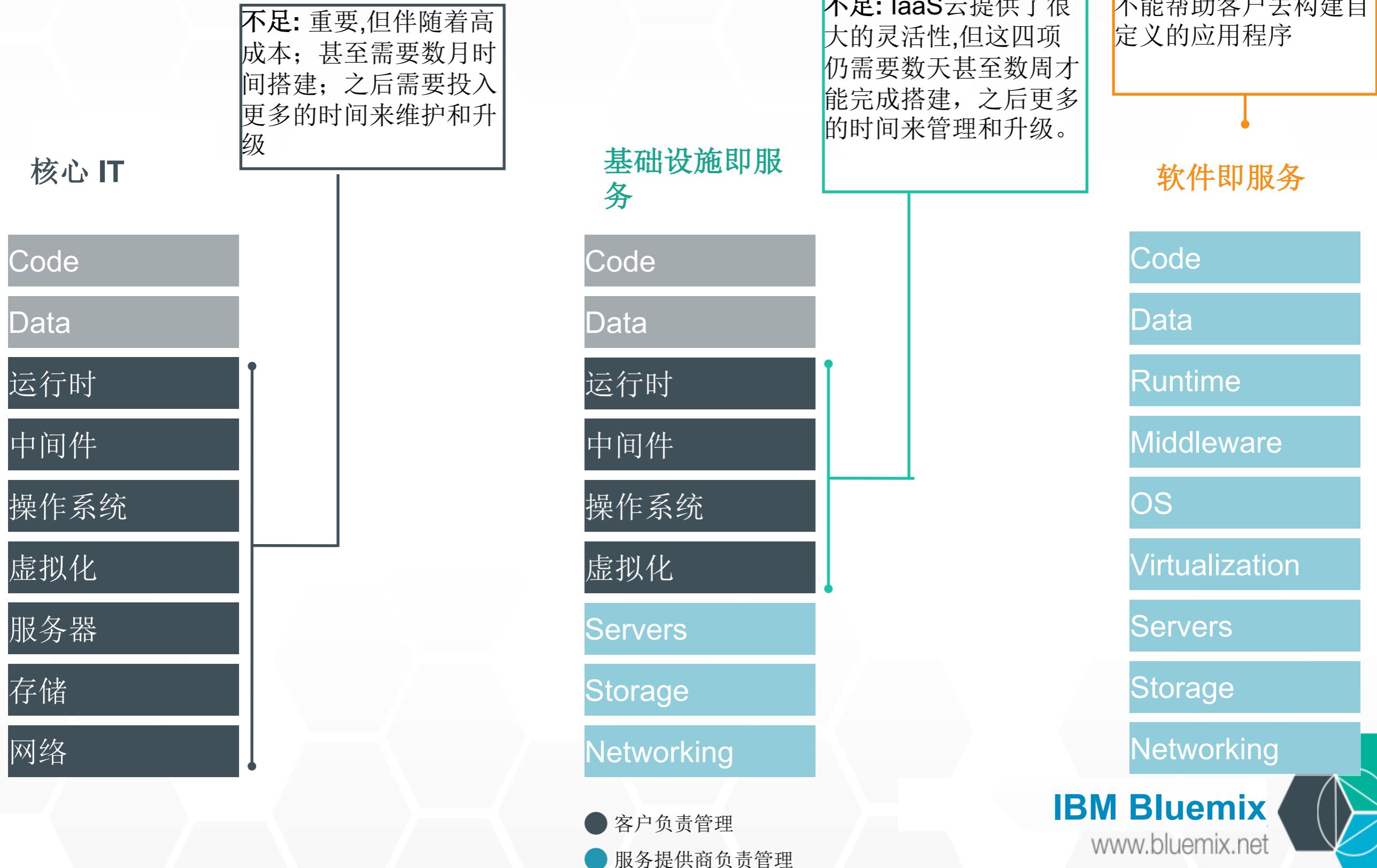
- 客户负责管理
- 服务提供商负责管理





# 混合云是IT未来的发展趋势

扩展（不是替换）已有的解决方案





# 混合云是IT未来的发展趋势

扩展（不是替换）已有的解决方案

核心 IT

代码
数据
运行时
中间件
操作系统
虚拟化
服务器
存储
网络

基础设施即服务

代码
数据
运行时
中间件
操作系统
虚拟化
服务器
存储
网络

平台即服务

代码
数据
运行时
中间件
操作系统
虚拟化
服务器
存储
网络

软件即服务

代码
数据
运行时
中间件
操作系统
虚拟化
服务器
存储
网络

- 客户负责管理
- 服务提供商负责管理

IBM Bluemix  
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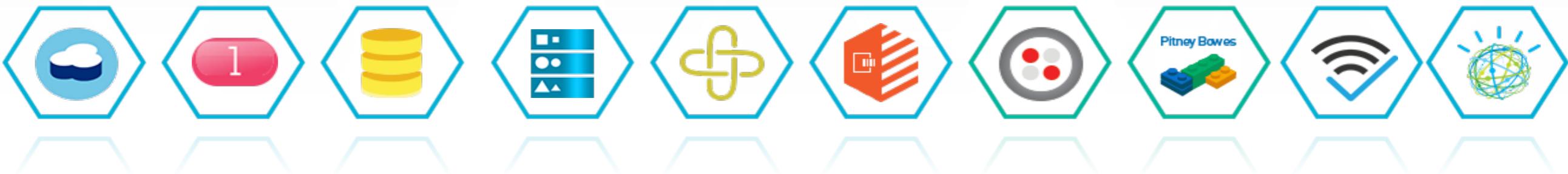
# 什么是 Bluemix?

- ◆ IBM Bluemix 是新一代数字创新平台，同时也是一个开放的云平台（基于Cloud Foundry，支持混合云），提供整合的环境和开发管理工具，使得组织和开发人员能够快速而轻松的在云上创建、开发、部署和管理应用程序（WEB，移动，大数据，新型智能设备等），而不用被硬件，软件，网络等其他因素分心。Bluemix提供了PaaS (Cloud Foundry), 虚拟机以及容器等计算能力，同时还整合网络和存储等功能，自下而上，横跨PaaS和IaaS,为用户提供完整的云计算解决方案。
- ◆ Bluemix 提供了超过100种的各式各样的服务供用户来使用，这些服务包括：认识服务、大数据服务、物联网服务、安全服务、移动服务、Web以及DevOps服务等等，只需要简单的点击操作或者运行几条命令就可以开始使用这些高质量的企业服务。
- ◆ Bluemix 支持混合云，提供了三种不同的部署模式，分别是公有云，专有云和私有云。允许客户根据自身业务的类型来自行选择部署模式，同时IBM 负责运维并提供统一的用户体验。



# 数字创新平台 Bluemix

Bluemix 是一个PaaS平台，用于构建、管理和运行各种类型的应用程序（Web、移动、大数据、新智能设备,等等）



## 在几秒内上线

开发人员可以选择任何语言的运行时，或引入他们自己的运行时。从零到生产只需一个命令。

## 开发运维

开发、监控、部署和日志工具，让开发人员可以运行整个应用程序。

## API 和服务

IBM、第三方和开源 API 服务的目录，让开发人员在几分钟内就能够组合出一个应用程序。

## 分层安全防护

IBM 保障平台和基础架构的安全性，并为您提供保护应用程序所需的工具。

## 内部部署集成

构建混合环境。连接到内部部署资产及其他公共和私有云。

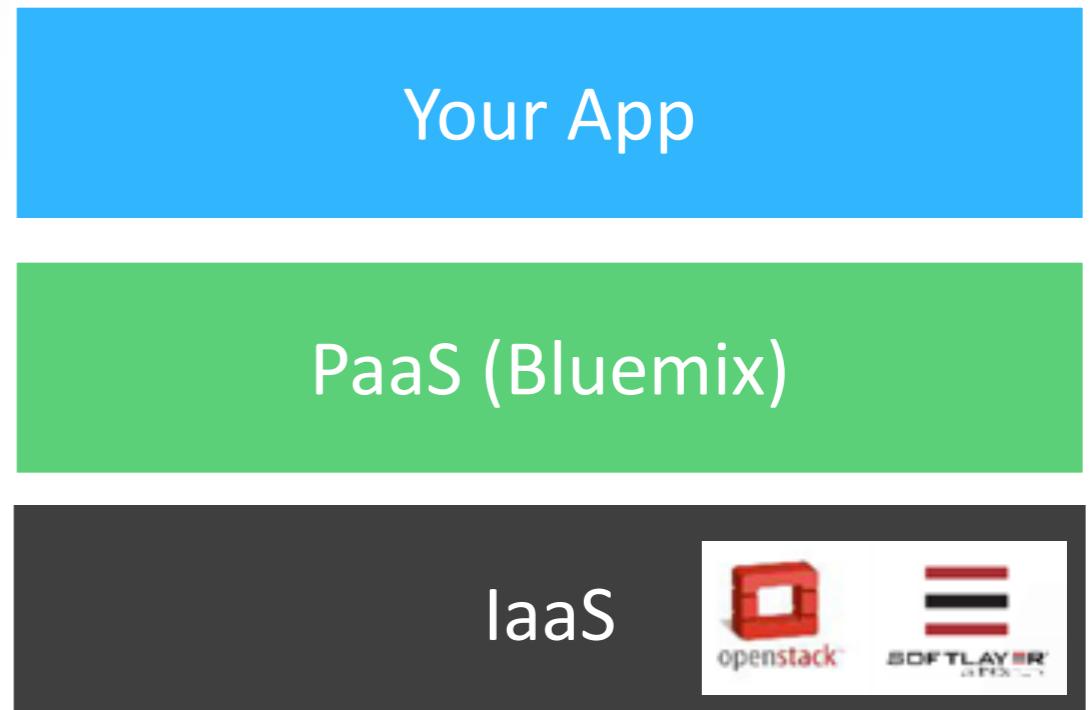
## 灵活的定价

**在几分钟内完成注册。按需付费，订阅模式提供选择和灵活性。**

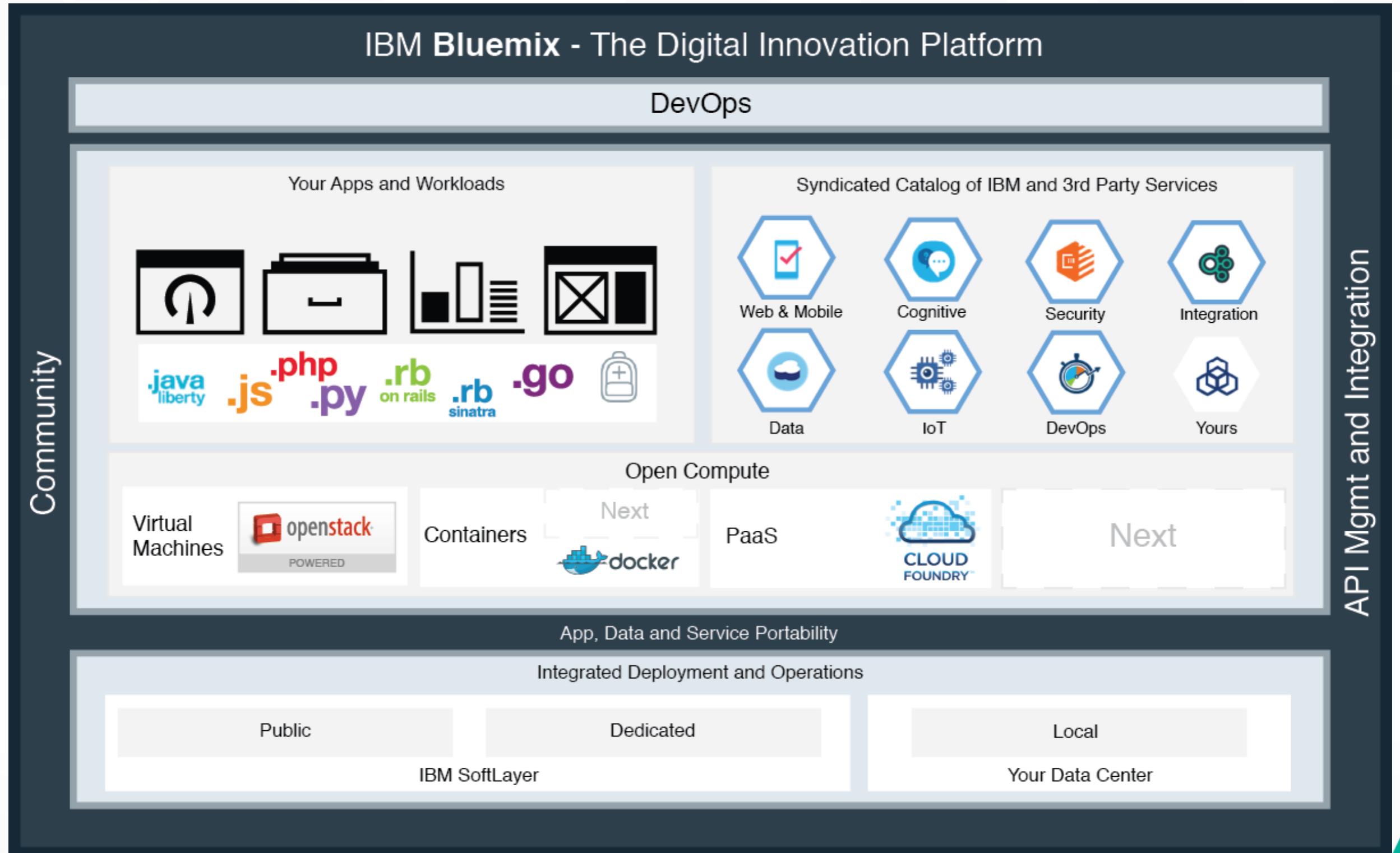


# Bluemix 扮演的角色

- ◆ PaaS 指的是运行在IaaS 层上的一系列软件服务，把服务器平台或开发环境作为一种服务提供给终端用户。
- ◆ Bluemix运行在Softlayer上，同时也支持Openstack, VMware
- ◆ 应用程序运行在Bluemix上，程序员和应用程序不需要关心IaaS层的内容。



# Bluemix 如何工作?

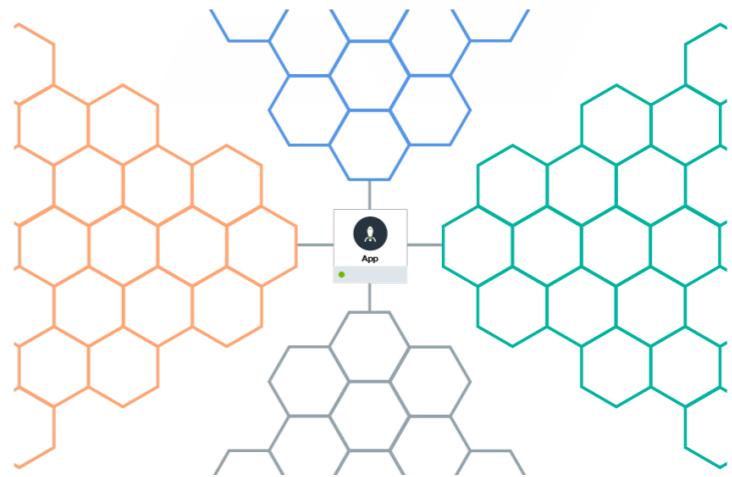


# 为什么选择Bluemix?

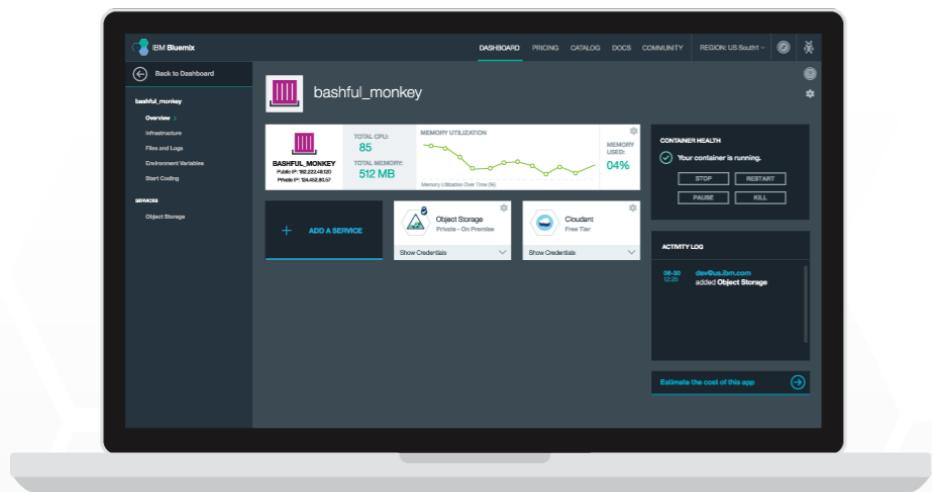
1. 按照您的方式构建应用程序



2. 使用API或服务扩展应用程序



3. 灵活的缩放 扩展势力及其他更多内容



4. 部署和管理混合应用程序





# 按照您的方式构建应用程序

Bluemix 支持并构建在开放云技术之上

在如何构建和运行应用程序上，Bluemix提供给开发人员多个选择来支撑多种多样的工作负载

以应用为中心的运行时环境



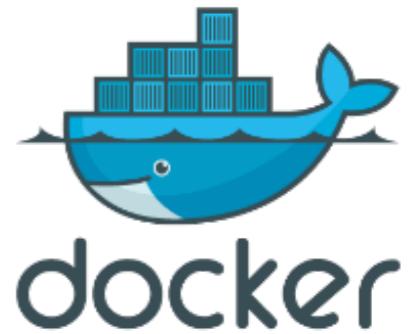
- PaaS
- 支持Node.js、Java、Go、Python、Ruby、PHP，并且允许构建自定义的buildpack
- 关注应用程序代码和数据，让平台管理剩下的一切

灵活、强健的虚拟机



- 通过使用开源技术以及统一的控制台，在专有云和公有云环境里部署和管理虚拟机

可移植且一致的容器



- 为用户提供安全可信的镜像库
- 由IBM提供的高可用的容器镜像
- 集成的网络和存储



# Bluemix中的容器

DASHBOARD PRICING CATALOG DOCS COMMUNITY REGION: US South1 🔍 Type to search

**Deploy your application on your choice of infrastructure.**

You have options with Bluemix. Deploy your apps the way you want to and have the ability to choose the right infrastructure for each project.

Select an Infrastructure choice to explore and try it out or [click here to learn more about Bluemix deployment methods.](#)

CLOUD FOUNDRY IBM CONTAINERS (BETA) VIRTUAL MACHINES

## IBM Containers **BETA**

Use IBM® Containers to run apps and services in a hosted cloud environment. Port existing applications to IBM Bluemix and make them publicly accessible and composable. Use a private registry to upload, store, and retrieve your trusted images.

[Learn more](#) [Set image registry](#)

Want to try an example IBM image first? Follow these simple steps:

1. Confirm or edit your private image registry name:  
`registry-ice.ng.bluemix.net/defaultregname`
2. Install [Docker](#) and the IBM Containers [CLI Extension](#).
3. Pull the example IBM image to your computer:  
`ice --local pull IBM_Trusted/ibmnode:latest`
4. Run the container:  
`ice --local run -P IBM_Trusted/ibmnode:latest`
5. Check the status of your container:  
`ice --local ps -a`

- ◆ 自动构建Docker 镜像
- ◆ 在私有Registry里管理和发布Docker 镜像
- ◆ 内嵌的自动扩展和恢复能力
- ◆ 内嵌的监控和日志能力
- ◆ 与Cloud Foundry的集成





# 使用云服务快速扩展云应用

提供全面的支持，帮助实现功能丰富的应用

## 选择

运行时、服务、以及各种相关工具(开发/测试/部署/运维)

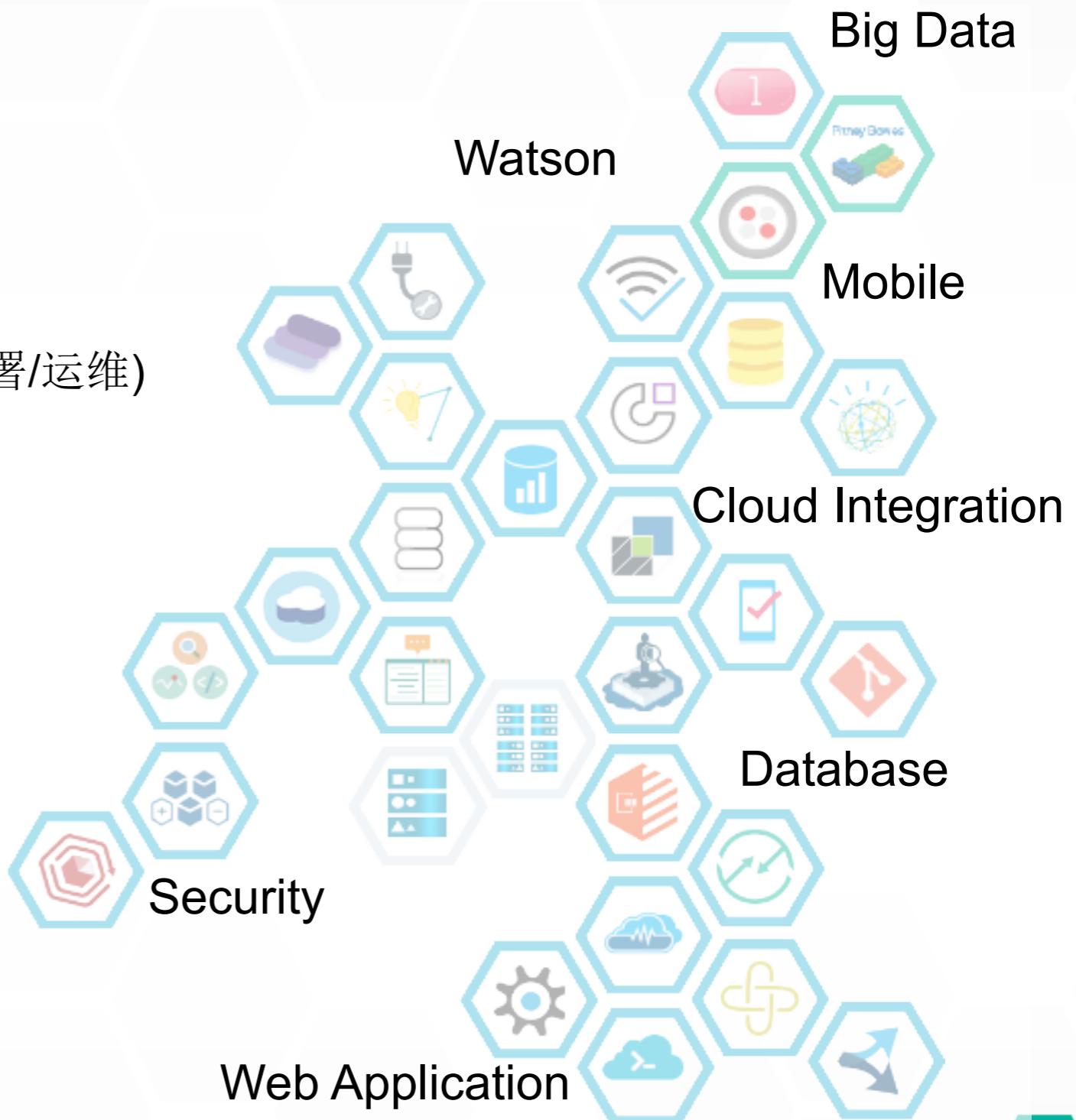
提供行业领先的IBM软件能力

利用行业领先的**IBM**软件来提供云服务  
全面、综合的功能支持

## 完整性

开源平台和服务

与第三方合作提供有价值的服务



# IBM Bluemix



# Bluemix服务 (Services)

- ◆ 以最小的代价把服务关联到应用程序，以此来增加和丰富应用程序的功能
- ◆ 使用UI选择想要的服务，然后一键绑定到相关的应用程序
- ◆ 当某一服务绑定到应用程序后，关于服务的信息就会被写在名为 VCAP\_SERVICES 的环境变量中，可以通过 System.getenv("VCAP\_SERVICES") 来读取





# Bluemix服务：环境变量

IBM Bluemix

仪表板 解决方案 目录 定价 文档 社区 区域： 美国南部 >

针对“RT\_SVT”返回... 环境变量

BluemixBoutique2014

概述

Liberty for Java™

文件和日志

环境变量 >

开始编码

服务

Cloudant NoSQL DB

Concept Expansion

SQL Database

环境变量

VCAP\_SERVICES 用户定义的

```
{  
  "sqldb": [  
    {  
      "name": "bluemixboutiquesql",  
      "label": "sqldb",  
      "plan": "sqldb_small",  
      "credentials": {  
        "port": 50000,  
        "db": "I_844186",  
        "username": "veaifuga",  
        "host": "23.246.235.89",  
        "hostname": "23.246.235.89",  
        "jdbcurl": "jdbc:db2://23.246.235.89:50000/I_844186",  
        "uri": "db2://veaifuga:ypxngofdvuwh@23.246.235.89:50000/I_844186",  
        "password": "ypxngofdvuwh"  
      }  
    }  
  ],  
  "cloudantNoSQLDB": [  
    {  
      "name": "bluemixboutiquecloudant",  
      "label": "cloudantNoSQLDB",  
      "plan": "Shared",  
      "credentials": {  
        "username": "c7bdb263-87e2-425c-afcb-a1b72d2f289a-bluemix",  
        "password": "63639bfa8aaa875a9c2b2e5015d70287e3beb1dae7b66941667b7fdb8892544",  
        "host": "c7bdb263-87e2-425c-afcb-a1b72d2f289a-bluemix.cloudant.com",  
        "port": 443,  
        "url": "https://c7bdb263-87e2-425c-afcb-a1b72d2f289a-bluemix:63639bfa8aaa875a9c2b2e5015d70287e3beb1dae7b66941667b7fdb8892544@c7bdb263-87e2-425c-afcb-a1b72d2f2"  
      }  
    }  
  ]  
}
```





# 运行时管理工具：问题诊断

IBM Bluemix

针对“RT\_SVT”返回... ▾

Liberty for Java™

Bluemix Boutique 2014

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仪表板 解决方案 目录 定价 文档 社区 区域：美国南部 >

实例：1 内存配额：512 可用内存：502.625 GB (每个实例 MB)

保存 重置

LIBERTY FOR JAVA™

操作：跟踪 转储

实例	状态	CPU	内存使用情况	磁盘使用情况	开始时间
0	正在运行	0.1%	140.9 MB / 512 MB	211.3 MB / 1 GB	2015年6月3日下午9:43:07

IBM Bluemix

针对“RT\_SVT”返回... ▾

文件和日志

Bluemix Boutique 2014

概述

Liberty for Java™

文件和日志 >

环境变量

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仪表板 解决方案 目录 定价 文档 社区 区域：美国南部 > ⌂

文件：logs/messages.log 大小：10.7K

操作	跟踪	转储			
<input checked="" type="checkbox"/> 实例	状态	CPU	内存使用情况	磁盘使用情况	开始时间
0	正在运行	0.1%	140.9 MB / 512 MB	211.3 MB / 1 GB	2015年6月3日下午9:43:07

文件树：

- .bash\_logout
- .bashrc
- .profile
- app
- droplet.yaml
- dumps
- logs
  - messages.log
  - staging\_task.log
  - run.pid
  - staging\_info.yaml
- tmp

文件内容（messages.log）：

```
*****
product = websphere Application Server 2014.9.0.0 (wlp-1.0.3.20140905-1614)
wlp.install.dir = /home/vcap/app/.liberty/
java.home = /home/vcap/app/.java/jre
java.version = 1.7.0
java.runtime = Java(TM) SE Runtime Environment (pxa6470_27sr1fp2-20140828_01 (SR1 FP2))
os = Linux (3.13.0-39-generic; amd64) (en_US)
process = 60@18nji17aqo6
*****
[6/3/15 13:43:01:665 UTC] 00000001 com.ibm.ws.kernel.launch.internal.FrameworkManager
[6/3/15 13:43:01:893 UTC] 00000021 com.ibm.ws.kernel.feature.internal.FeatureManager
[6/3/15 13:43:04:319 UTC] 00000025 com.ibm.ws.tcpchannel.internal.TCPChannel
[6/3/15 13:43:04:984 UTC] 00000019 .management.client.service.internal.ManagedBeanContainerImpl
[6/3/15 13:43:04:988 UTC] 00000019 .management.client.service.internal.ManagedBeanContainerImpl
[6/3/15 13:43:05:153 UTC] 00000029 com.ibm.ws.webcontainer.osgi.webGroup
[6/3/15 13:43:05:156 UTC] 00000029 com.ibm.ws.webcontainer
[6/3/15 13:43:05:160 UTC] 00000029 com.ibm.ws.http.internal.VirtualHostImpl
[6/3/15 13:43:05:325 UTC] 0000002a com.ibm.ws.app.manager.AppMessageHelper
[6/3/15 13:43:06:639 UTC] 0000002a com.ibm.ws.webcontainer.osgi.webGroup
[6/3/15 13:43:06:639 UTC] 0000002a com.ibm.ws.webcontainer
[6/3/15 13:43:06:639 UTC] 0000002a com.ibm.ws.http.internal.VirtualHostImpl
[6/3/15 13:43:06:647 UTC] 0000002a com.ibm.ws.app.manager.AppMessageHelper
[6/3/15 13:43:06:685 UTC] 00000021 com.ibm.ws.kernel.feature.internal.FeatureManager
[6/3/15 13:43:06:685 UTC] 00000021 com.ibm.ws.kernel.feature.internal.FeatureManager
[6/11/15 2:53:54:772 UTC] 0000002c com.ibm.ws.session.WASSessionCore
[6/11/15 2:53:54:821 UTC] 0000002c com.ibm.ws.session.WASSessionCore
[6/11/15 2:53:54:839 UTC] 0000002c com.ibm.ws.util
[6/11/15 2:53:55:272 UTC] 0000002c com.ibm.ws.jca.cm.Connectorservice
[6/11/15 2:53:55:834 UTC] 0000002c com.ibm.ws.rsaadapter.Adapterutil
*****
```

# 运行时管理工具：修改Trace

## Trace of BlueTrader



### Define Trace Specification

1 instance is selected. Please input trace specification.

```
*=audit:com.myco.mypackage.*=debug
```

[View trace syntax](#)

**SUBMIT TRACE**

### Current Trace Specification

Instance 0

```
*=info
```

CLOSE



# 运行时管理工具：生成Dump文件

**Dump of BlueTrader** ×

---

**Select Dump Type**

1 instance is selected. Select the type of dump to generate.

Heap Dump  
 Thread Dump  
 Snap Trace

**GENERATE DUMP**

---

**Download Dump Data**

(x) ALL

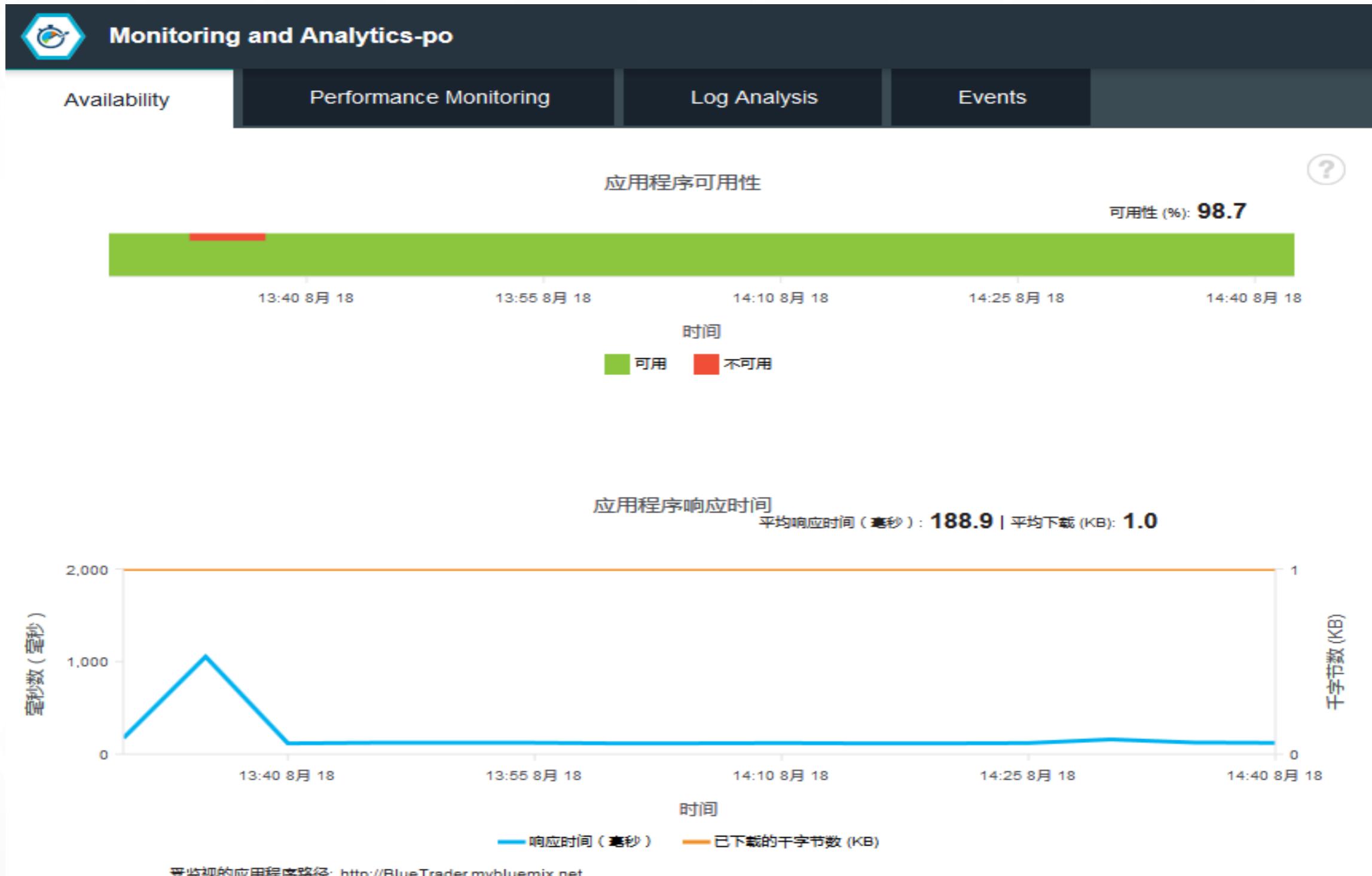
Instance 0	File
	hepdump.20150818.070207.236.0001.phd <b>NEW</b> <span style="float: right;">(x)</span>

---

**CLOSE**



# 应用监控：查看应用状态



# 应用监控：查看应用性能



# 应用监控：分析应用日志

Monitoring and Analytics-po

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

+\_datasource:"liberty\_message:1439876112379" +source:"../../../../logs/http\_acc" 搜索 15分钟

日志事件详细程度：秒 时间范围：08/18/2015 06:34:00 - 08/18/2015 06:35:00 ( UTC )

1 到 23 个结果 (共 23 个) >

[08/18/15 06:34:36:000 +0000]  
\_datasource:access\_log:1439876132354, responseCode:304, source:../../../../logs/http\_access.log, \_writetime:08/18/15 06:34:37:380  
remoteHost:75.126.52.20  
datetime=2015-08-18T06:34:36.000+0000,,requestProtocol=HTTP/1.1,responseCode=304,userAgent=Mozilla/5.0 (Windows NT 6.1; W  
rv:38.0) Gecko/20100101 Firefox/38.0,elapsedTime=2251,remoteHost=75.126.52.20,source=../../../../  
/logs/http\_access.log,sequence=69,bytesReceived=0,requestMethod=GET,uriPath=/css/bootstrap.min.css

[08/18/15 06:34:36:000 +0000]  
\_datasource:access\_log:1439876132354, responseCode:304, source:../../../../logs/http\_access.log, \_writetime:08/18/15 06:34:42:333  
remoteHost:75.126.23.243  
datetime=2015-08-18T06:34:36.000+0000,,requestProtocol=HTTP/1.1,responseCode=304,userAgent=Mozilla/5.0 (Windows NT 6.1; W  
rv:38.0) Gecko/20100101 Firefox/38.0,elapsedTime=1325,remoteHost=75.126.23.243,source=../../../../  
/logs/http\_access.log,sequence=75,bytesReceived=0,requestMethod=GET,uriPath=/js/angular-route.js



# 应用监控：事件监控与通知

Monitoring and Analytics-po

Availability Performance Monitoring Log Analysis Events

## 事件策略配置

应用程序名称: BlueTrader  
应用程序类型: Liberty

### 可用性事件

- Application unavailable  
*The application's URL is unavailable.*  启用
- Application response time is slow  
*The application's URL response time is greater or equal to 3000 milliseconds.*  启用

### 性能事件

- Servlets or JSPs in error  
*One or more JSP are in error, the request completion percentage is not 100.*  启用
- WebSphere Application Server is disconnected  
*The status of the monitored application is 0.*  启用
- WebSphere application server response time high  
*The request average response time is greater than 2000 milliseconds.*  启用

下一步

取消

### 通知配置

指定在发生应用程序警报时将接收电子邮件的收件人。此通知设置适用于当前空间中的所有受监视应用程序。

将警报通过电子邮件发送给以下收件人:

输入或复制收件人的电子邮件地址。地址必须以逗号分隔。



# 弹性伸缩(Scaling): 基础

- ◆ Bluemix同时支持在短时间内进行水平和垂直的弹性伸缩机制
- ◆ 伴随着应用负载的增大/减少，你可以选择调整运行程序的实例的数量来应对
- ◆ 如果你发现应用程序在消耗大量的资源，可以选择增加应用所能使用的内存来解决

**Cloud Computing Elasticity :**

**Expand**

**Contract**



# 弹性伸缩(Scaling): 手动

The screenshot shows the 'Resources' section of the Bluemix Liberty application configuration interface. It includes fields for 'Instances' (set to 1) and 'Memory Quota (Instance)' (set to 1GB). Below these are 'SAVE' and 'RESET' buttons. To the right, two scaling types are illustrated with arrows pointing to their respective configuration fields:

- Horizontal Scaling:** Points to the 'Instances' field.
- Vertical Scaling:** Points to the 'Memory Quota (Instance)' field.

Below the resources section is an 'Instance Details' table:

Instance	State	CPU	Memory Usage	Disk Usage
0	Running	0.1%	309.7MB / 1GB	218.2MB / 1

cf cmd:  
**cf scale <app> -i 3**  
( App will NOT be restarted)

Horizontal  
Scaling

Vertical  
Scaling

cf cmd:  
**cf scale <app> -m 1024M**  
( App will be restarted)



# 弹性伸缩(Scaling): 进阶

## Scale app with Bluemix Auto-Scaling Service

- ◆ With Auto-Scaling Service, users can automatically increase or decrease the compute capacity of application, by dynamically adjusting the application instance numbers that are based on the defined policy.
- ◆ Supported Runtimes: all runtime types supported by Bluemix
- ◆ Supported Metrics for scaling:

Metric name	Description	Supported Runtime
JVM heap	The usage percentage of the JVM heap memory	<ul style="list-style-type: none"><li>Java (Liberty for Java)</li></ul>
Memory	The usage percentage of the memory	<ul style="list-style-type: none"><li>Java (Liberty for Java)</li><li>Node.js</li><li>Ruby</li><li>Bring your own</li></ul>
Throughput	Average throughput of the app	<ul style="list-style-type: none"><li>Java (Liberty for Java)</li></ul>
ResponseTime	Average response time of the app	<ul style="list-style-type: none"><li>Java (Liberty for Java)</li></ul>





# 弹性伸缩(Scaling): 策略

 Auto-Scaling-ul

策略配置 度量值统计信息 缩放历史记录

◀ 后退 | 编辑 Auto-Scaling 策略

策略名称:

最小应用程序实例数:

最大应用程序实例数:

缩放规则

▼ 规则 1  
如果平均“内存使用率”超出 80% 达 600 秒时间, 请添加 1 个实例。  
如果平均“内存使用率”低于 30% 达 600 秒时间, 请除去 1 个实例。

度量值类型:  ▾

扩大: 如果平均“内存使用率”超出  %, 请增加  个实例 ▾。

缩小: 如果平均“内存使用率”低于  %, 请减少  个实例 ▾。

▶ 高级配置

添加一个规则



# 弹性伸缩(Scaling): 基于日期和时间

缺省实例限制

允许的最大实例计数

缺省最小实例计数

缩放规则

▶ 规则 1

如果平均“内存使用率”超出 80%达 600 秒时间，请添加 1 个实例。  
如果平均“内存使用率”低于 30%达 600 秒时间，请除去 1 个实例。

添加规则

▼ 计划安排

时区 (GMT +08:00) 亚洲/重庆

重复计划安排

开始时间	结束时间	重复频率	最小实例计数	操作
00:00	02:00	每天	3	<input type="button" value="▲"/> <input type="button" value="X"/>

添加重复计划安排

特定日期

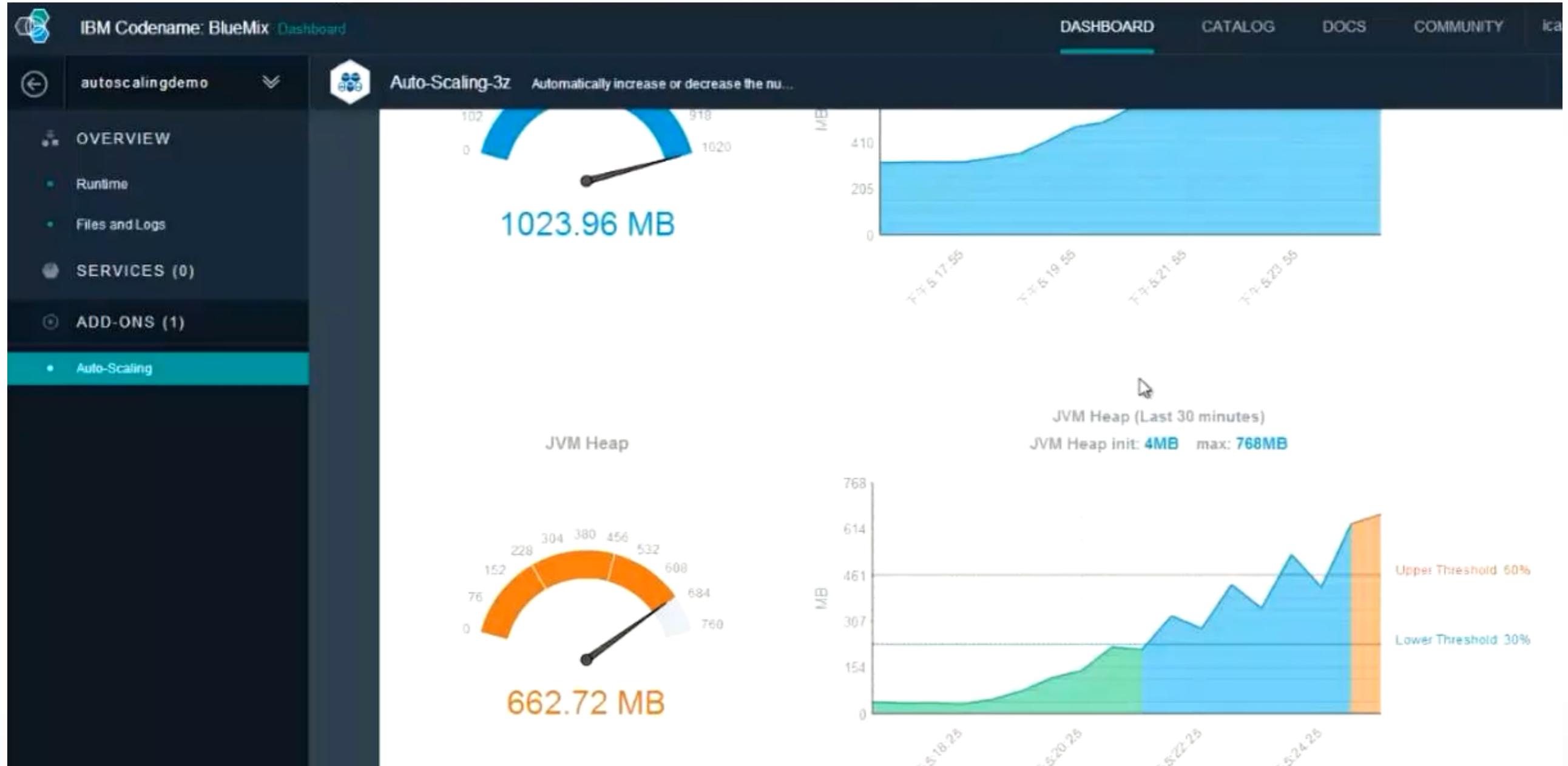
如果计划安排出现重叠，那么特定日期的计划安排优先于重复计划安排。

开始日期和时间	结束日期和时间	最小实例计数	操作
2015-8-18 00:00	2015-8-18 23:59	3	<input type="button" value="▲"/> <input type="button" value="X"/>

添加特定日期



# 弹性伸缩(Scaling): 度量统计



# 弹性伸缩(Scaling): 历史记录

Policy Configuration		Metric Statistics		Scaling History		
Past Week	Past Month	Custom Range	Scaling Status:	Any	Scaling In/Out:	Any
Completed	Monday, June 16, 2014 5:06:40 PM	2 seconds 615 milliseconds	CPU Utilization lower than 20% for 30 seconds.	Remove 1 instance.	1	
Completed	Monday, June 16, 2014 4:54:04 PM	2 seconds 101 milliseconds	CPU Utilization lower than 20% for 30 seconds.	Remove 1 instance.	2	
Completed	Monday, June 16, 2014 4:51:32 PM	2 seconds 767 milliseconds	CPU Utilization lower than 20% for 30 seconds.	Remove 1 instance.	3	
Completed	Monday, June 16, 2014 4:47:01 PM	2 seconds 821 milliseconds	CPU Utilization lower than 20% for 30 seconds.	Remove 1 instance.	4	
Completed	Monday, June 16, 2014 4:44:28 PM	5 seconds 221 milliseconds	CPU Utilization exceeds 60% for 30 seconds.	Add 3 new instances.	5	
Completed	Monday, June 16, 2014 4:41:11 PM	10 seconds 928 milliseconds	CPU Utilization exceeds 60% for 30 seconds.	Add 1 new instance.	2	



# 安全的连接到已有系统

使用安全网关和连接服务来增强新的Web和移动应用.

## 安全的连接和集成

- 使用安全网关服务打开安全的网络连接，并进行监控和管理。
- 使用安全连接器精细的控制要暴露的连接，比如特定的数据库表
- 使用直观的图形界面来构建连接使用的APIs



## 一般用例

通过构建私有的REST APIs来暴露受保护的数据库信息，这是一种简单并且可以被重复利用的方式。

### New Services

- Secure Gateway
- Connect and Compose



# Bluemix: 基础概念

Account – Anchor point for billing

Organisations – enables team collaboration

## Spaces

- Logical grouping of apps and service instances
  - per-user permissions

Apps

Containers

VMs

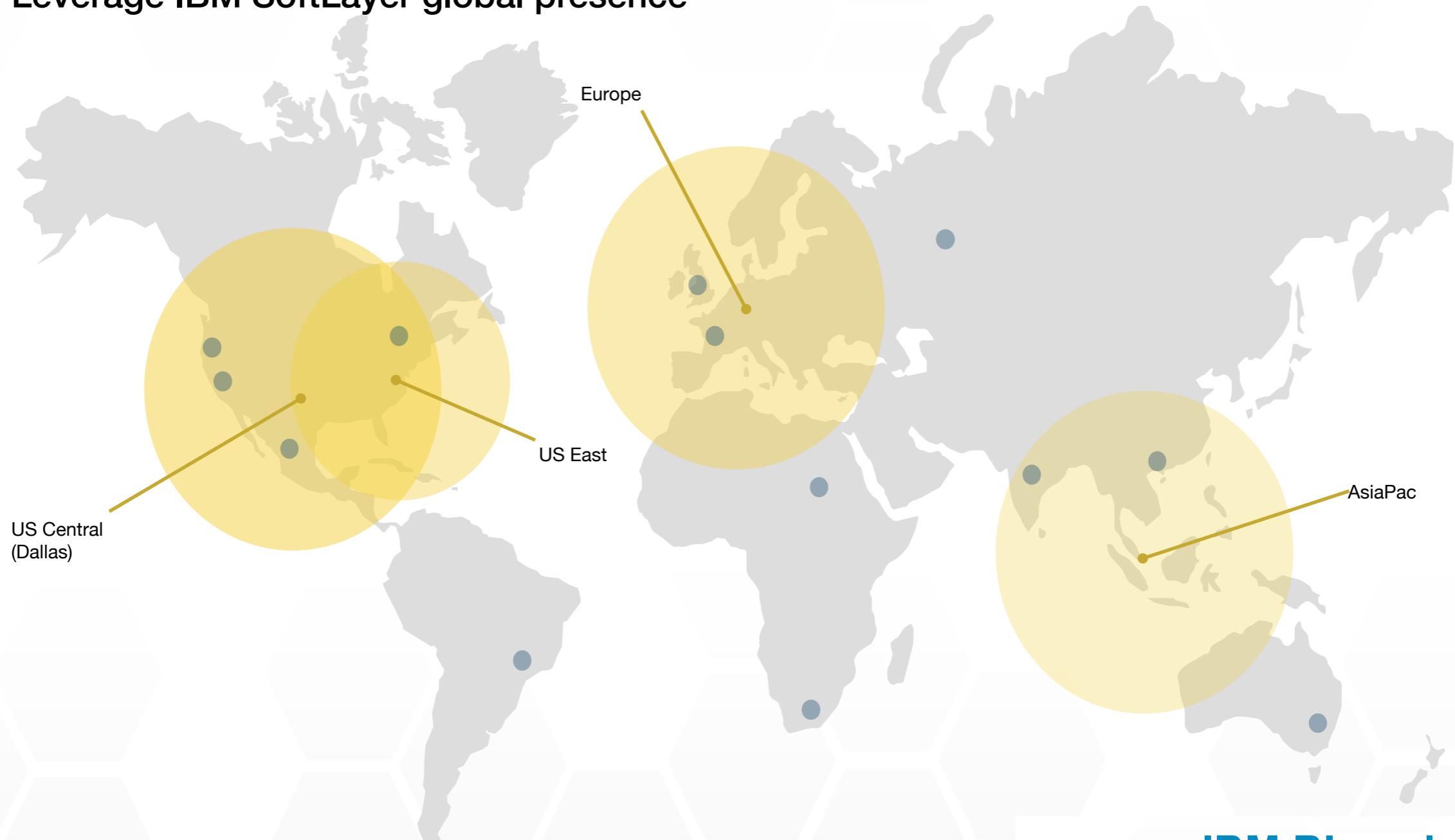
Service  
Instances

User



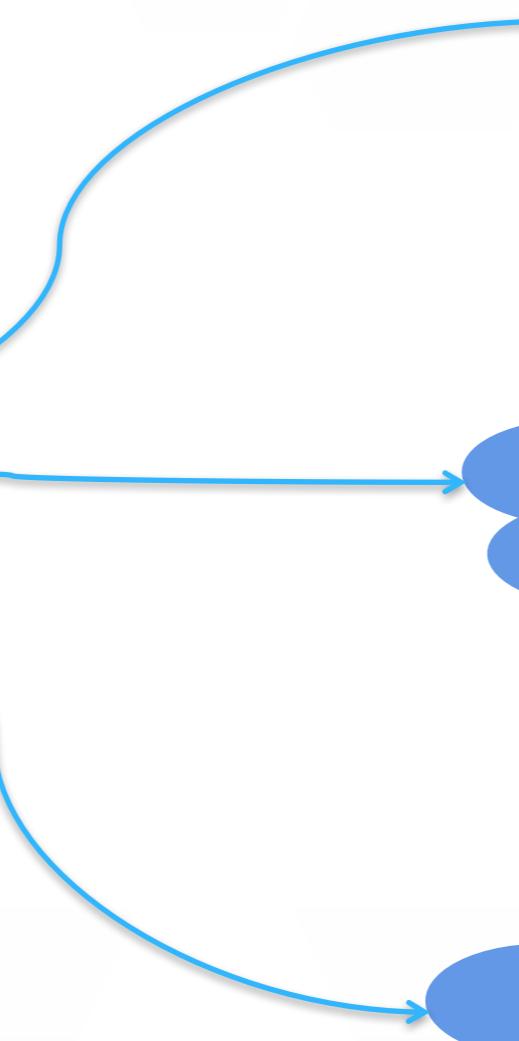
任何地区的用户可以根据需要部署应用到不同区域的数据中心并接收单一的账单

### Leverage IBM SoftLayer global presence



# 什么是区域？

- Dedicated cloud Foundry Installation & services
- Maximum isolation from entities in other regions



us-south

<https://console.ng.bluemix.net>

<https://api.ng.bluemix.net>

eu-gb

<https://console.eu-gb.bluemix.net>

<https://api.eu-gb.bluemix.net>

au-syd

<https://console.au-syd.bluemix.net>

<https://api.au-syd.bluemix.net>





# Bluemix提供集成的混合云平台管理功能

任意选择和组合以下三种应用交付方式

## Public (公有)

全球范围的多租户公有云.

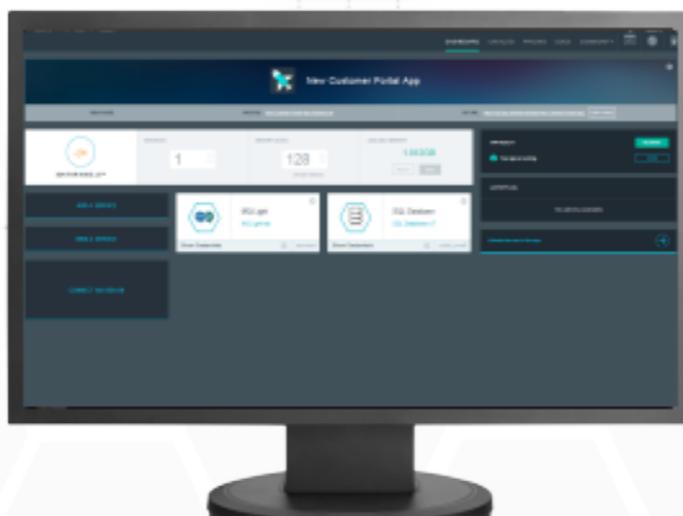


## 聚合目录

在多个Bluemix环境里，IBM和第三方提供的服务，以及用户的私有服务聚合在一起，提供统一的方式来供用户消费.

## Dedicated (专有)

在隔离的Softlayer私有云环境里运行Bluemix.  
IBM 负责管理运维



## Local (本地/私有)

交付Bluemix到用户的本地数据中心.



## 控制台

提供统一的控制台来管理和监控应用程序及计算资源。

**IBM Bluemix**  
[www.bluemix.net](http://www.bluemix.net)

# Bluemix Dedicated (专享云)

## Bluemix Dedicated

The power and simplicity of Bluemix – in your own dedicated SoftLayer environment that's securely connected to both the public Bluemix and your own network.



### Dedicated to you

Single tenant hardware that's dedicated to you – allowing you to satisfy regulatory & legal compliance.

### Global – so you're local

Get closer to your users. Bluemix dedicated can live in any of 20+ SoftLayer data centers around the world.

### Feels like home

Secure, fast, and unmetered access. Bluemix Dedicated sits on your network via VPN or direct network connectivity.

### Pay smart

Never over buy again. Pay based on intuitive runtime/service metrics and adjust capacity monthly depending on needs.

### Focus on apps, not iron

Focus on building custom applications and services. IBM manages the platform and dedicated services.

### We're on call – 24/7

Experts are always on call to solve problems. Premium support options are also available to further meet your requirements.



# Bluemix Local (私有云)

The power and flexibility of Bluemix **in your own data center** – fully managed cloud agility for even your most sensitive workloads.

## Deployment choice

Bluemix Local sits either on OpenStack or VMWare driven infrastructure, or on a Bluemix appliance.

## Focus on apps, not iron

Focus on building custom applications and services. IBM manages the platform and local services.

## Portable apps and services

Burst and move workloads as performance requirements and regulations change.

## Built on open standards

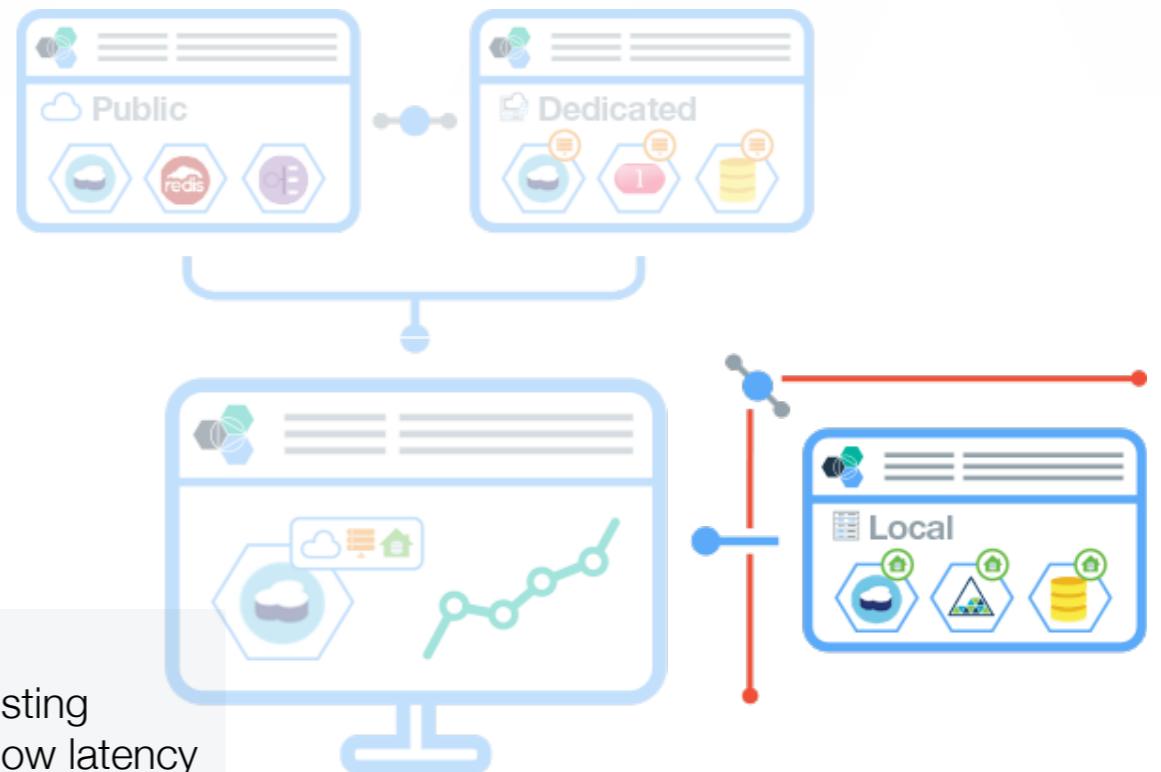
Bluemix Local combines the power of OpenStack, Cloud Foundry, and Docker.

## Proximity

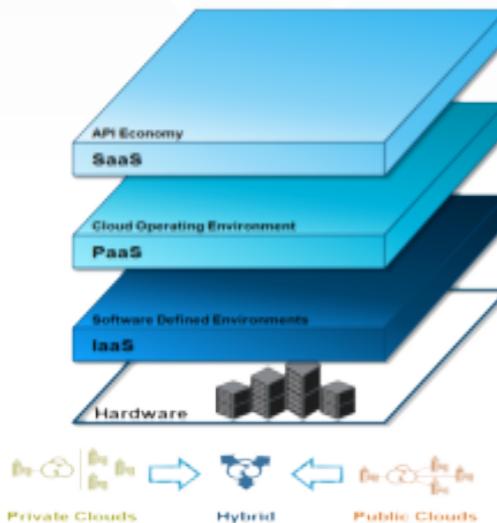
Side by side with your existing infrastructure to address low latency requirements.

## We're on call – 24/7

Experts are always on call to solve problems. Premium support options are also available to further meet your requirements.

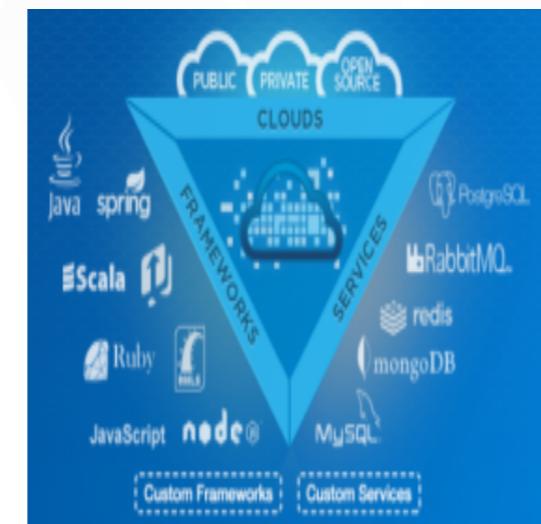


# 为什么选择Cloud Foundry?



## 开放云平台

基于云的移动、社交和大数据分析的应用逐渐受到越来越多的关注，这种关注和背后的需求需要一个更加开放的云计算开发平台



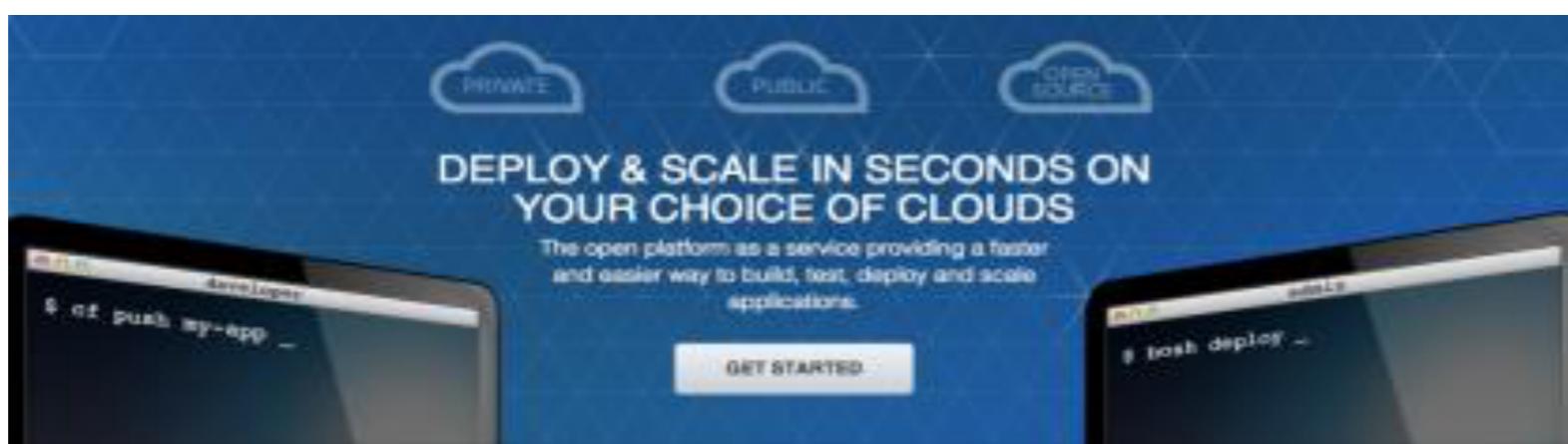
## 符合程序员的需求

关注应用，而不是耗费尽力在  
VMs/数据库/消息服务器等等的安  
装与配置  
敏捷开发模型  
妙极部署与扩展



## 活跃的社区

Cloud Foundry有一个非常引人注目并且活跃的社区，这对于构建生态系统非常重要



**IBM Bluemix**  
[www.bluemix.net](http://www.bluemix.net)





# Bluemix 带来的优势

## ◆ 快速灵活

加速应用上线，从零到生产只需要一条命令；IBM、第三方和开源API服务，帮助开发人员在几分钟内就能组合出一个应用程序，使其将所有的精力和时间放在code的编写和调优上，而不用去担心繁杂的平台基础架构和设施

## ◆ 形式多样

支持CloudFoundry原生、虚拟机以及容器等多种云应用发布方式，提供公有云，专有云以及私有云等云平台交付方式

## ◆ 高效集成

构建混合云环境，连接到内部部署资产以及其他共有和私有云，实现新型应用程序与传统应用的无缝集成

## ◆ 持续交付

开发与运营（DevOps），可以使用Bluemix提供的开发、监控、部署和日志工具，实现应用程序持续交付

## ◆ 轻松上手

平台使用的语言，运行时，框架都是你已经熟知的，不需要新的学习成本

**IBM Bluemix**  
[www.bluemix.net](http://www.bluemix.net)



# 为什么不直接使用IaaS?

- ◆ 借助一些流行的工具，或者预先构建你的image，那么将应用直接部署在IaaS看起来也是很容易的
- ◆ 但是，随着时间越来越久，维护的成本在不断增加
- ◆ OS/安全策略的升级，引入新的类库版本，DNS和网络设置可能会改变，配置并维护其他的服务（比如：DB 等）
- ◆ 采用PaaS平台，上面的问题都将很容易解决——因为平台自身会替你去处理这些问题



# Lets Deploy An App! - CLI

**Start your Cloud journey with 2048.**

<https://github.com/acostry/2048-on-Bluemix>

登录

cf api https://api.eu-gb.bluemix.net

cf login

部署应用

cf push 应用程序名 --no-start

绑定服务

cf create-service mysql 100 实例名称 (cf create-service 服务类型 服务计划 实例名称)

cf bind-service 应用程序名 服务实例名

cf start 应用程序名

访问应用

http://应用程序名.eu-gb.mybluemix.net



**Bluemix works**  
with the new Experience.

Hands on Workshop  
Section 2 – Bluemix Interface (Demo)



# Bluemix 控制台

[www.bluemix.net](http://www.bluemix.net)



## IBM Bluemix

数字创新平台

免费试用

构建

扩展

缩放

集成

特色

IBM Bluemix

仪表板 解决方案 目录 定价 文档 社区 区域：美国南部 >

组织：OE\_Runtimes\_... ▾

RT\_SVT

- CF 应用程序 (12)
- 服务 (8)
- 容器 (0)
- 虚拟机 (0)

RT\_SVT\_Auto

按照您希望的方式部署应用程序  
为每个项目选择正确的基础架构。单击一个选项以了解更多内容并开始工作。

CLOUD FOUNDRY IBM CONTAINERS 虚拟机



# Bluemix 中文问答专区

- [https://developer.ibm.com/cn\\_answers/](https://developer.ibm.com/cn_answers/)
  - A instance of developerworks: a large network of Q&A forum websites

dW Answers

搜索 搜索提示

标签 ▾ 空间 ▾ 更多 ▾ 提问

# 问题

所有 未回答

排序方式: 活跃 最新 喜欢

45 个问题 活跃用户

1 0 10 答案 喜欢 浏览次数

Watson Personality Insights 支持中文吗?

PERSONALITY-INSIGHTS

荒荒已编辑 | 5月 18, '16

1 0 6 答案 喜欢 浏览次数

请问, 如何使用bluemix vm, 我创建了virtual server, 但不能登录,看文档说是要用openstack client来做key来验证。

VIRTUAL SERVER

yitaojiang 已回答 | 5月 18, '16

2 0 12 答案 喜欢 浏览次数

如何在bluemix使用mysql

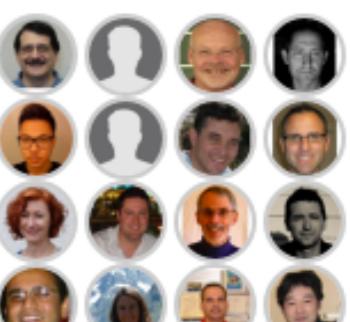
BLUEMIX

AIX\_yuanbing 已回答 | 5月 17, '16

我关注的标签

没有关注的标签

查看热门的标签



# IBM Bluemix



# Bluemix **works** with your apps.

Hands on Workshop  
Section 3 – Deploy your first application



# 开始编码

IBM Bluemix

仪表板 解决方案 目录 定价 文档 社区 区域: 美国南部

针对“RT\_SVT”返回... ▾

Bluemix Boutique2014

概述

Liberty for Java™

文件和日志

环境变量

开始编码 >

✓ 您的应用程序正在运行。 <http://BluemixBoutique2014.mybluemix.net>

您希望如何开始编码？

**Eclipse Tools for Bluemix**  
使用 Eclipse 进行开发和集成，以及将应用程序推送到 Bluemix。

**CF 命令行界面**  
在本地运行您的代码。  
手动推送到 Bluemix。

**GIT**  
使用 Git CLI 或使用 Bluemix DevOps 服务部署应用程序。





# 命令行工具 Command Line(CLI)

- ◆ 命令行工具用来和Bluemix进行交互
- ◆ 你想在Bluemix上做的任何事情，绝大部分都可以借助于命令行工具来完成
- ◆ 应用的部署，启动，停止，重启以及删除
- ◆ 服务的创建，绑定，以及接触绑定等操作
- ◆ 查看和监控应用程序的日志
- ◆ 文档: <http://docs.cloudfoundry.org/devguide/installcf/whats-new-v6.html>



## 部署应用

### ◆通过cf push命令来部署一个应用

- push的内容取决于你想要选择的运行时，对于Java，push的是一个war或者jar，对于Node.js，push的是一个应用的目录
- cf push将会把当前目录所有的内容都push到云上，除非你显示的使用-p参数指定特定的内容



## 巧用 Manifest.xml 文件

### ◆ cf push 有可能会变得很冗长

- `cf push appName -p myapp.war -b https://github.com/ryanjbaxter/mybuildpack -i 5 -m 512M --no-start`

### ◆ 为了避免这种现象，可以选择使用manifest文件

- 当使用这种方式的时候，运行cf push后，命令行工具将默认加载当前目录下的manifest.yml文件
- Manifest 在线生成器: <http://cfmanigen.mybluemix.net/>



# 一个简单的 Manifest 示例

- ◆ 命令行

```
cf push appName -p myapp.war -b https://github.com/ryanjbaxter/mybuildpack -i 5 -m  
512M --no-start
```

- ◆ manifest.yml 文件

---

```
applications:  
- name: appName  
  path: myapp.war  
  memory: 512M  
  instances: 5  
buildpack: https://github.com/ryanjbaxter/mybuildpack  
services:  
- todo-mongo-db
```



# 日志

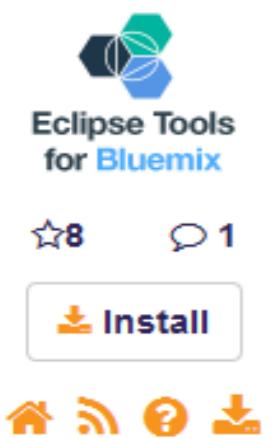
- ◆ 获取日志是问题诊断的第一步
- ◆ 应用程序的日志将被写进 stderr.log 和 stdout.log
- ◆ 可以通过Bluemix UI或者监控和分析服务，来查看和分析日志
- ◆ 也可以通过命令行工具来查看——非常有用！
  - cf logs appName
  - cf logs appName --recent - 显示最近的日志





# 使用 Eclipse 插件开发和部署应用

## IBM Eclipse Tools for Bluemix



### Details

[Screenshots](#)[Metrics](#)[Errors](#)[External Install Button](#)

Enables rapid deployment and integration of applications with IBM **Bluemix** or the Cloud Foundry Clouds, including support for JavaScript and EAR publishing. **A Java 7 or newer Execution Environment is required.** For more information about installing this version of the tools, see [https://developer.ibm.com/wasdev/downloads/#asset/tools-IBM\\_Eclipse\\_Tool...](https://developer.ibm.com/wasdev/downloads/#asset/tools-IBM_Eclipse_Tool...)

**Categories:** Application Development Frameworks, Application Server, Build and Deploy, IDE, Systems Development, Tools

**Tags:** WebSphere, Liberty, Cloud Foundry, Pivotal, BlueMix, 1.0.2

### ADDITIONAL DETAILS

**Eclipse Versions:** Luna (4.4), Kepler (4.3), Juno (4.2, 3.8)

**Platform Support:** Windows, Mac, Linux/GTK

**Organization Name:** IBM

**Date Created:** June 30, 2014 - 04:34

**Development Status:** Production/Stable

**License:** Commercial - Free

**Date Updated:** May 22, 2015 - 07:36

**Submitted by:** Carl Anderson [IBM]

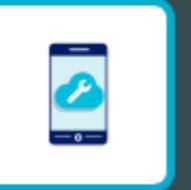
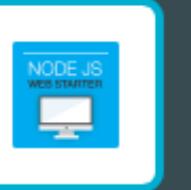


# Boilerplates

- Provide a fast way to get an application stated
- Package of sample application code and services

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

**Boilerplates**  
Get started with a new app, now

 Java Cache Web Starter <b>IBM</b>	 Java Cloudant Web Starter <b>IBM</b>	 Java DB Web Starter <b>IBM</b>	 Mobile Cloud <b>IBM</b>	 MobileFirst Services Starter <b>IBM</b>	 Node.js Cache Web Starter <b>IBM</b>
 Node.js Cloudant DB Web Starter <b>IBM</b>	 Personality Insights Java Web Starter <b>IBM</b>	 Personality Insights Node.js Web Starter <b>IBM</b>	 Node-RED Starter Community	 Ruby Sinatra Community	 Vaadin Rich Web Starter Community





# Exercise 3.a

Deploy your first  
application

# Accessing sample code

- Sample code for the application is available to download once a runtime or boilerplate has been deployed

The screenshot shows the IBM Bluemix dashboard for an application named "BI-MyFirstDeploy-BI". On the left sidebar, under the "SERVICES" section, there is a "Cloudant NoSQL DB" entry. A white callout bubble with the text "1.Click" points to the "Start Coding" button in the main content area. In the main content area, there is a heading "How do you want to start coding?" followed by three options: "Eclipse Tools for Bluemix", "CF Command Line Interface", and "GIT with IBM DevOps". Below these options, there is a section titled "Start coding with Cloud Foundry command line interface" with instructions and download links for the CF Command Line Interface and Starter Code. A red callout bubble with the text "2.Click" points to the "Download Starter Code" button.

How do you want to start coding?

- Eclipse Tools for Bluemix  
Develop, integrate, and push applications to Bluemix using Eclipse.
- CF Command Line Interface  
Run your code locally. Manually push to Bluemix.
- GIT with IBM DevOps  
When you commit to GIT, push to Bluemix with DevOps Services.

Start coding with Cloud Foundry command line interface

You can use the Cloud Foundry command line interface to deploy and modify applications and service instances.

**S** Setup: Before you begin, install the Cloud Foundry command line interface.

[Download CF Command Line Interface](#)

1 Download and extract your starter code to set up your development environment.

[Download Starter Code](#)

2 Change to your new directory.

\$ cd directory\_name

# Command Line Interface

- Bluemix uses the CloudFoundry command line interface (CLI) – cf
- cf help – provides help page showing all the commands
- cf help <command> - provides help for specific command

<b>cf l</b>	login	<b>cf ds</b>	delete service
<b>cf t</b>	target space or organization	<b>cf bs</b>	bind service to application
<b>cf a</b>	list apps in current space	<b>cf st</b>	start app
<b>cf app</b>	display status for specific app in current space	<b>cf sp</b>	stop app
<b>cf p</b>	push (deploy or update) app	<b>cf d</b>	delete app
<b>cf s</b>	show service info	<b>cf scale</b>	scale app
<b>cf cs</b>	create service	<b>cf logs</b>	tail or show logs for app



# Sample cf commands

- To login to Bluemix:
  - cf l -a <https://api.ng.bluemix.net> -u <email> -p <password> -o <email> -s dev
  - cf l -a <https://api.eu-gb.bluemix.net> -u <email> -p <password> -o <email> -s dev
  - cf l -a <https://api.au-syd.bluemix.net> -u <email> -p <password> -o <email> -s dev
    - This will login to Bluemix, set the organisation to the user's own organisation and the space to dev
- To check what space you are logged onto or to change the space:
  - cf t
  - cf t -s test
    - The first option will print the current target organisation and space
    - The second option will switch to the test space
- To check what spaces exist in an organisation:
  - cf spaces
    - Displays the spaces available in the current organisation
  - cf space dev
    - Displays information about the dev space in the current organisation





## Exercise 3.b

Deploy then update an application  
using the CLI

# Manifest file

- Allows you to specify the parameters for an application deployment
- manifest.yml file is used at deploy time if found in directory application is being pushed from

```
---  
applications:  
- name: bluemix-todo-node  
host: bluemix-todo-node-${random-word}  
command: node app.js  
memory: 128M  
services:  
- todo-db
```

```
---  
applications:  
- name: Myphpmyadmin  
memory: 128M  
instances: 1  
host: Myphpmyadmin  
path: .  
buildpack: https://github.com/dmikusa-pivotal/cf-php-build-pack.git  
services:  
- mysql_BlueMixLab
```

<http://docs.cloudfoundry.org/devguide/deploy-apps/manifest.html>



## .cignore

- When you push an application all content of the current directory and all sub directories are pushed to the server – this is not the behaviour you always want
- .cignore allows control of what is sent to the server by listing the files and directories you do not want to send to the server
- Sample .cignore file:

```
.git  
node_modules  
tmp  
lib-src
```



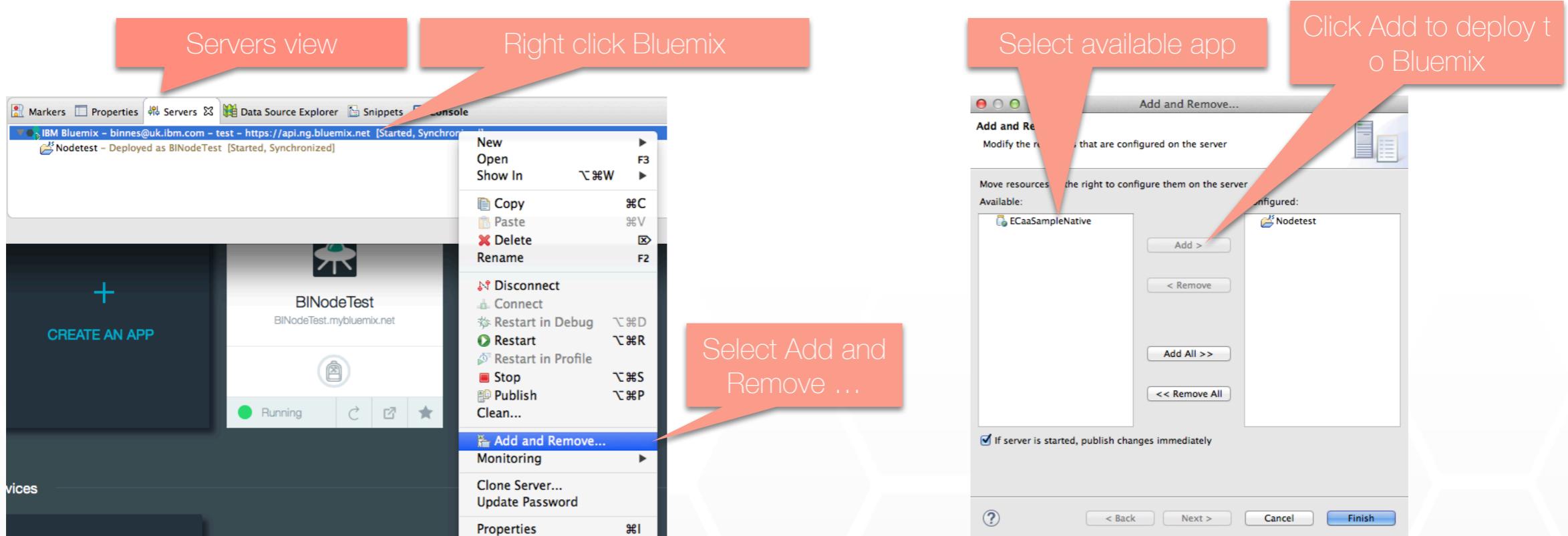


# Exercise 3.c

Working with Eclipse and  
Bluemix

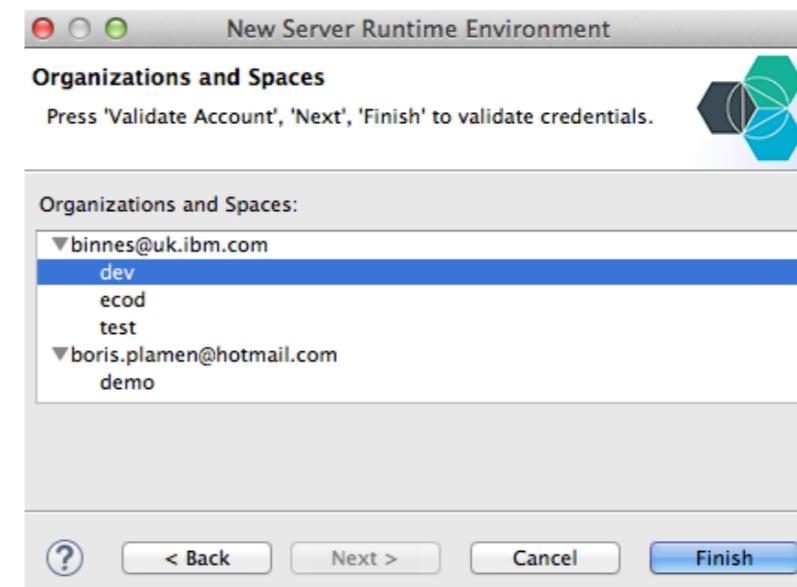
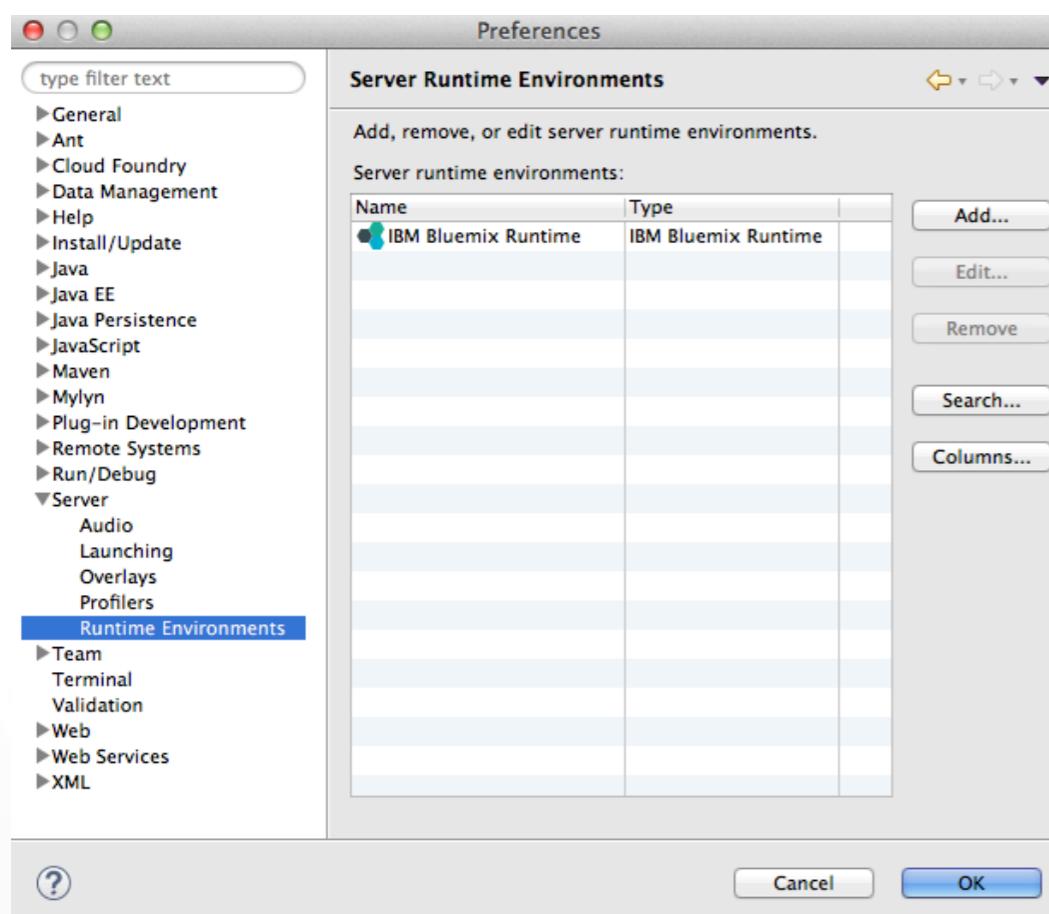
# Eclipse plugin for Bluemix

- Available in the Eclipse marketplace
- Enables developers to develop in Eclipse then deploy to Bluemix.
  - Java and JavaScript supported



# Define your Bluemix server connection

- In Eclipse preferences select ‘Server’ then ‘Runtime Environments’
- Need to add a server definition for each Bluemix space you want to deploy to

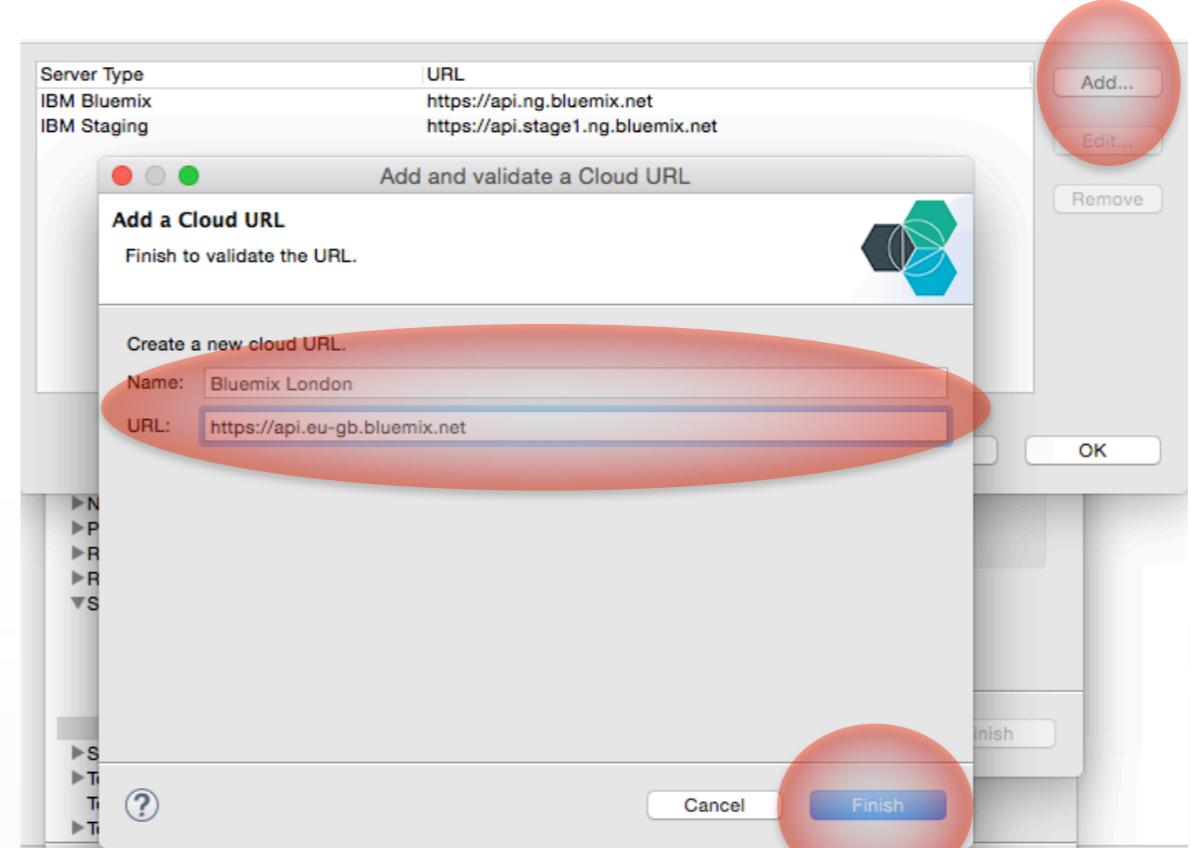
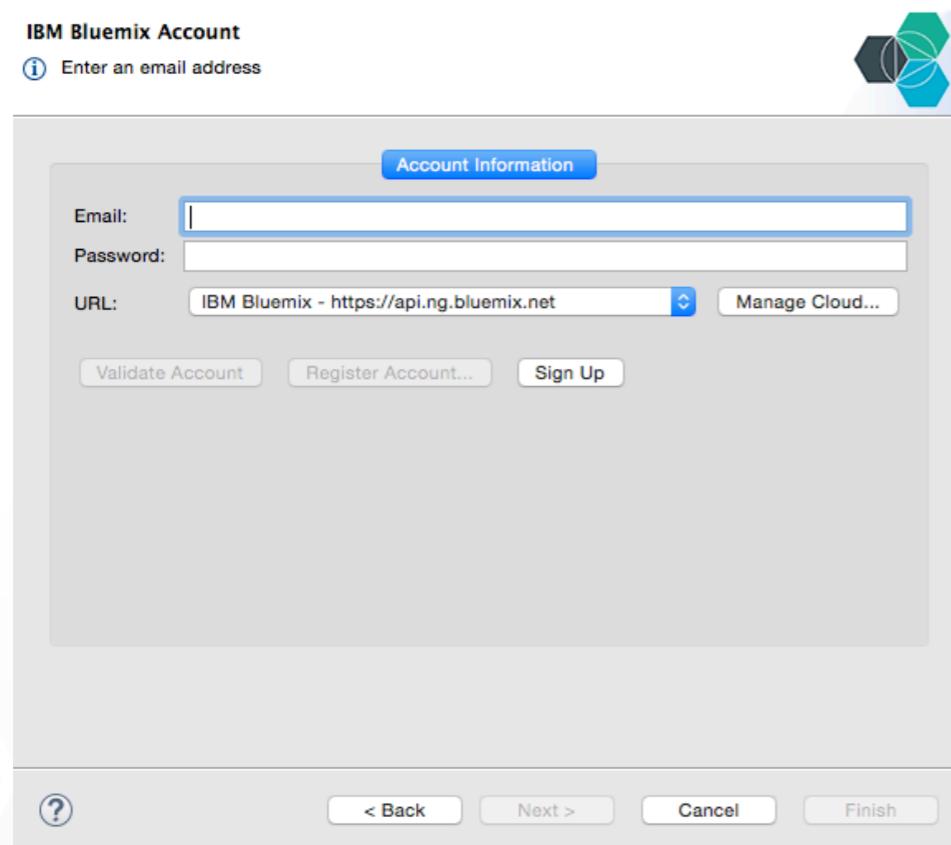


# Adding additional Bluemix Regions to Eclipse

1. Select ‘Manage Cloud ...’ from the Add Bluemix Account dialog box
2. Select ‘Add’ to add an addition Bluemix cloud
3. Enter the details of the Bluemix region by providing the name and endpoint URL
4. Select ‘Finish’

You can find details of region endpoint URLs here:

[https://www.ng.bluemix.net/docs/#overview/overview.html#ov\\_intro\\_reg](https://www.ng.bluemix.net/docs/#overview/overview.html#ov_intro_reg)



# Summary

- Bluemix provides a number of options for developing applications giving you the ability to integrate Bluemix into the developer tools of your choice
- Bluemix provides starter packs to get you up and running quickly
- Start applications from scratch



# Bluemix works With DevOps.

Hands on Workshop  
Section 4 – DevOps and Bluemix



# IBM Bluemix DevOps Services

*An Open, Integrated Rapid Development Experience that Scales*

持续集成, 敏捷开发, 集成的IDEs

<https://hub.jazz.net/>

## DevOps Made Easy

Integrated Agile Planning, Coding, Building, Deploying

[Sign up for free](#)



轻易获取

快速编码

编译部署

团队协作

- ◆ DevOps 云解决方案支持在云上进行移动和Web应用的开发
- ◆ 使用Git和JazzHub创建项目，进行代码托管以及管理和跟踪项目，支持连接到GitHub
- ◆ 选择你最喜欢的开发环境或者直接使用Web开发环境(内置WEB IDE , Eclipse, Visual Studio, or other)
- ◆ 自动的编译和部署应用到 Bluemix
- ◆ 集成的任务管理、敏捷开发计划、源代码控制和自动部署
- ◆ 持续集成:自动构建,单元和集成测试和通过Jenkins和Rational Team Concert部署到云的环境里

**IBM Bluemix**  
[www.bluemix.net](http://www.bluemix.net)



# DevOps Services available today



## Easy Access

Get started for free. With Git hosting and the built-in Web IDE, it's zero to code in seconds.



## Code Now

Use the built-in Web IDE, Eclipse, Visual Studio, or your tool of choice.



## Build & Deploy

Automatically build and deploy your application to IBM's cloud platform, Bluemix.



## Team Collaboration

Share your work and collaborate through expert tools for Agile Development.





# Exercise 4.a

Bluemix integration with  
DevOps Services



# Get productive with Bluemix DevOps Services in minutes

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

- Answer a few questions

- Which SCM (Git, GitHub, Jazz SCM)?
- Do you want your project to be public or private?
- Do you want to practice agile software development?
- Do you want to deploy on IBM Bluemix?

- Start coding

## Create a project

binnes |

URL: <https://hub.jazz.net/project/binnes/>

Choose where your code will be (required)



Use Jazz SCM



Create a Git repository



Connect to an external GitHub repository

or

Private

By default, projects are public. Select this to make it private so that you can share with project members only. [Learn more](#)

Add features for Scrum development (This option can only be added at project creation time.)

Select this if you're familiar with Scrum and plan to deliver software on regular sprints. [i](#)

Make this a Bluemix Project

Select this if you want to deploy your application to the IBM Bluemix cloud platform. [Find out how](#) [i](#)

CANCEL

CREATE



# Collaborate seamlessly on public or private projects

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

The screenshot shows the IBM Bluemix DevOps Services interface. At the top, there's a navigation bar with links for DASHBOARD, MY PROJECTS, EXPLORE, HELP, BLOG, and FORUM. Below that is a project header for "BI-MyFirstDeploy" with tabs for EDIT CODE, TRACK & PLAN, BUILD & DEPLOY, and a settings gear icon. On the left, there's a sidebar with OVERVIEW, MEMBERS (1), and GIT LOG sections. The main content area shows the project details: "BI-MyFirstDeploy" (ID: binnes), a file icon, a lock icon, 0 likes, and a FORK PROJECT button. Below this is a "Members (1 of 1)" section showing a user profile. A red circle highlights the "Invite others to join your project" link. Another red circle highlights the input field where email addresses can be entered, with a callout bubble saying "Enter email addresses (separated by commas) and click invite." A third red circle highlights the "INVITE" button. At the bottom, there's a list of project files with their details:

File	Action	Time	Size
instructions.md	Add starter application package	2 months ago	1 KB
JavaCloudantDB.war	Add starter application package	2 months ago	5555 KB
License.txt	Initial commit	2 months ago	1 KB
manifest.yml	Add starter application package	2 months ago	1 KB
project.json	initial project config	2 hours ago	1 KB
README.md	Initial commit	2 months ago	1 KB
README.txt	Add starter application package	2 months ago	1 KB

Invite other people  
to your project

Enter comma  
separated list of  
email addresses



# Agile development in the Cloud is easy with Bluemix

## DevOps Services for Bluemix

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

**General** 

Select Catalog:  Change and Configuration Management (/ccm10)

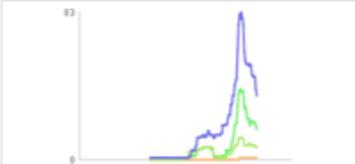
**Select Category**

- All
- Build
- Feeds
- General
- Help
- Plans
- Project/Team
- Reports
- Source Control
- Work Items

**Add External Widgets**



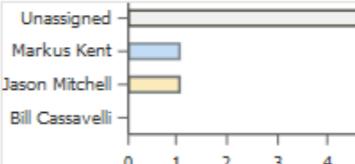
**Open Work Items by Type**



[+ Add Widget](#)

The 'Open Work Items by Type' viewlet shows an area plot of open work items by their type over ...

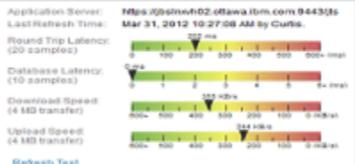
**Plan Statistics**



[+ Add Widget](#)

Shows a report representation of the plan broken down by a configurable criteria. In contrast ...

**Performance Health Check**



[+ Add Widget](#)

The 'Performance Health Check' widget runs a number of tests to measure the performance of ...

**Plan View**

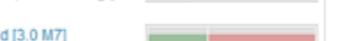


[+ Add Widget](#)

Shows a non editable view on a specific plan.

**Current Iteration: 3.0 M7**

  
**APT Sprint Backlog [3.0 M7]**

  
**Build [3.0 M7]**

  
**ClearCase Connector 3.0 M7 [3.0 M7]**

Page 1 of 12

**Plans**

[+ Add Widget](#)

Shows the overall progress of one or more team's development plan for a specified iteration.

This project uses the Scrum process. Scrum is an agile software development methodology based on the following core practices:

- (1) Backlog;
- (2) Iterative development;
- (3) Scrum meetings;
- (4) Burn Down Charts;
- (5) Sprint review meeting.

**Process Description**

[+ Add Widget](#)

A widget that provides the content of the process description that belongs to a team or project ...

◀ Previous | 37 - 42 of 65 | Next ▶



# Choose how you code with DevOps Services

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

The screenshot shows the IBM Bluemix DevOps Services web interface. On the left, there's a sidebar with icons for file operations like edit, view, tools, and a 'FORK' button. Below it is a tree view of the project structure: .git, public, and app.js (which is selected). The main area is a code editor with syntax highlighting for JavaScript. The code in app.js is as follows:

```

1  /*jslint node:true*/
2  var port = (process.env.VCAP_APP_PORT || 3000);
3  var express = require("express");
4  var sentiment = require('sentiment');
5  var twitter = require('ntwitter');
6
7  var app = express();
8  // Configure the app web container
9  app.configure(function() {
10    app.use(express.static(__dirname + '/public'));
11  });
12
13 // Sample keys for demo and article - you must get your own keys if you clone this application!
14 // Create your own app at: https://dev.twitter.com/apps
15 var tweeter = new twitter({
16   consumer_key: 'VdidGOWCQLMKW2e6orPtFgYq',
17   consumer_secret: 'M3d21CdhzvH0obu0l0XNsX14fs7rvXIp21VJSN0QpTQk5eOjZ7',
18   access_token_key: '195079856-cDW1QdUE0bPas8PDONMU841QbwIxUK0AyC6h4YjnW',
19   access_token_secret: 'jxFHWA1AfuFyraKLH9CuKBsXnE0uJAGzQAh10p1Q03rt'
20 });
21
22 app.get('/twitterCheck', function (req, res) {
23   tweeter.verifyCredentials(function (error, data) {
24     res.send("Hello, " + data.name + ". I am in your twitters.");
25   });
26 });
27
28 var tweetCount = 0;
29 var tweetTotalSentiment = 0;
30 var monitoringPhrase;
31

```

Choose where your code will be



Use Jazz source control  
hosted at JazzHub



Create a Git repository  
hosted at JazzHub



Connect to an existing  
GitHub repository

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





# Exercise 4.b

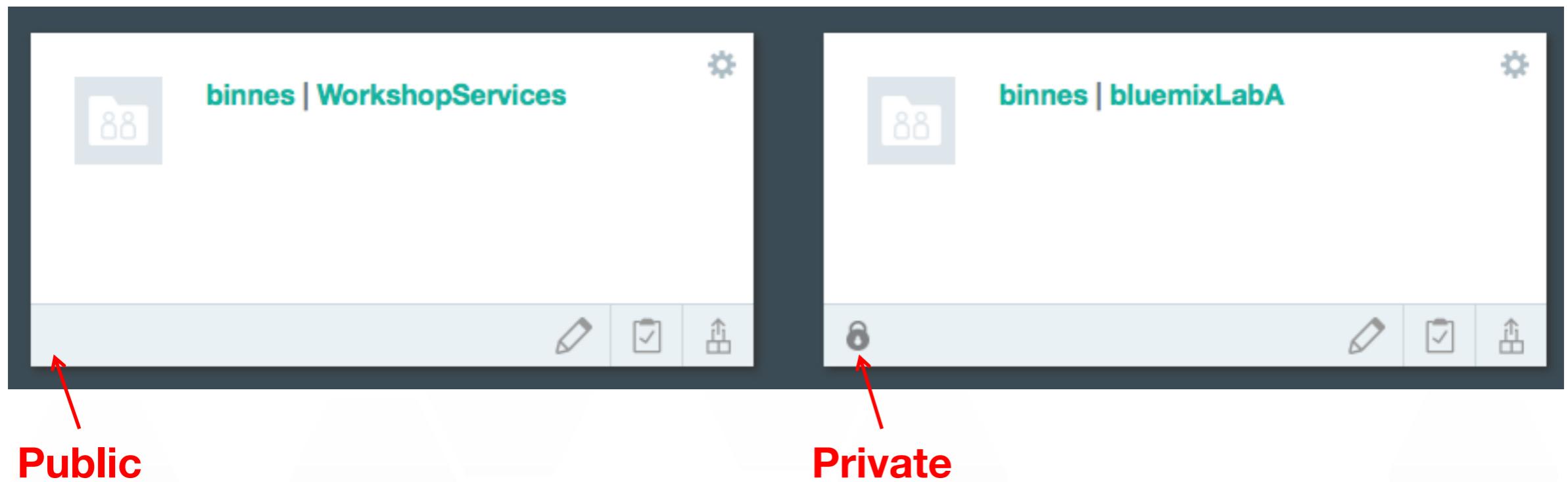
## Working in DevOps Services

# Leverage the power of social coding

With public projects, it's easy to learn and share work with a broader audience.

**Private**

By default, projects are public. Select this to make it private so that you can share with project members only. [Learn more](#)



# Summary

- IBM Bluemix DevOps Services:
  - Provides an online set of tooling to plan, manage, develop, and deploy your application
  - Can use the build in code repository or choose to use Git Hub
  - Allows developers to collaborate on a project
  - Allows developers to work online or locally on the same project

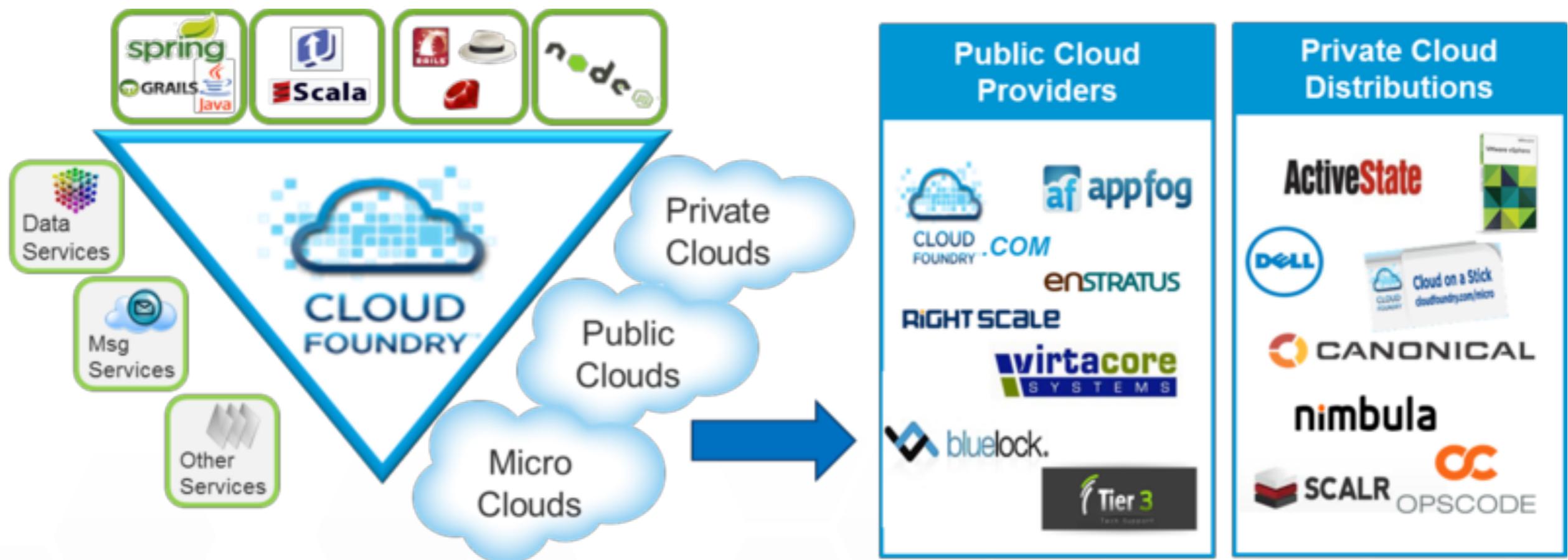


# Bluemix works with Cloud Foundry.

Hands on Workshop  
Section 5 – Cloud Foundry and Bluemix

# What is Cloud Foundry?

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



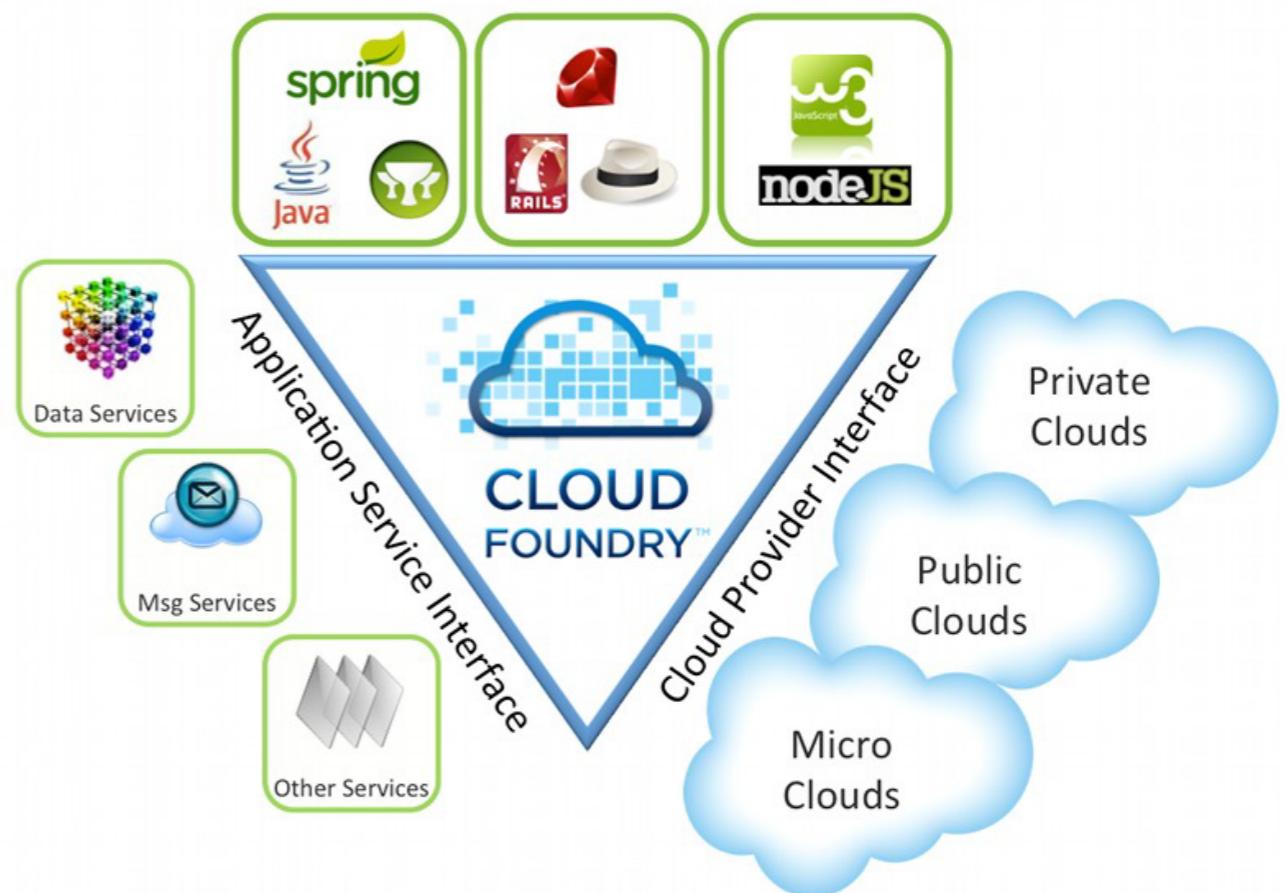
*Making Multi-Cloud a Reality*

IBM Bluemix  
[www.bluemix.net](http://www.bluemix.net)



# 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 和 Bluemix

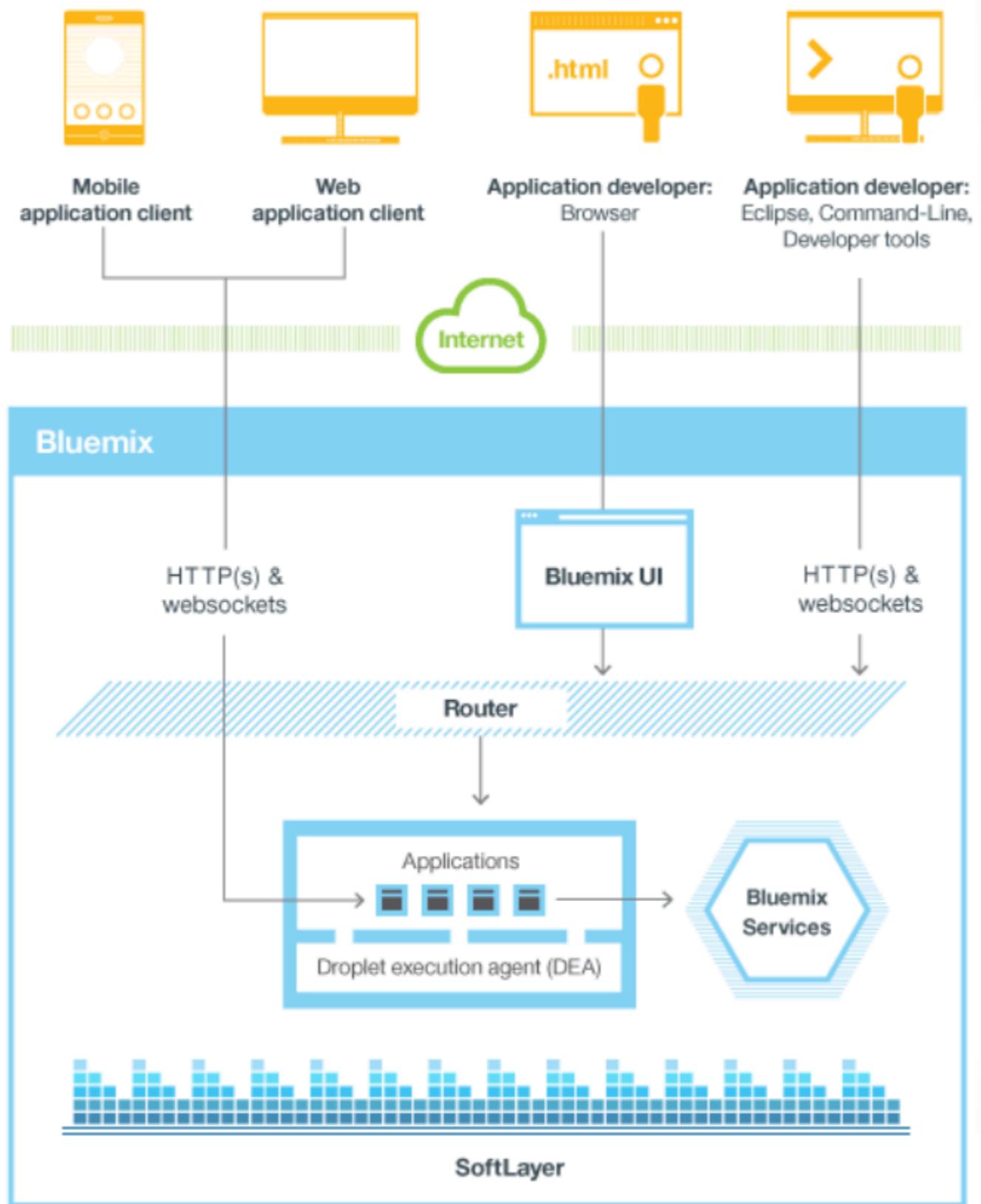
- ◆ Bluemix 构建在开源的平台即服务Cloud Foundry之上
- ◆ Bluemix提供了企业级服务，包括IBM软件能力，第三方服务及开源技术。这些服务可轻松地与用户的云应用相集成，用户无需知道如何安装或配置它们。
- ◆ IBM 为这个开源项目贡献代码，并且是Cloud Foundry基金会的重要成员
- ◆ 和Cloud Foundry相关工具，文档，以及代码例子都可以平滑的运行在Bluemix上
- ◆ Buildpacks, Services, CLI（命令行工具），Scaling（弹性伸缩）这些概念都与Cloud Foundry保持一致



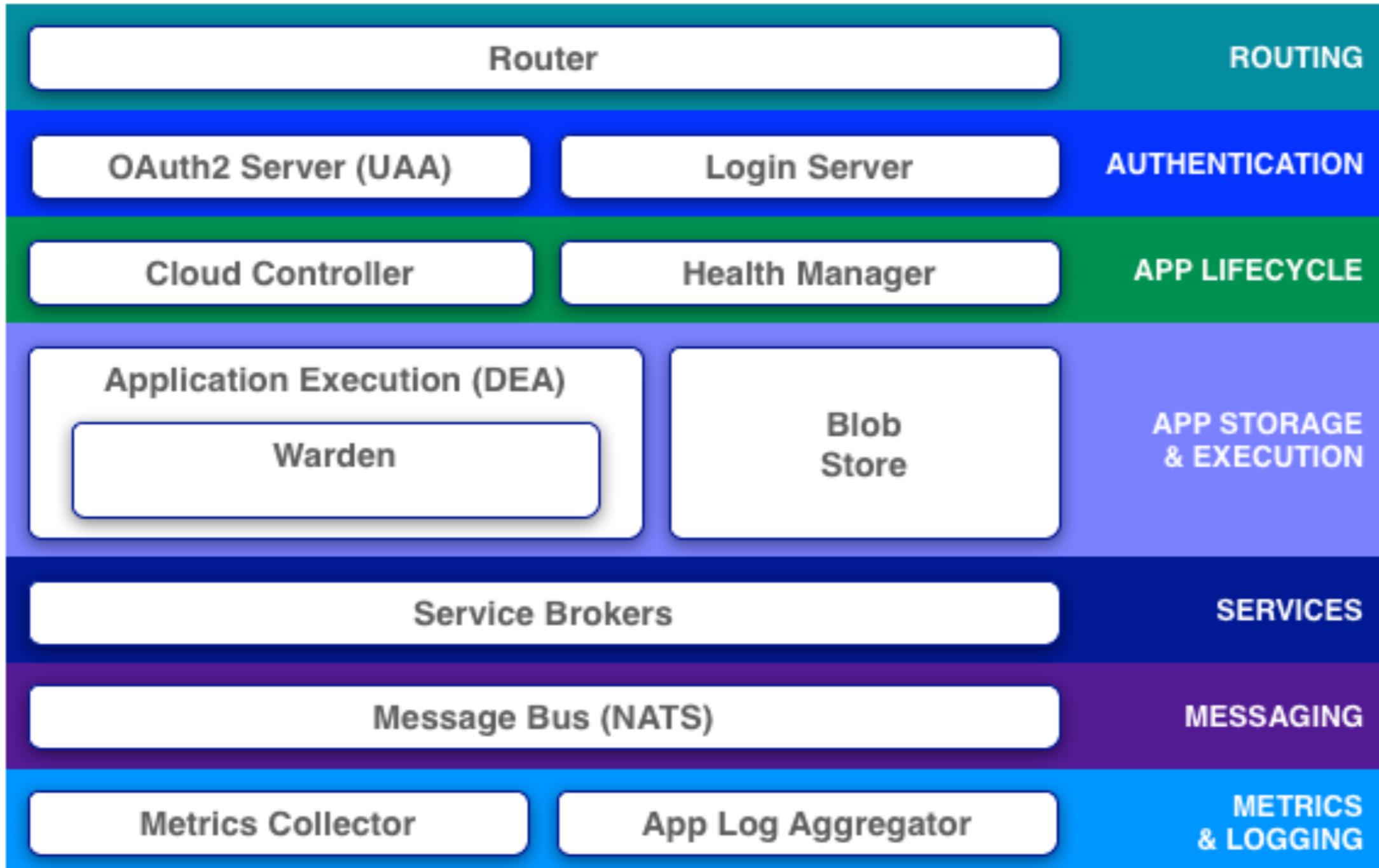
CLOUD  
FOUNDRY™



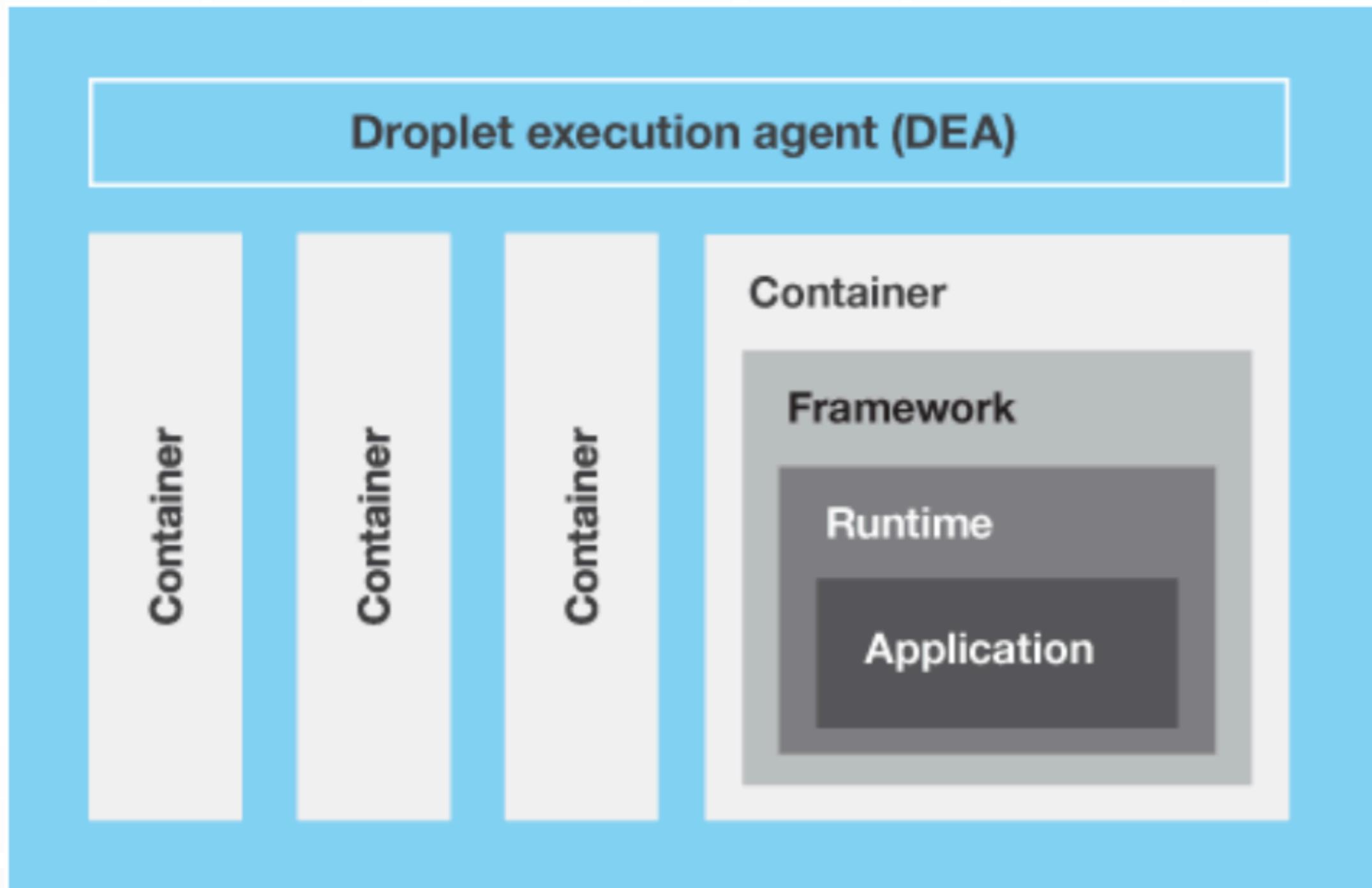
# Bluemix Architecture



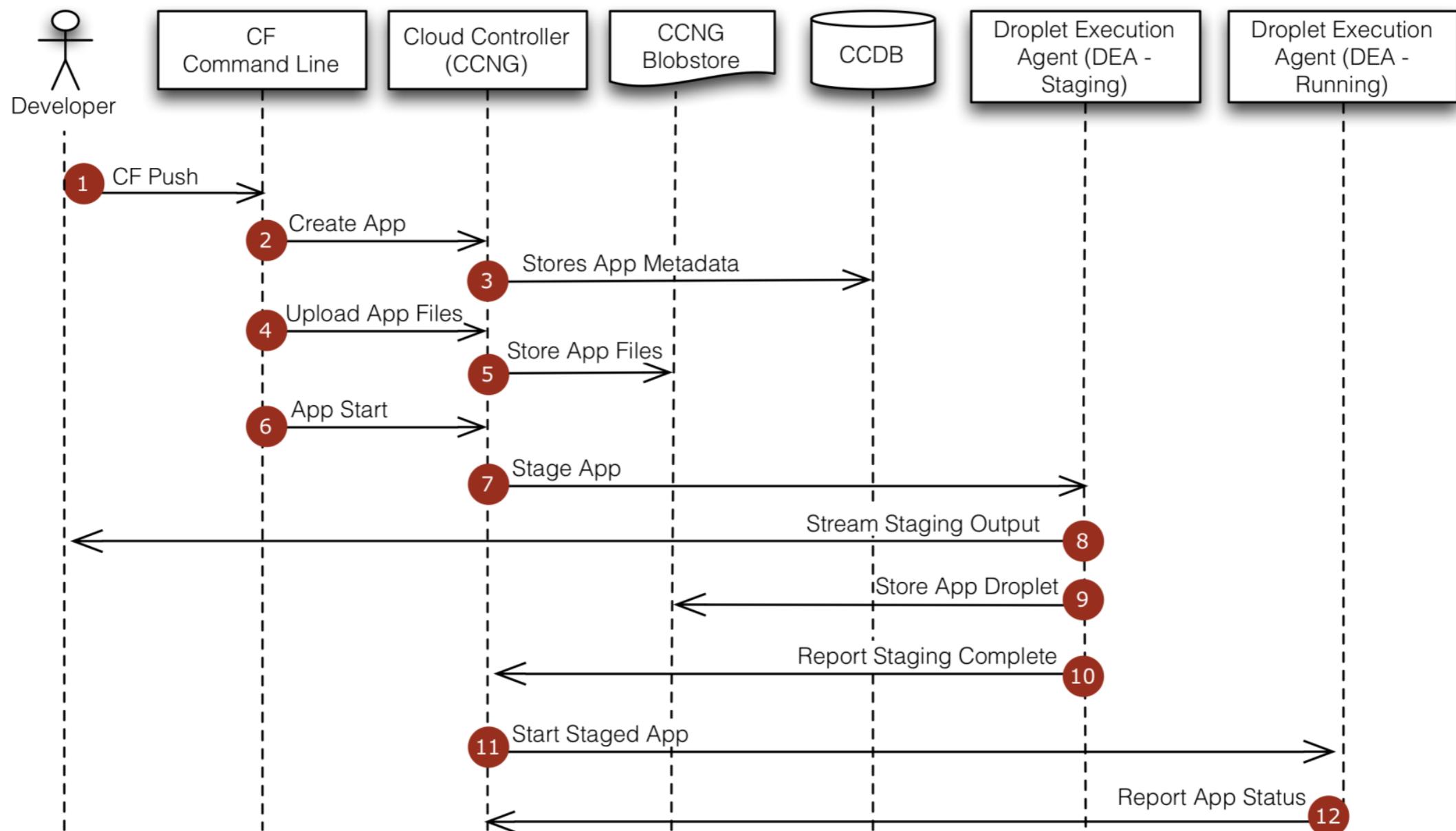
# Cloud Foundry Kernel Internal



# Design of a VM



# Cloud Foundry - Application Staging



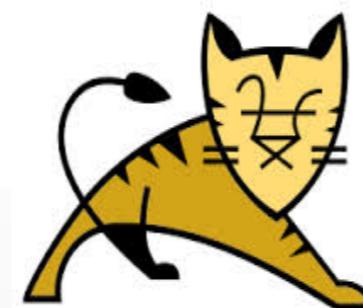
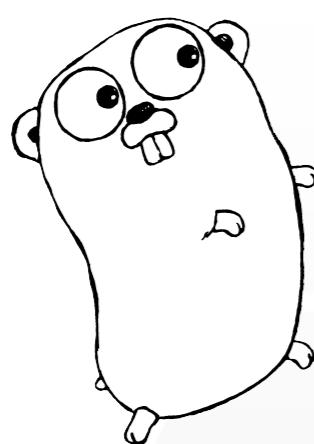
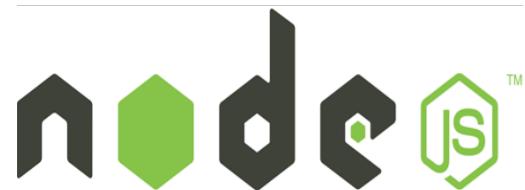
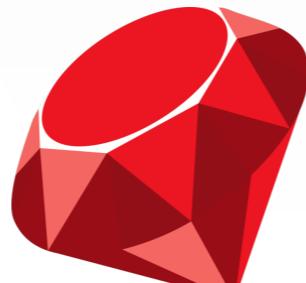
# 运行时(Runtimes)和 Buildpacks

- ◆ Bluemix 一个比较大的有点就是它几乎支持所有类型的运行时
- ◆ 运行时是以Buildpacks的形式提供的
- ◆ Bluemix自带部分Buildpacks
  - Liberty for Java, Node.js, Ruby, Go, PHP, Python
  - 如果部署的应用是上面语言之一，那么在部署的时候就不需要指定特定的Buildpack，Bluemix会根据应用选择正确的Buildpack进行安装和部署
- ◆ 其他的运行时，Bluemix是通过支持社区BuildPacks的形式来提供的





## 运行时(Runtimes)



IBM Bluemix  
[www.bluemix.net](http://www.bluemix.net)

# Choosing the runtime for an application

- If you don't specify a runtime when deploying an application Bluemix will try to find a suitable runtime
  - Each pre-defined runtime has a position set and runtimes are tried in ascending position order
  - Bluemix asks each runtime, starting with runtime at position 1, if they can run the application
  - First runtime that responds it is able to run the application is used
  - If no runtime can run the application an error is returned
- At deploy time you can specify the runtime to use

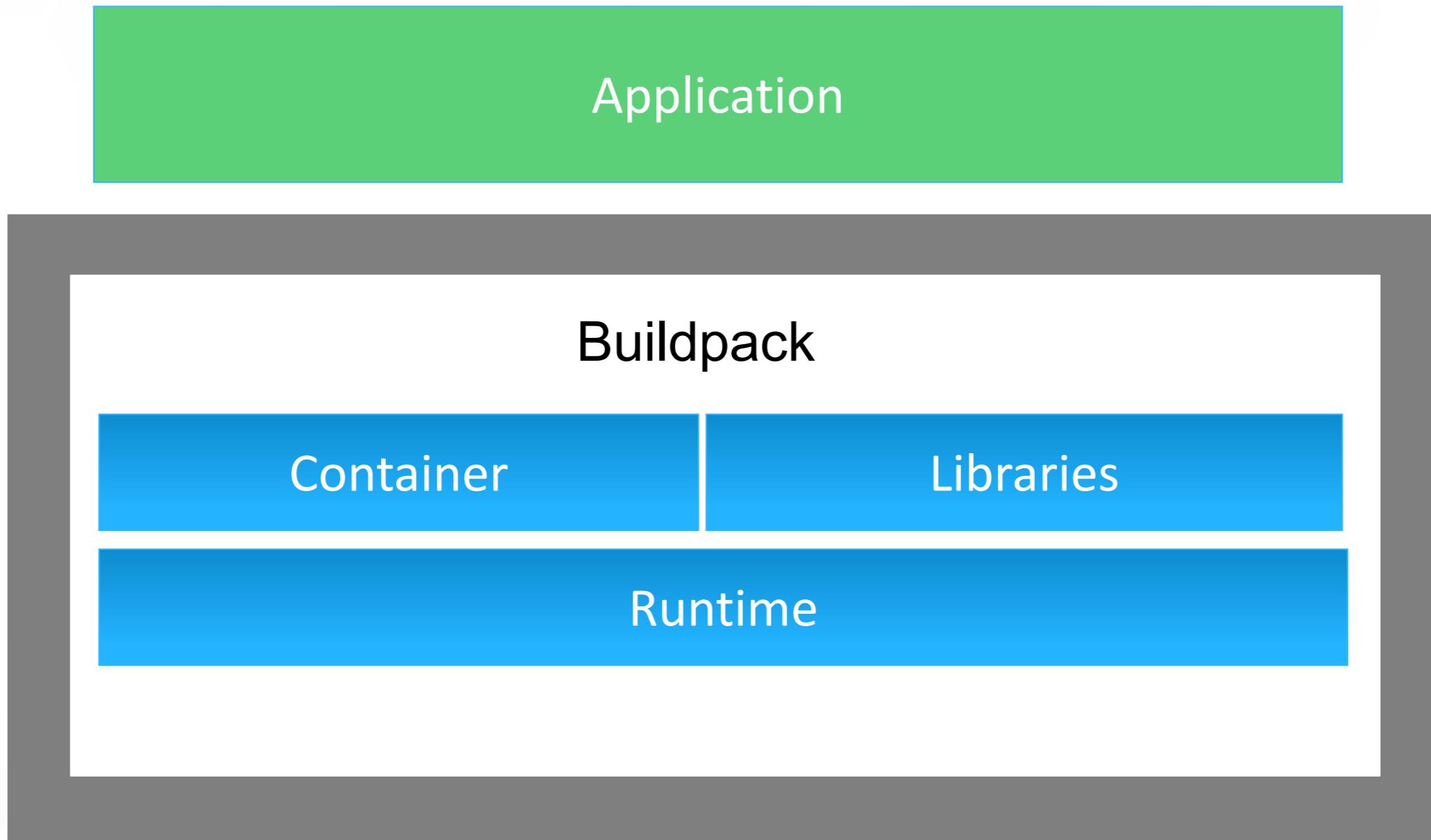


# Buildpacks

- Buildpacks provide the framework and runtime support for your application
- They will determine if they can run your application as part of the ‘autodetect’ mechanism Bluemix uses when you push an application
- You can control which platform provided buildpack your application should use or specify an external buildpack to be used to run your application = “Bring your own Buildpack”



# 图解 Buildpack



# Specifying a buildpack

- CLI allows you to specify which buildpack to use when deploying your application using the '**-b**' options with '**cf push**'.
- Can specify the name of an internal buildpack or provide the URL for an external buildpack
- '**cf buildpacks**' shows the installed internal buildpacks available:

buildpack	position	enabled	locked	filename
liberty-for-java	1	true	false	buildpack_liberty-for-java_v1.12-20150130-1016-yp.zip
sdk-for-nodejs	2	true	false	buildpack_sdk-for-nodejs_v1.12-20150130-1059-yp.zip
noop-buildpack	3	true	false	noop-buildpack-20140311-1519.zip
java_buildpack	4	true	false	java-buildpack-v2.6.zip
ruby_buildpack	5	true	false	ruby_buildpack-offline-v1.2.0.zip
nodejs_buildpack	6	true	false	nodejs_buildpack-offline-v1.1.1.zip
go_buildpack	7	true	false	go_buildpack-offline-v1.1.1.zip
python_buildpack	8	true	false	python_buildpack-offline-v1.1.1.zip
php_buildpack	9	true	false	php_buildpack-offline-v1.0.2.zip
liberty-for-java_v1-11-20150119-1511	10	true	false	buildpack_liberty-for-java_v1.11-20150119-1511-yp.zip
sdk-for-nodejs_v1-11-20150115-2258	11	true	false	buildpack_sdk-for-nodejs_v1.11-20150115-2258-yp.zip

- `cf push myApp -b nodejs_buildpack`
- `cf push myApp -b https://github.com/dmikusa-pivotal/cf-php-build-pack.git`

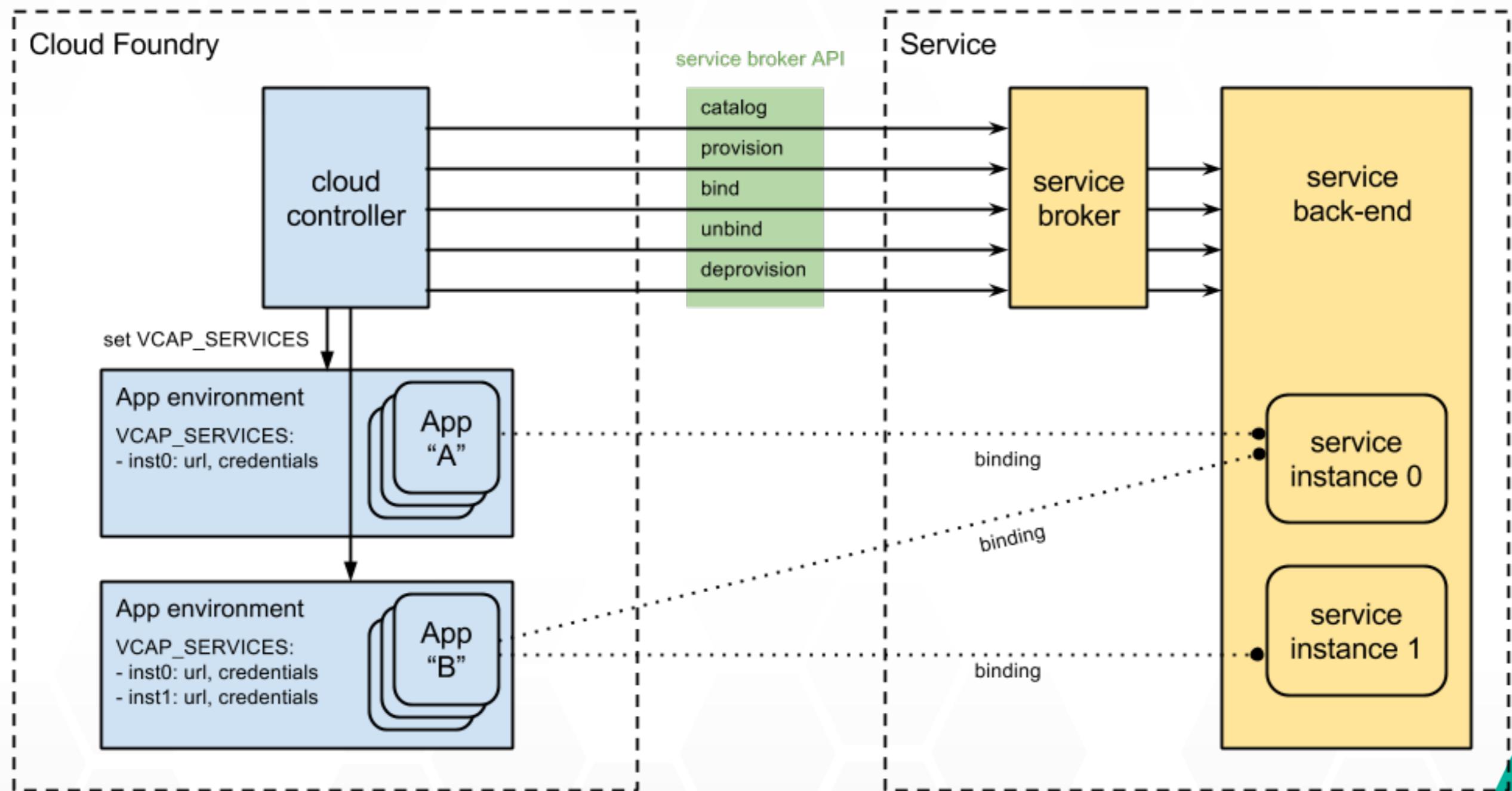




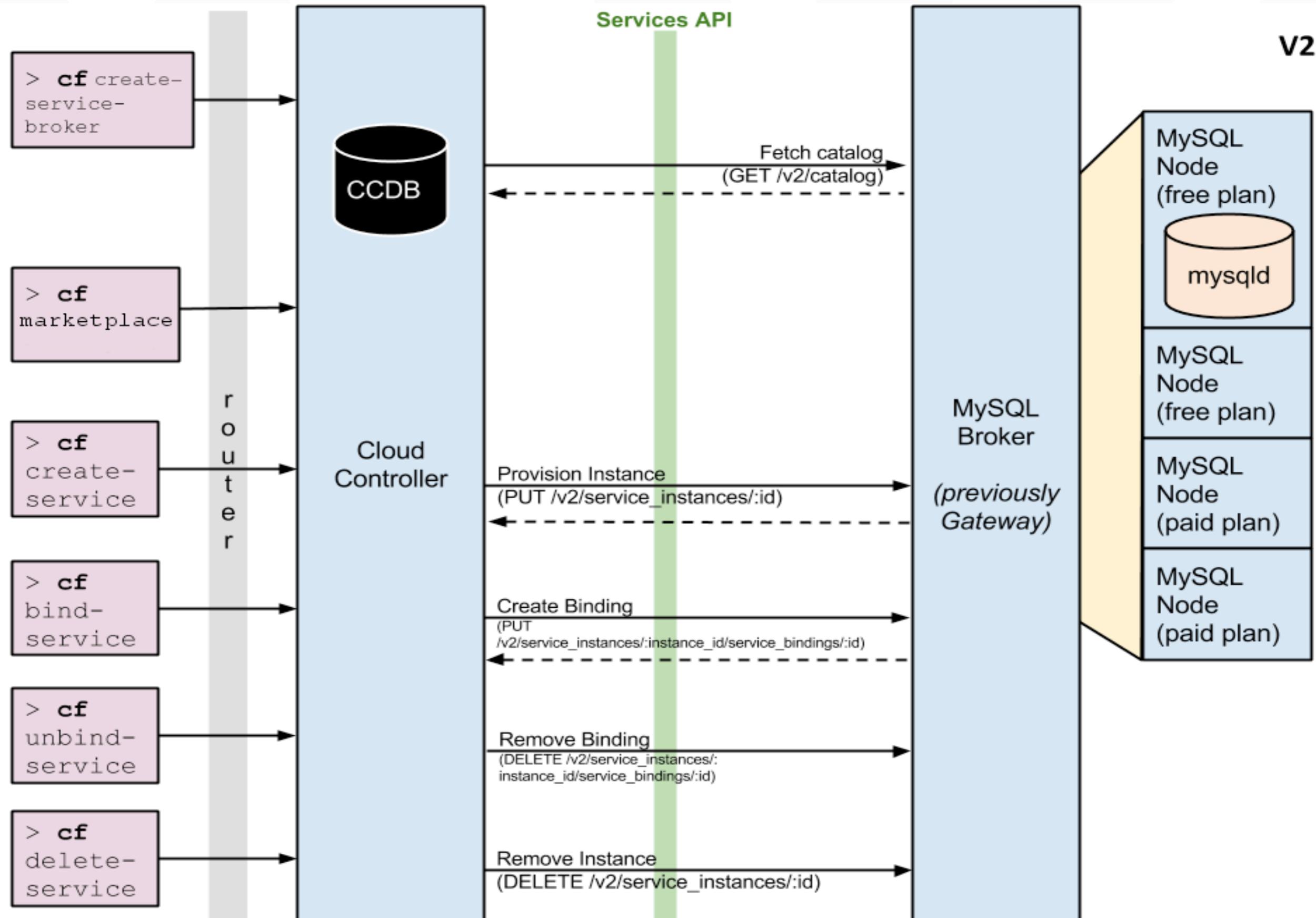
## Exercise 5.a

Specifying a buildpack when  
deploying an application

# Cloud Foundry - Services



# Service Broker API Overview





## 文章

# 初探IBM Bluemix，带您领略平台云 如何使用IBM Bluemix 开发下一代云应 用

[http://www.ibm.com/developerworks/cn/websphere/library/techarticles/1406\\_zhuxl\\_bluemix/1406\\_zhuxl\\_bluemix.html](http://www.ibm.com/developerworks/cn/websphere/library/techarticles/1406_zhuxl_bluemix/1406_zhuxl_bluemix.html)  
[http://www.ibm.com/developerworks/cn/cloud/library/1512\\_zhuxl\\_bluemixapp/](http://www.ibm.com/developerworks/cn/cloud/library/1512_zhuxl_bluemixapp/)





# 资源

文档: <https://www.ng.bluemix.net/docs/index.jsp>

developerWorks: <http://developer.ibm.com/bluemix>

应用范例 & 教程: <https://www.ibmdw.net/bluemix/docs/articles/>,  
<https://www.ibmdw.net/bluemix/docs/sample-code/>

开发者论坛: <https://www.ibmdw.net/bluemix/>

Blog: <https://www.ibmdw.net/bluemix/blog/>

developerWorks 中国: <http://www.ibm.com/developerworks/cn/cloud/bluemix>



微信号:IBMBluemix



*Thank You*

