

Pivotal



Cloud Native Applications

Introduction

WE BELIEVE

Transforming how the world builds software
will shape the future.

Agenda

1. Changing Development Models
2. Cloud Native Application Platforms
3. Pivotal Cloud Foundry

Stephen O'Grady

The New Kingmakers

How Developers
Conquered the World



O'REILLY®

Pivotal

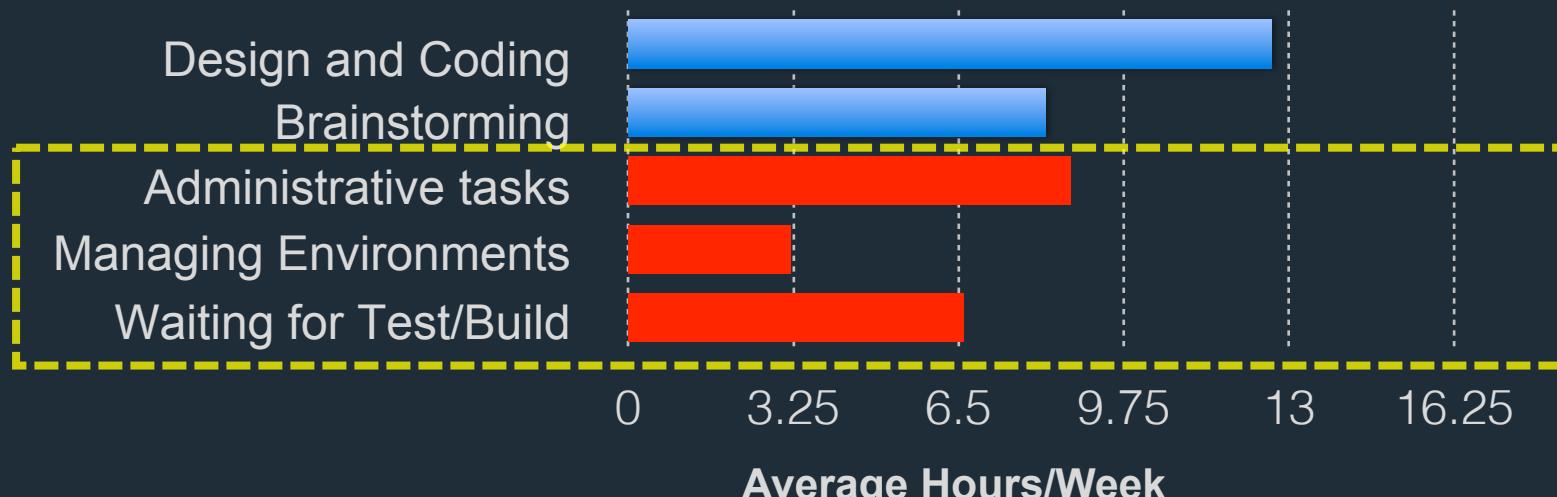
From idea to production: 6-9 months



An idea in the morning, is running in production by evening



Software Developers Spend too Much Time NOT Writing Software



17.5 hrs ~ 40% of full work week!

The developer dream haiku

Here is my source code,

Run it in the Cloud for me,

I do not care how

The IT Operator reality

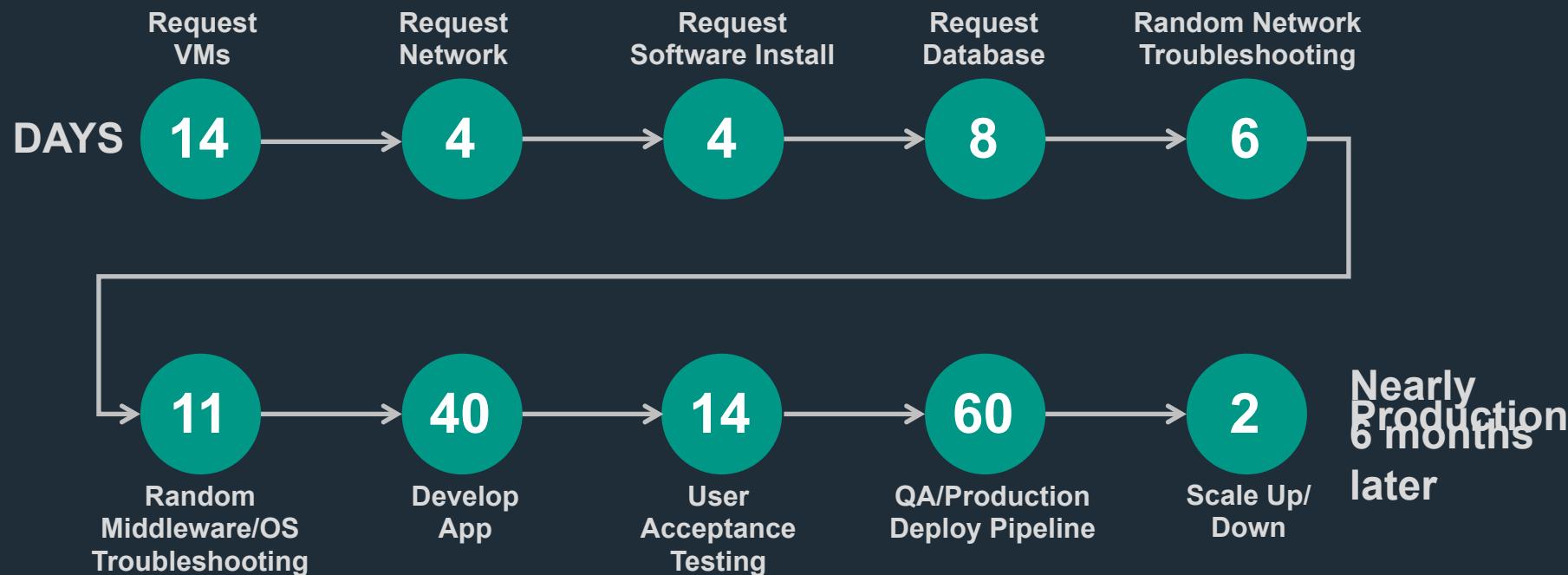


It's not enough just to deploy something

That's only Day One

You have to deploy again and again and again

IT Ops Spends Time Building Snowflakes



Software is changing INDUSTRIES



Square

\$6 BN

Financial Services



\$53 BN

Entertainment



\$26 BN

Hotel



\$34 BN

Automotive



U B E R

\$50 BN

Transportation



\$3.2 BN

Industrial Products

The Enterprise REVOLUTION

comcast®

\$138BN

dish

\$34BN



\$108BN



\$62BN



\$145BN



\$23BN

The Enterprise REVOLUTION



700+ apps



Spring + PCF



Re-writing software
the modern way



Agile software
transformation

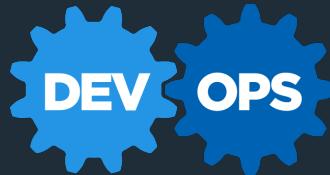


DevOps adoption with PCF
Automated build pipeline



Major IT
transformation

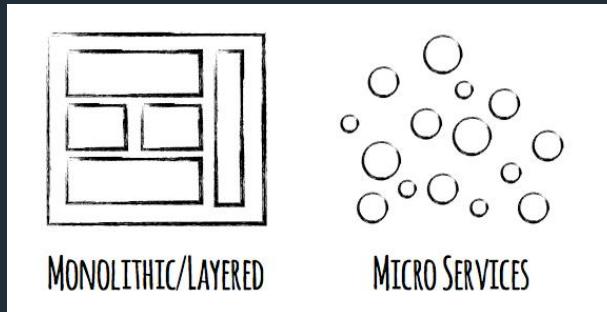
Software is CHANGING



Continuous Delivery



THE TWELVE-FACTOR APP

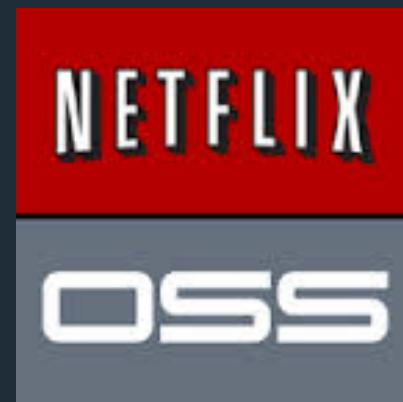


MONOLITHIC/LAYERED

MICRO SERVICES



Spring Boot

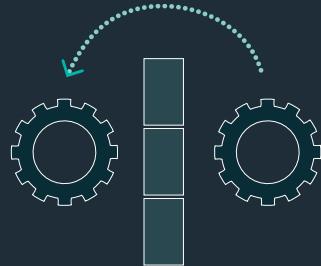


Pivotal

DevOps

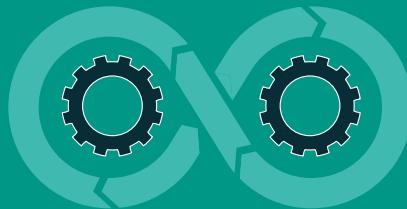
Not my problem

Separate tools, varied incentives,
opaque process



Shared responsibility

Common incentives, tools,
process and culture



Continuous Delivery

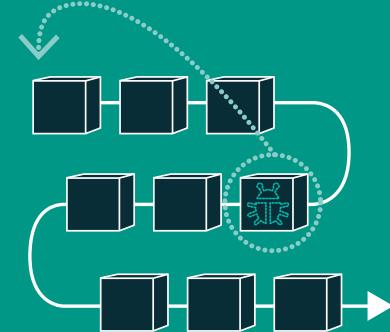
Release once every 6 months

More Bugs in production



Release early and often

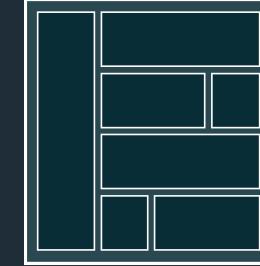
Higher Quality of Code



Microservices

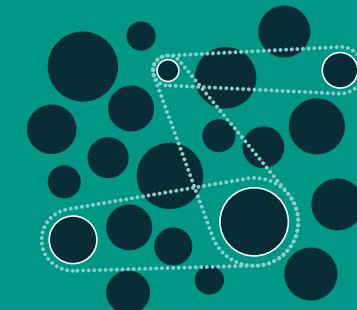
Tightly coupled components

Slow deployment cycles



Loosely coupled components

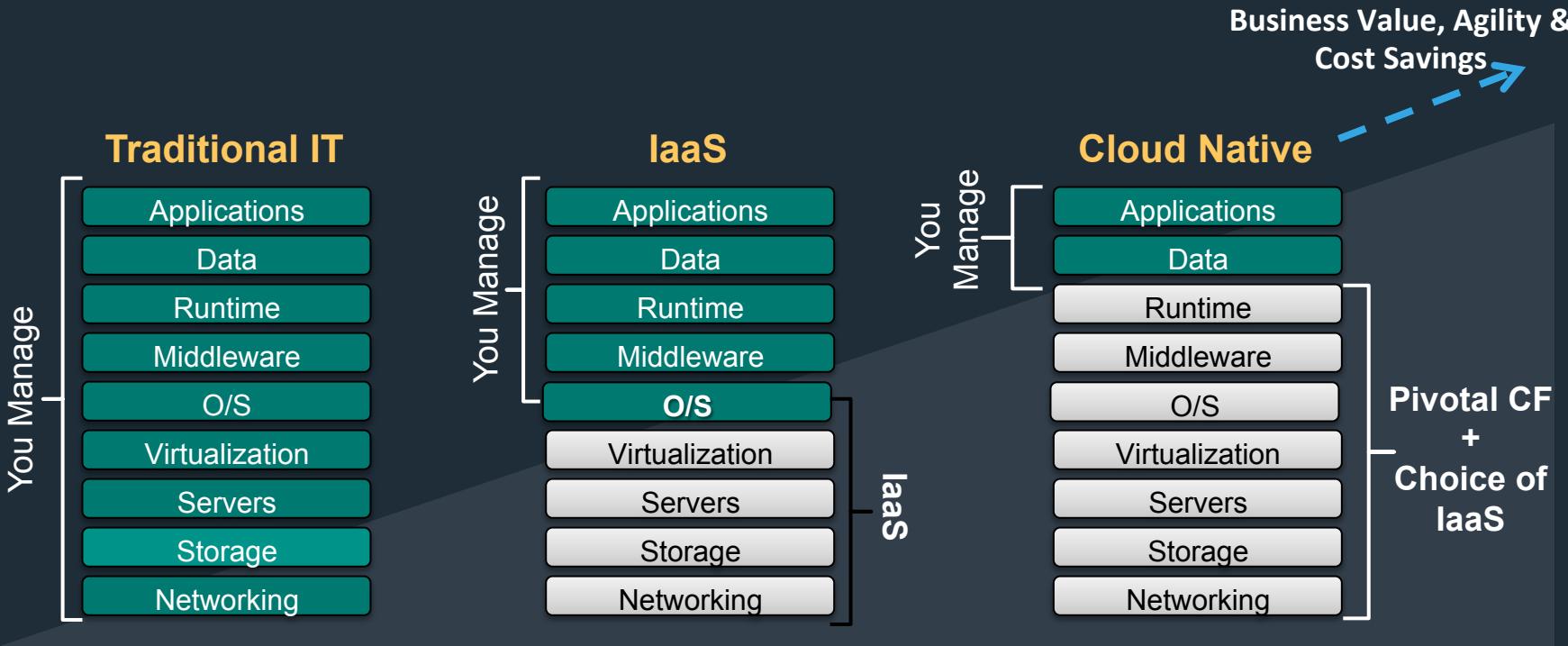
Automated deployments



It Takes a Platform

An end-to-end *structured platform*
that makes implementing
distributed application best
practices, a turn-key and first
practice

Application-centric Platforms





DEMO



CF

What Just Happened?

Behind the scenes with

\$ cf push



Upload

`cf push` uploads your files to a cloud controller API which transforms them a running application.

Stage

Behind the scenes, your files go through staging scripts called [buildpacks](#) to create a ready-to-run droplet.

Distribute

A [Droplet Execution Agent](#) unpacks the droplets into containers, calls a start command and alerts cloud controller that your app instances are ready to receive traffic.

Run

Your app receives an entry in a dynamic routing tier, which load balances traffic across all your app instances.

Pivotal Cloud Foundry® CF

Pivotal

Full Stack Ticket Elimination

```
D:\pcf\PCF-demo-1>cf push
Updating manifest file D:\pcf\PCF-demo-1\manifest.yml
Using route pcfdemo.apps.pcf
Uploading pcfdemo.war...
Uploading app files from: D:\pcf\PCF-demo-1\target\pcfdemo.war
Uploading 615.4K, 66 files
Done uploading
OK
Binding service myrabbit to app pcfdemo-1 in org PCF-Org-01 / space development as H141869...
OK
Binding service mylogger to app pcfdemo-1 in org PCF-Org-01 / space development as H141869...
OK
Binding service myscaler to app pcfdemo-1 in org PCF-Org-01 / space development as H141869...
OK
Stopping app pcfdemo-1 in org PCF-Org-01 / space development as H141869...
OK
Starting app pcfdemo-1 in org PCF-Org-01 / space development as H141869...
----> Downloaded app package (6.5M)
----> Downloaded app buildpack cache (4.0K)
+--> Java Buildpack Version: v3.0 (offline) | https://github.com/cloudfoundry/java-buildpack.git@v3b15e1
----> Downloading Open Jdk JRE 1.8.0_40 from https://download.run.pivotal.io/openjdk/trusty/x86_64/openjdk-1.8.0_40.tar.gz (found in cache)
----> Expanding Open Jdk JRE to .java-buildpack/open_jdk_jre (0.9s)
----> Downloading Spring Auto Reconfiguration 1.7.0.RELEASE from https://download.run.pivotal.io/auto-reconfiguration/auto-reconfiguration-1.7.0.RELEASE.jar (found in cache)
+--> Modifying ./WEB-INF/web.xml for Auto Reconfiguration
----> Downloading Tomcat Instance 8.0.21 from https://download.run.pivotal.io/tomcat/tomcat-8.0.21-instance.jar.gz (found in cache)
+--> Expanding tomcat to .java-buildpack/tomcat (0.1s)
----> Downloading tomcat Lifecycle Support 2.4.0.RELEASE from https://download.run.pivotal.io/tomcat-lifecycle-support/tomcat-lifecycle-support-2.4.0.RELEASE.jar (found in cache)
----> Downloading Tomcat Logging Support 2.4.0.RELEASE from https://download.run.pivotal.io/tomcat-logging-support/tomcat-logging-support-2.4.0.RELEASE.jar (found in cache)
----> Downloading Tomcat Access Logging Support 2.4.0.RELEASE from https://download.run.pivotal.io/tomcat-access-logging-support/tomcat-access-logging-support-2.4.0.RELEASE.jar (found in cache)
----> Uploading droplet (60M)
1 of 1 instances running
App started

Showing health and status for app pcfdemo-1 in org PCF-Org-01 / space development as H141869...
OK
requested state: started
instances: 1/1
usage: 512M x 1 instances
urls: pcfdemo.apps.pcf
last uploaded: Mon Aug 3 00:19:12 UTC 2015
stack: cflinuxfs2
#0  state     since          CPU    memory   disk      details
#0  running   2015-08-02 07:19:38 PM  0.0%  345.8M of 512M  138.3M of 1G  details
D:\pcf\PCF-demo-1>
```

Firewall & Routes

Service Bindings

App Lifecycle

Runtime Installation & Config

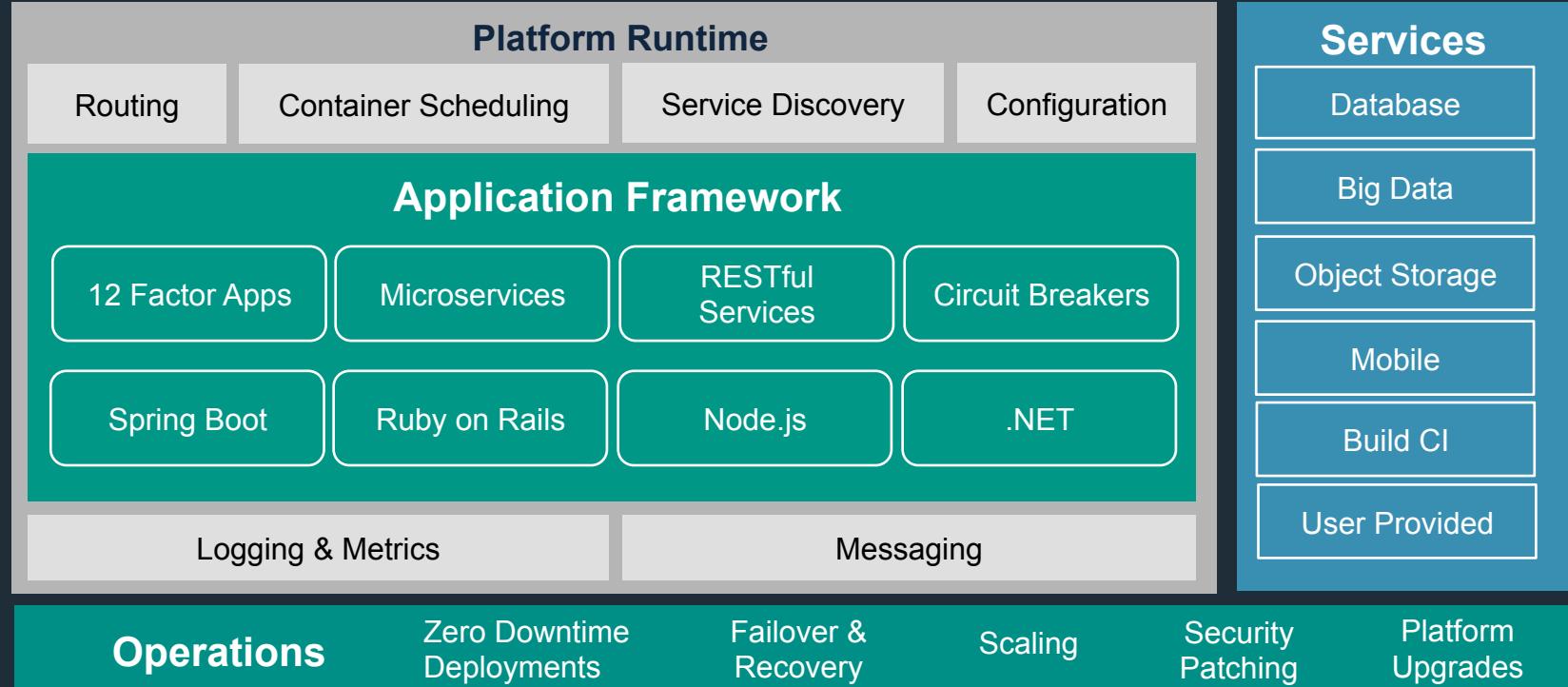
Middleware Installation & Config

Application Installation & Config

App Lifecycle

Logging, Health, Telemetry

Pivotal Cloud Foundry at a Glance



Pivotal Cloud Foundry

An Open Industry Standard

PLATINUM



GOLD



SILVER



Pivotal

CF Open Source Momentum



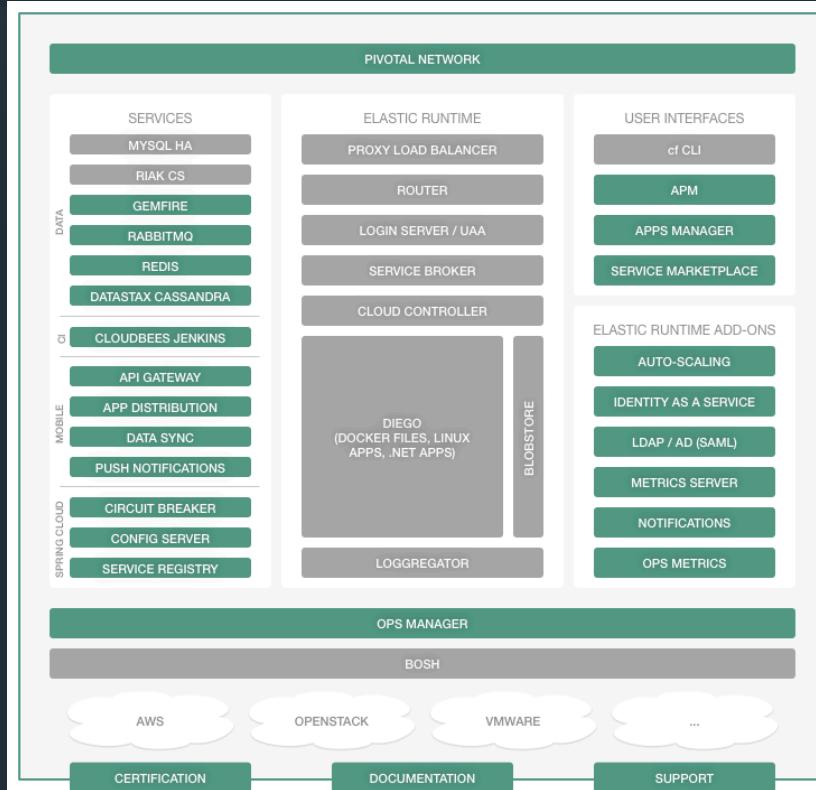
- 53 corporations are contributing members
- 158 meetups in 49 countries
- 21K members with ~5K joining last month
- ~2200 developers, ~650 Code Submitters, ~400 of them in last year
- 65K commits with ~30K of those in the last year

Source: <http://cloud-foundry.meetup.com/> on Jun 12 2015

Pivotal Cloud Foundry Commercialization Model

Open source software provides the basis for the platform

Commercial distribution provides value add features, enterprise services, support, docs, certs etc.



ESI's Cloud Foundry

Location
Independent

ORACLE

TIBCO

SQL

Legacy

vCenter
Network A



Apigee

Ports: 80/443



Polaris* Availability Zones x 3

*.px1.cfapps.internal.t-mobile.com
*.px2.cfapps.internal.t-mobile.com
*.px3.cfapps.internal.t-mobile.com

*.px1.cf.internal.t-mobile.com
*.px2.cf.internal.t-mobile.com
*.px3.cf.internal.t-mobile.com

PCF System Components

API Logs and Metrics Routing
Buildpacks Identity Health

Services



BOSH

vmware®



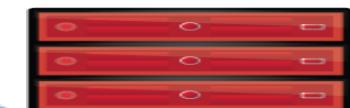
[6 x Nutanix]

PCF /22 Net B

BOSH Net A, B

Cassandra Net TBD

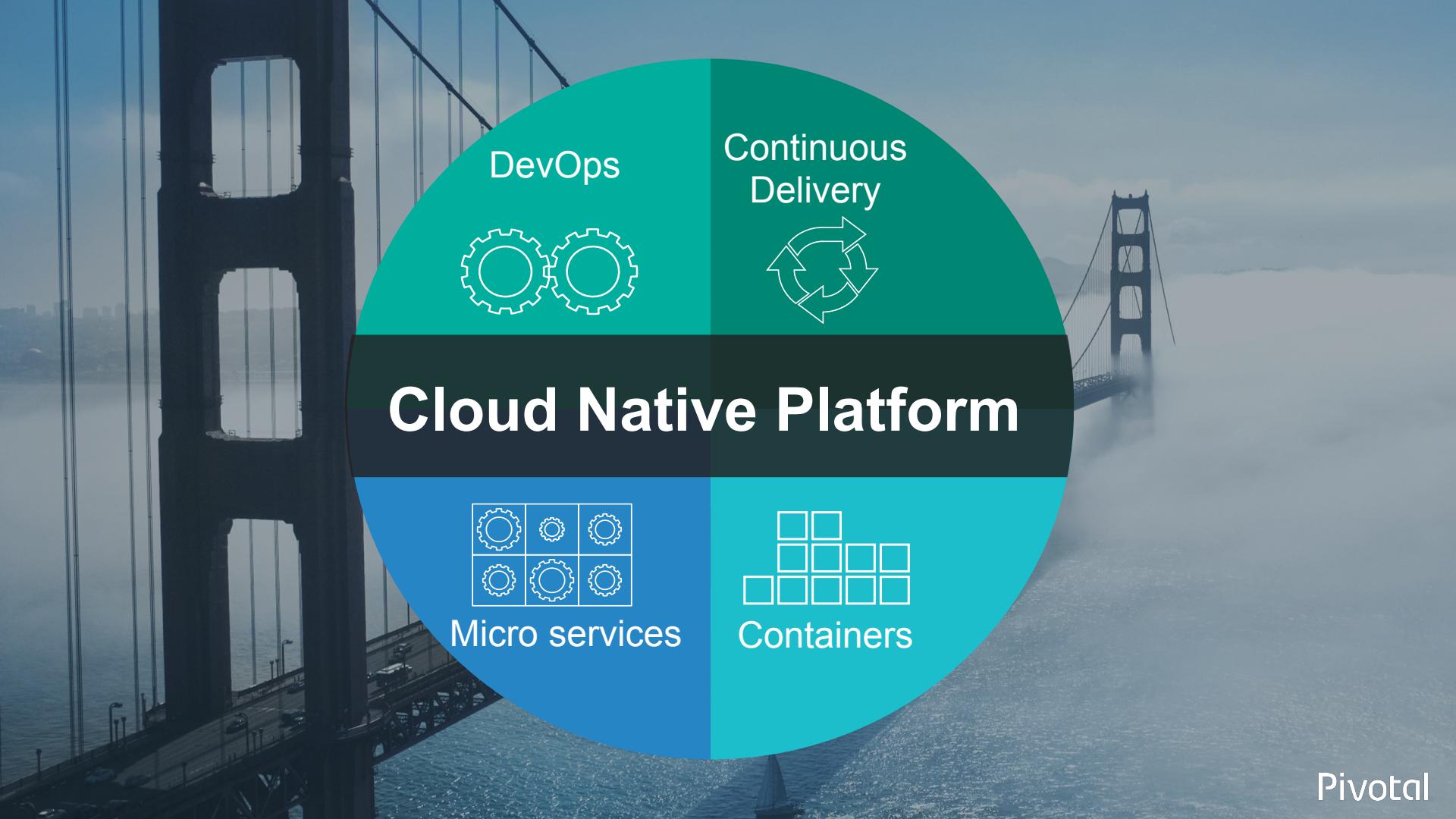
DataStax /
Cassandra



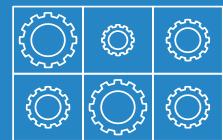
[Dedicated]

* Availability Zone arch same for Titan data center

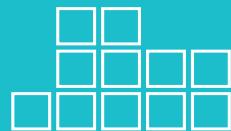
Pivotal



Cloud Native Platform

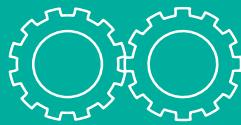


Micro services



Containers

DevOps



Continuous
Delivery



BREAK

