

Pivotal.

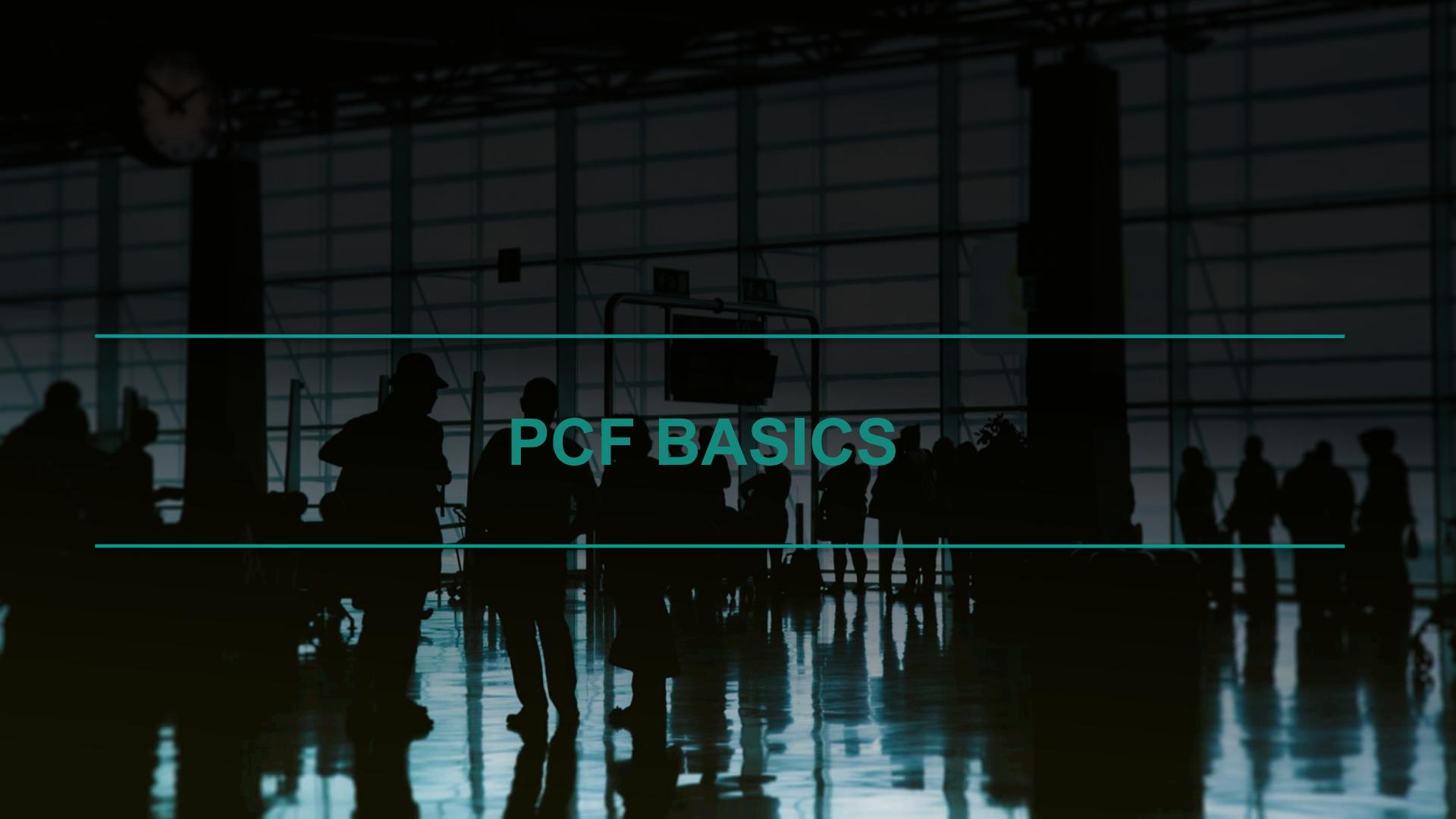
# Pivotal Cloud Foundry Basics and Architecture



# Agenda

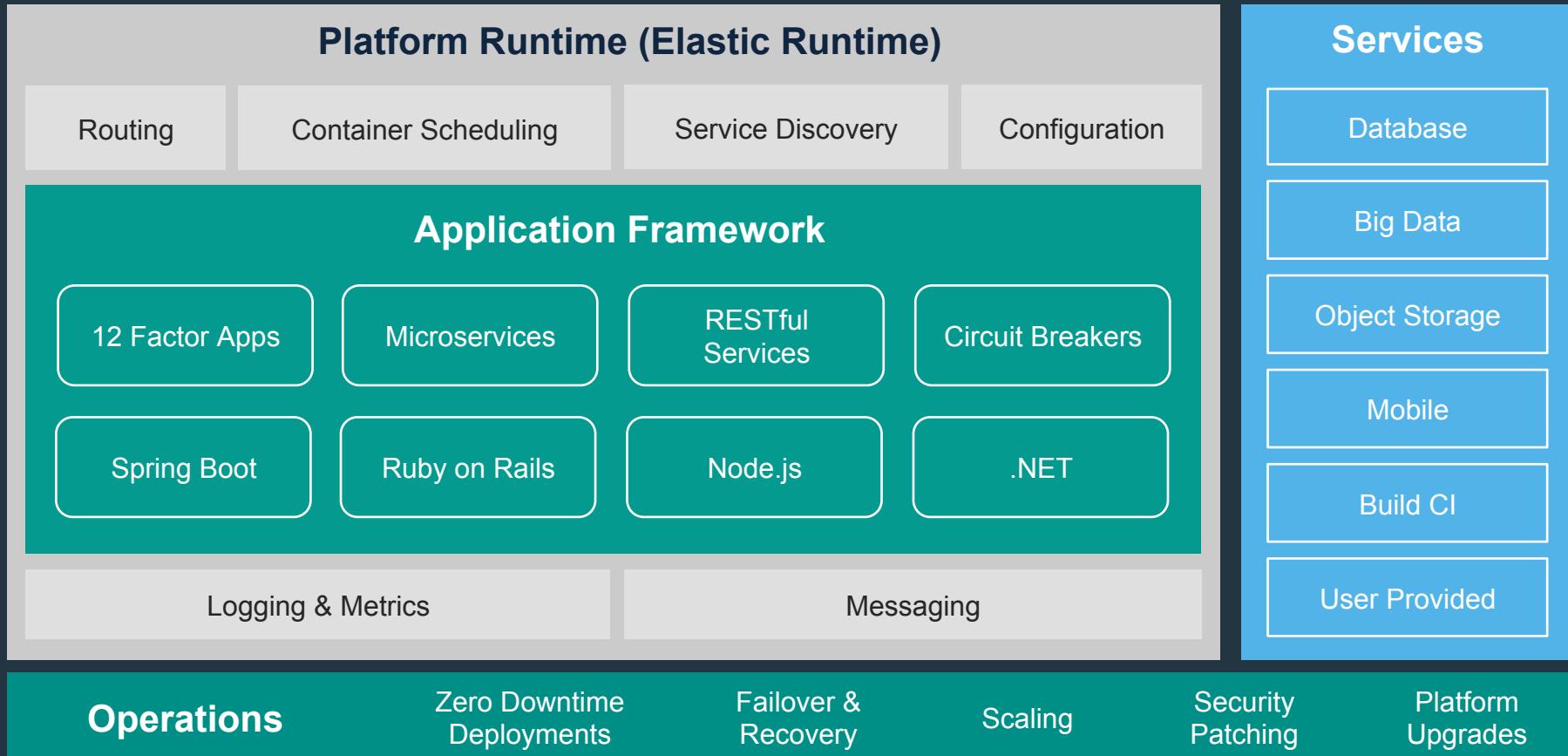
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- Pivotal Cloud Foundry
  - PCF Basics
  - PCF Architecture

A dark, atmospheric photograph of an airport terminal. Silhouettes of numerous people are visible against a bright, overexposed background where a large glass wall looks out onto a tarmac. The scene is bathed in a strong teal or cyan light, which creates a moody, futuristic feel. In the center, the words "PCF BASICS" are overlaid in a bold, white, sans-serif font.

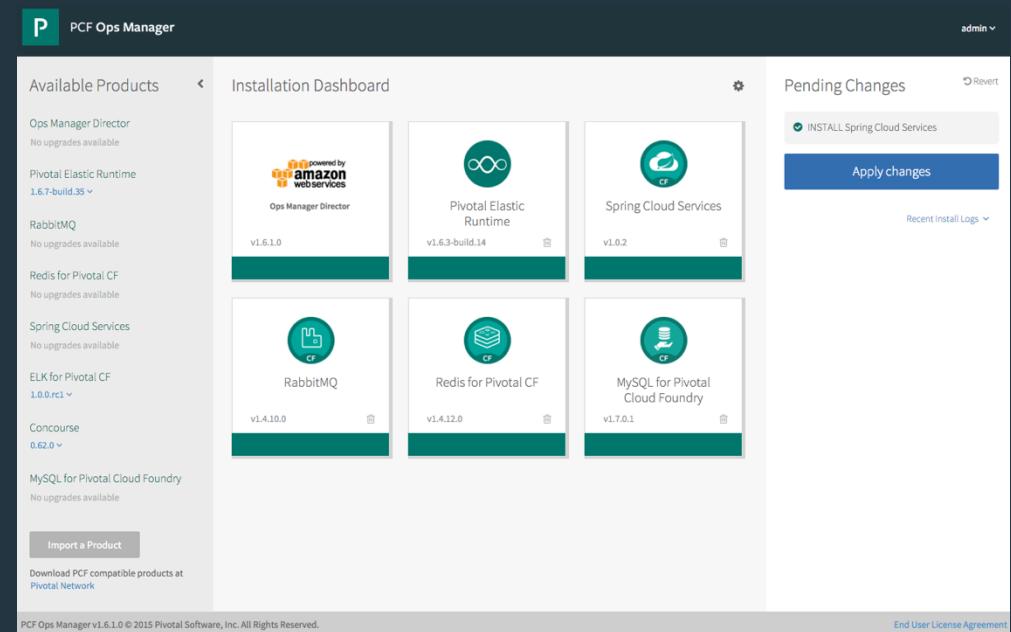
# PCF BASICS

# Pivotal Cloud Foundry Architecture



# Operations - Pivotal Ops Manager

- Click to Install the Platform
- Built-in High Availability
- Install and Manage Services
- Handle Live upgrades and updates
- Click to scale the platform
- Built-in Platform monitoring



# Elastic Runtime Tile

- Web form allowing an operator to scale components both
  - vertically (CPU, RAM, Disk) and
  - horizontally (number of instances).

The screenshot shows the PCF Ops Manager interface. The top navigation bar includes a logo, the title "PCF Ops Manager", and a user dropdown. The main content area has two tabs: "Resource Config" and "Available Products".

**Resource Config:** This section is for the "Pivotal Elastic Runtime" component. It lists several services with their current resource configurations:

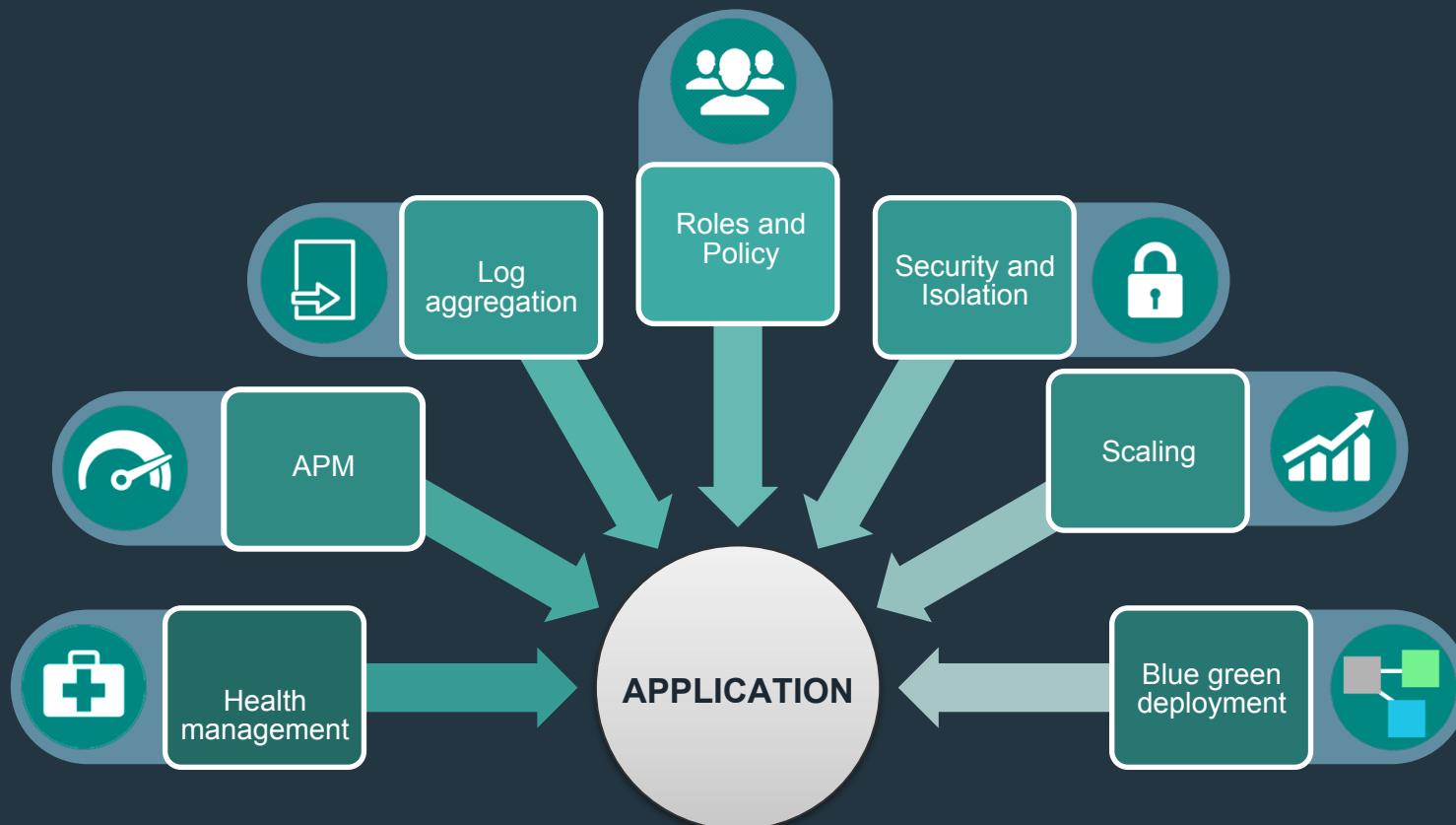
Service	Instances	CPU	RAM (MB)	Ephemeral Disk (MB)	Persistent Disk (MB)
NATS	1	1	1024	2048	0
consul	1	1	1024	2048	1024
etcd	1	1	1024	2048	1024
NFS Server	1	1	1024	2048	30960
Cloud Controller Database	1	1	1024	2048	2048
UAA Database	1	1	1024	2048	8192
Apps Manager Database	1	1	1024	2048	1024

**Available Products:** This section lists various Pivotal services with their current versions:

- Ops Manager Director: v1.6.1.0
- Pivotal Elastic Runtime: v1.6.3 build 14
- RabbitMQ: v1.6.1.0
- Redis for Pivotal CF: v1.6.1.0
- Spring Cloud Services: v1.6.2
- ELK for Pivotal CF: v1.6.0.12
- Concourse: v1.6.0.9
- MySQL for Pivotal Cloud Foundry: v1.7.6.1
- RabbitMQ: v1.6.10.0
- Redis for Pivotal CF: v1.6.12.0
- MySQL for Pivotal Cloud Foundry: v1.7.6.1

This results in updating the deployment manifest followed by a “bosch deploy.”

# Platform Runtime – Application Centric



# Platform Runtime - Apps Manager

- Manage Organizations, users, applications and Spaces
- Monitor applications logs, services and routes
- Access Service Marketplace, create services and bind to applications

The screenshot shows the Pivotal CF Apps Manager interface. At the top, there's a header with the Pivotal CF logo, the organization name "pivotalcf-demo", and a user dropdown labeled "admin". Below the header, the main dashboard for "pivotalcf-demo" is displayed. It includes a summary card for the organization with metrics like "QUOTA" (2%, 2.63 GB of 100 GB Limit), "4 Spaces", "1 Domain", and "14 Members". On the left, a sidebar lists "ORG" (pivotalcf-demo) and "SPACES" (1 - Development, 2 - Testing, 3 - Staging, 4 - Production, Marketplace). The right side shows four cards for the spaces: 1 - Development (1 app, 0 services, 0% of org quota), 2 - Testing (1 app, 0 services, 0% of org quota), 3 - Staging (1 app, 0 services, 0% of org quota), and 4 - Production (2 apps, 0 services, 1% of org quota). A button "Add A Space" is also visible.

# Pivotal Apps Mgr. – App View

The image shows two screenshots of the Pivotal Apps Manager web interface. On the left, the 'development' space overview is displayed, showing one running application ('pcf-scale-prod') and its associated services ('auto-scaler' and 'ge-db'). On the right, the detailed view for the 'pcf-scale-prod' application is shown, including configuration (1 instance, 128 MB memory), status (1 running instance), and recent events (started app). A large green arrow points from the left screenshot to the right one.

**Space Overview (Left):**

- ORG:** mborges-org
- SPACES:** development (selected), production, Marketplace
- APPLICATIONS:** pcfc-scale-prod (status: 1 Running, 128MB)
- SERVICES:** auto-scaler (App Autoscaler Bronze), ge-db (MySQL for Pivotal Cloud Foundry 100 MB Dev)

**Application Detail (Right):**

- APP:** pcf-scale-prod
- CONFIGURATION:** Instances: 1, Memory Limit: 128 MB, Disk Limit: 1 GB
- STATUS:** 1 Running, CPU: 0%, Memory: 59.8 MB, Disk: 84.2 MB, Uptime: 1 min
- ABOUT:** Buildpack: Ruby, Start CMD: Set by the buildpack, Stack: cflinuxv2 (Cloud Foundry Linux-based file...)
- Events:** started app (mborges@pivotai... 12/23/2015 at 12:02 AM UTC)

- Drill into a space to see all application and services instances
- Then drill into an application to see configuration, status, event, logging, routes, environment variables and service instances bound to the application

# Services Marketplace

- Service is an external application dependency or components such as:
  - Database or Message Queue
- Quickly access platform services via marketplace
- Create services instances based on service plans
- Bind Services to Applications

The screenshot shows the Pivotal Web Services Services Marketplace. On the left, there's a sidebar with navigation links: OSG, EastPractice, SPACES (development, jaxenter, jcr, production, staging, Marketplace), Docs, Support, Tools, Blog, Status. The main area is titled "Services Marketplace" with the sub-header "Get started with our free marketplace services. Upgrade to gain access to premium service plans." It displays a grid of service cards:

- Searchify: Custom search you control.
- BlazeMeter: The JMeter Load Testing Cloud.
- Redis Cloud: Enterprise-Class Redis for Developers.
- ClearDB MySQL Database: Highly available MySQL for your Apps.
- CloowdAMQP: Managed HA RabbitMQ servers in the cloud.
- ElephantSQL: PostgreSQL as a Service.
- SendGrid: Email Delivery. Simplified.
- Mongo: Fully managed MongoDB.
- Load Impact: Automation and on-demand performance testing.
- Memcached: Memcached.
- CloudForge: Development Tools In The Cloud.
- Innodb: Scalable MySQL.

Below the grid, there's a section titled "ABOUT THIS SERVICE" for ClearDB MySQL Database, which describes it as a reliable, fault tolerant, geo-distributed database-as-a-service for MySQL powered applications. It includes a "Documentation | Support" link. To the right, under "COMPANY", it says SuccessBricks, Inc. DBA ClearDB.

A large teal arrow points from the bottom left towards the "Innodb" service card.

SERVICE PLANS	
Innodb	Scalable
Spark DB	free
Boost DB	\$10.00/MONTH
Amp DB	\$50.00/MONTH
Shock DB	\$100.00/MONTH

On the right side, there's a "PLAN FEATURES" list:

- ✓ Price: FREE!
- ✓ DB size up to 5 MB
- ✓ Connections: 4
- ✓ I/O Performance: Low
- ✓ Daily Backups
- ✓ Perfect for proof-of-concept and initial development.

A "Select this plan" button is at the bottom right.

# CLI – Command Line Interface

- Command line utility providing easy access to the Pivotal CF commands.
- Scriptable
- Fully documented (cf –help)

```
[... cf
NAME:
  cf - A command line tool to interact with Cloud Foundry

USAGE:
  [environment variables] cf [global options] command [arguments...] [command options]

VERSION:
  6.13.0-e68ce0f-2015-10-15T22:53:29+00:00

BUILD TIME:
  2016-01-05 12:14:41.736991803 -0600 EST

GETTING STARTED:
  help                                     Show help
  login                                     Log user in
  logout                                    Log user out
  passwd                                    Change user password
  target                                    Set or view the targeted org or space

  api                                         Set or view target api url
  auth                                        Authenticate user non-interactively

APPS:
  apps                                       List all apps in the target space
  app                                         Display health and status for app

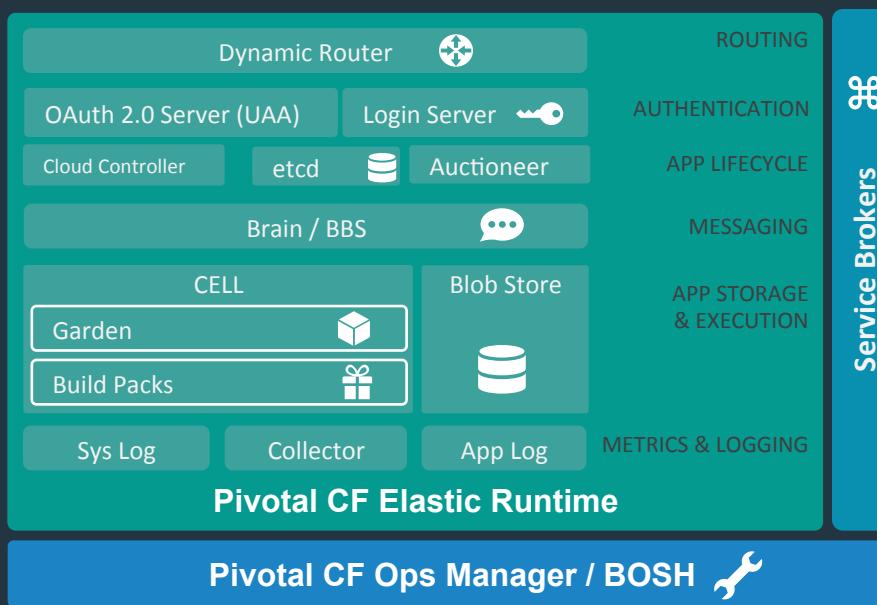
  push                                        Push a new app or sync changes to an existing app
  scale                                       Change or view the instance count, disk space limit, and memory limit for an app
  delete                                      Delete an app
  rename                                      Rename an app

  start                                       Start an app
  stop                                        Stop an app
  restart                                     Restart an app
  restage                                     Restage an app
```

A dark, atmospheric photograph showing the silhouettes of many people walking through a modern architectural space. The building features large glass windows and a polished floor that reflects the figures. The overall mood is mysterious and dynamic.

# PCF ARCHITECTURE

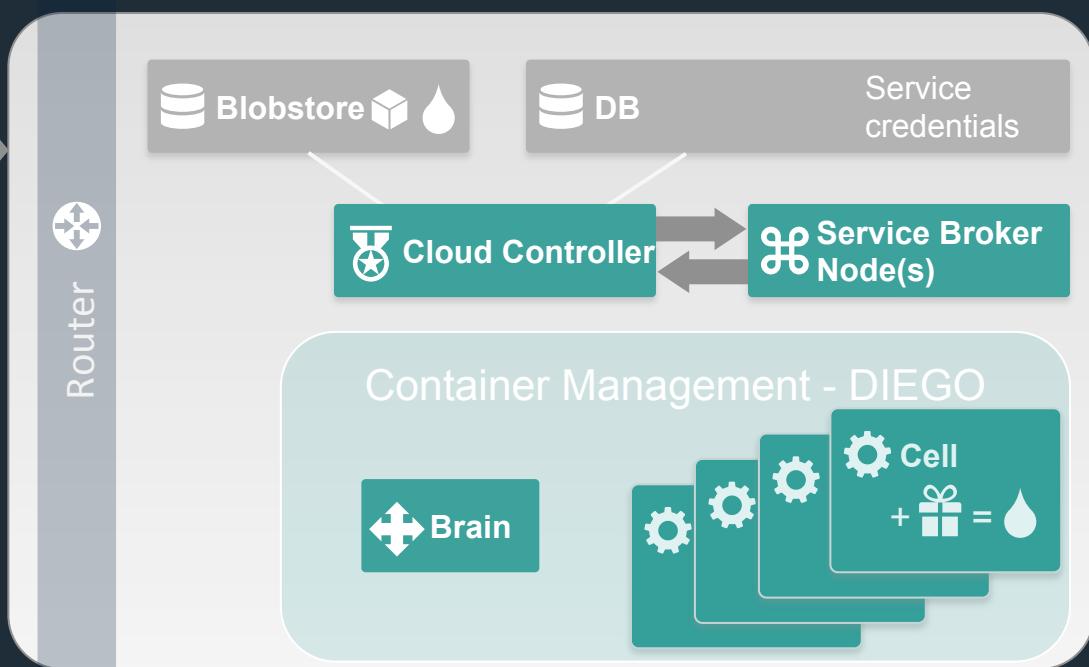
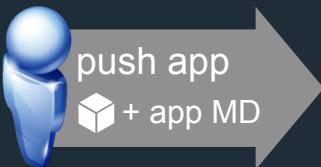
# Elastic Runtime Architecture



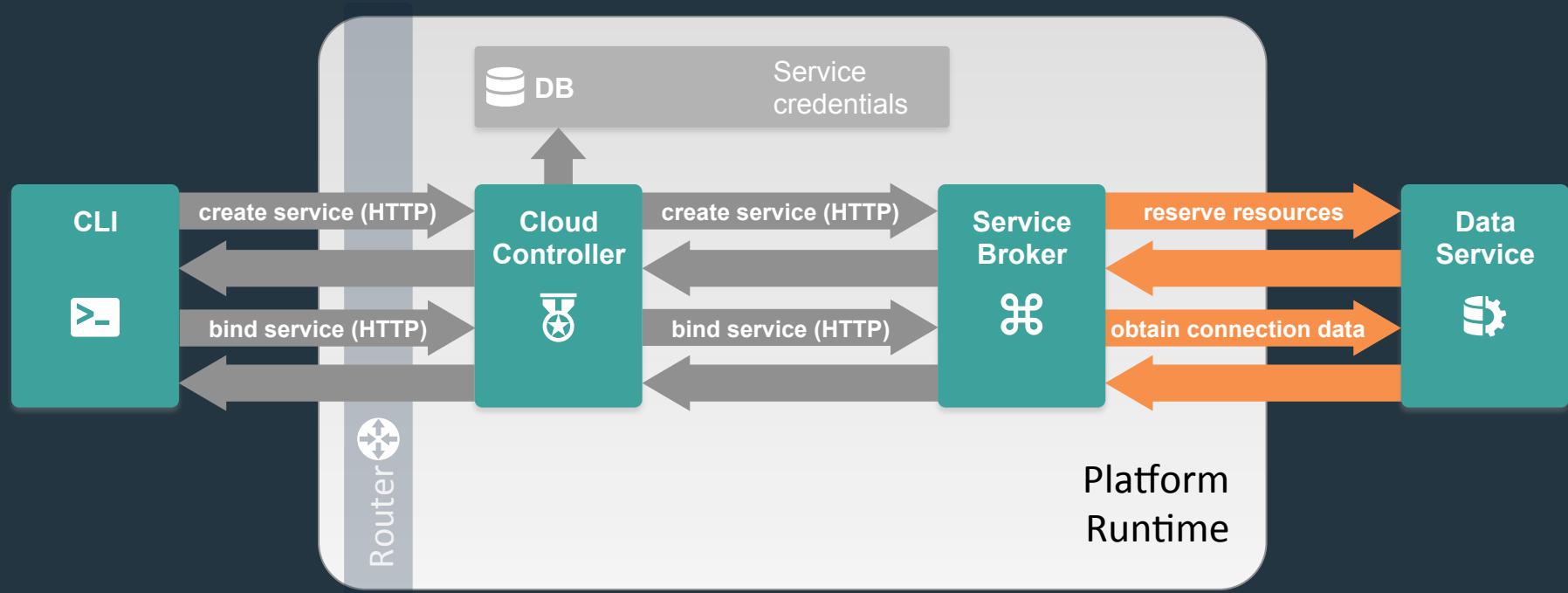
- Turnkey, Fully automated Cloud Native Platform
- Scalable runtime environment, extensible to modern framework and languages
- Instant scalable with updates and upgrades with no downtime
- Deploy, scale and manage applications with services

# Deploying an Application

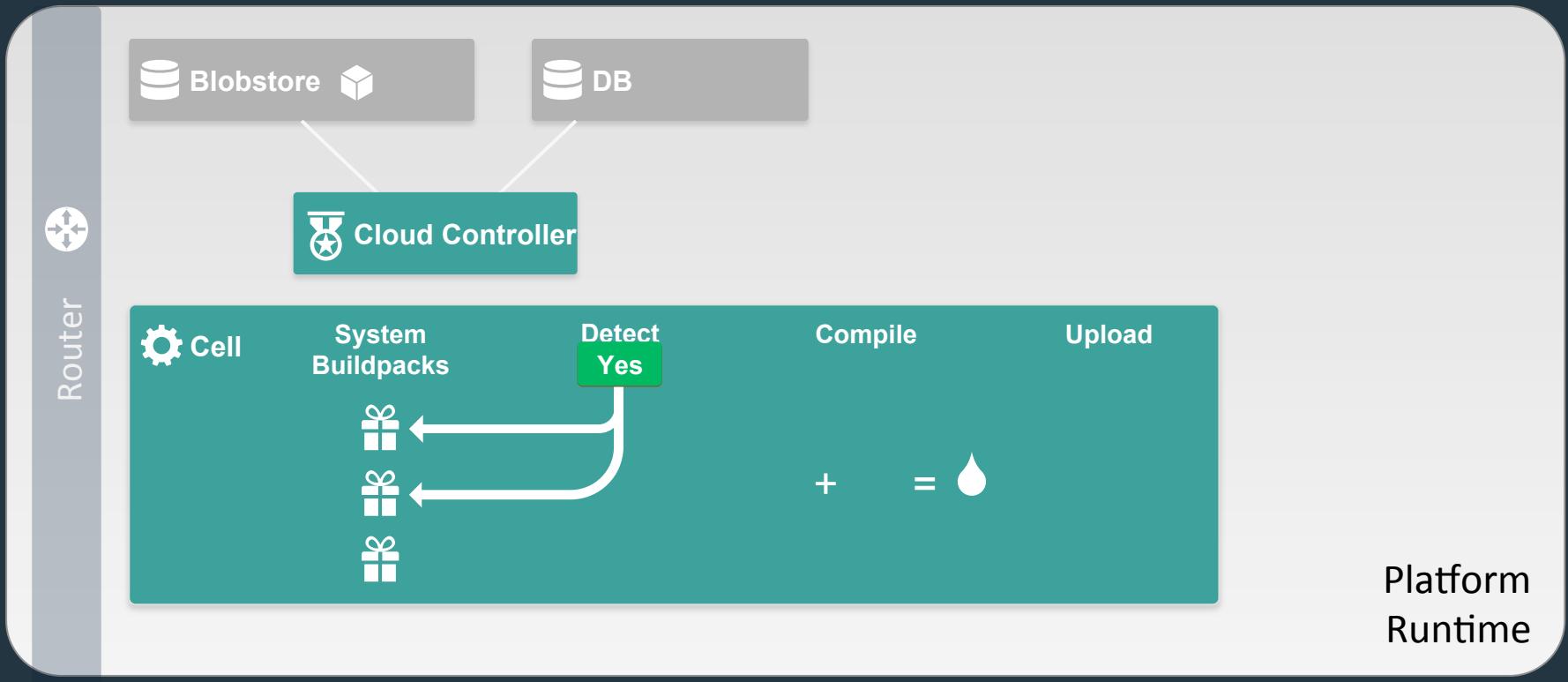
1. Upload app bits and metadata
2. Create and bind services
3. Stage application
4. Deploy application
5. Manage application health



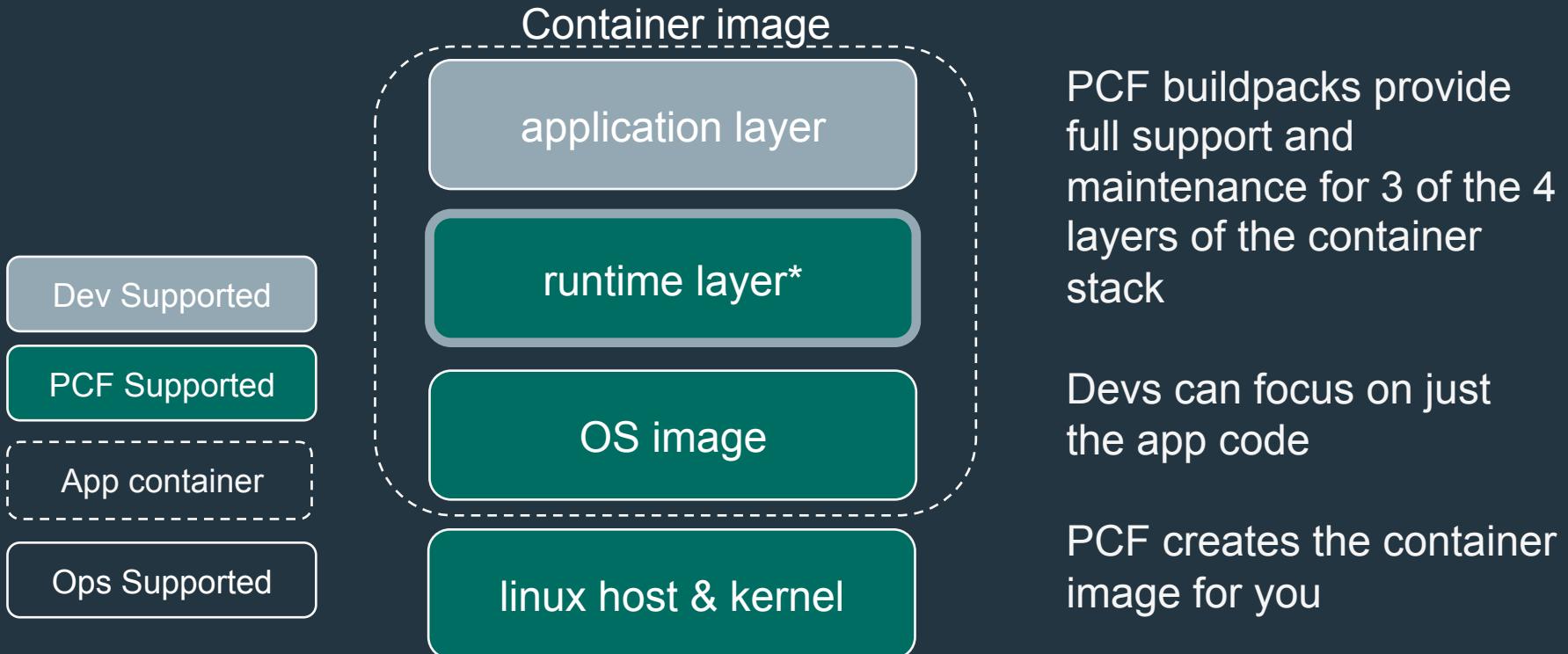
# Creating and binding services



# Staging an Application

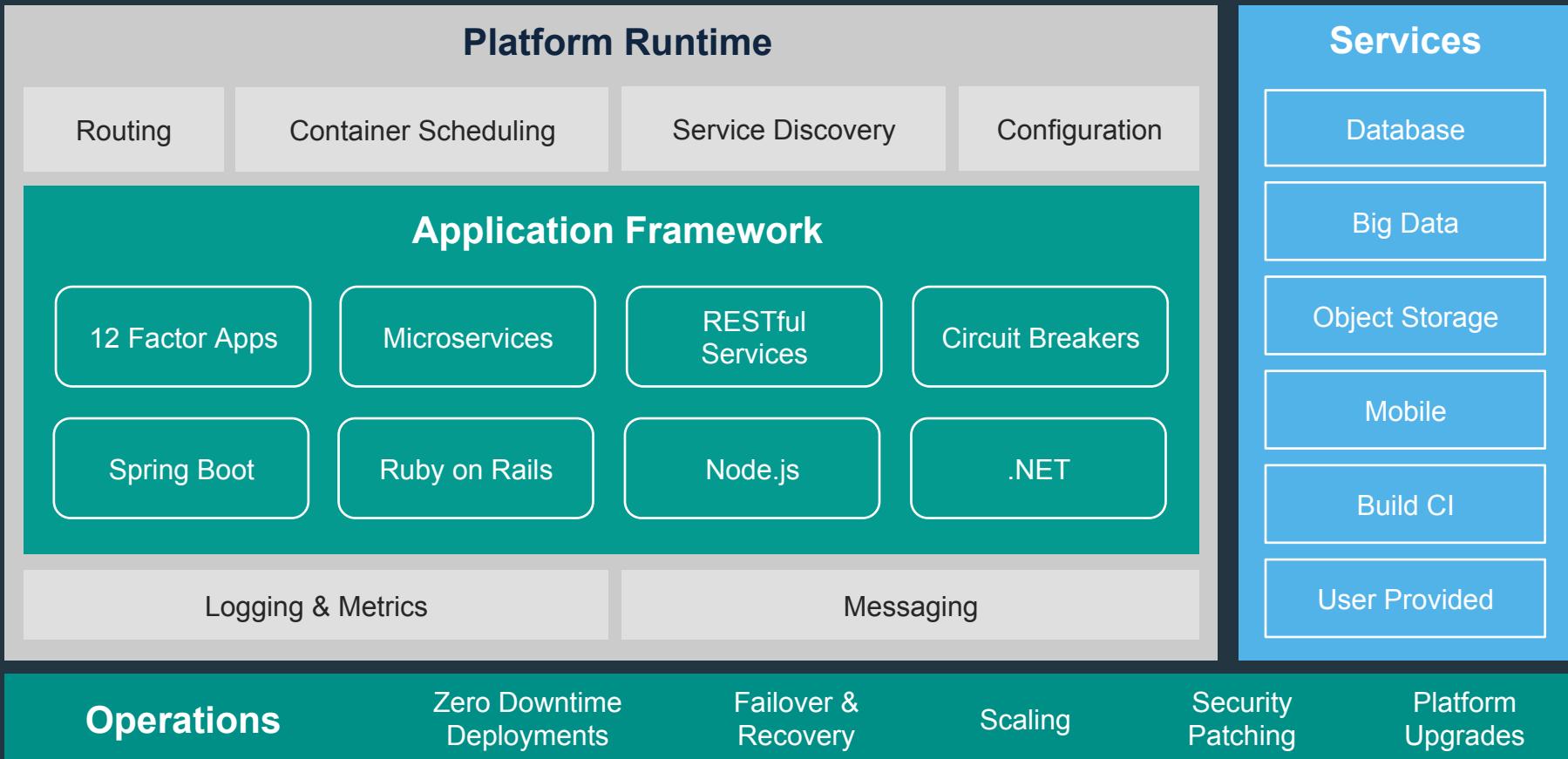


# Platform Runtime – Application Frameworks



\* Devs may bring a custom buildpack

# Pivotal Cloud Foundry Architecture



Pivotal.

Open.  
Agile.  
Cloud-Ready.

