

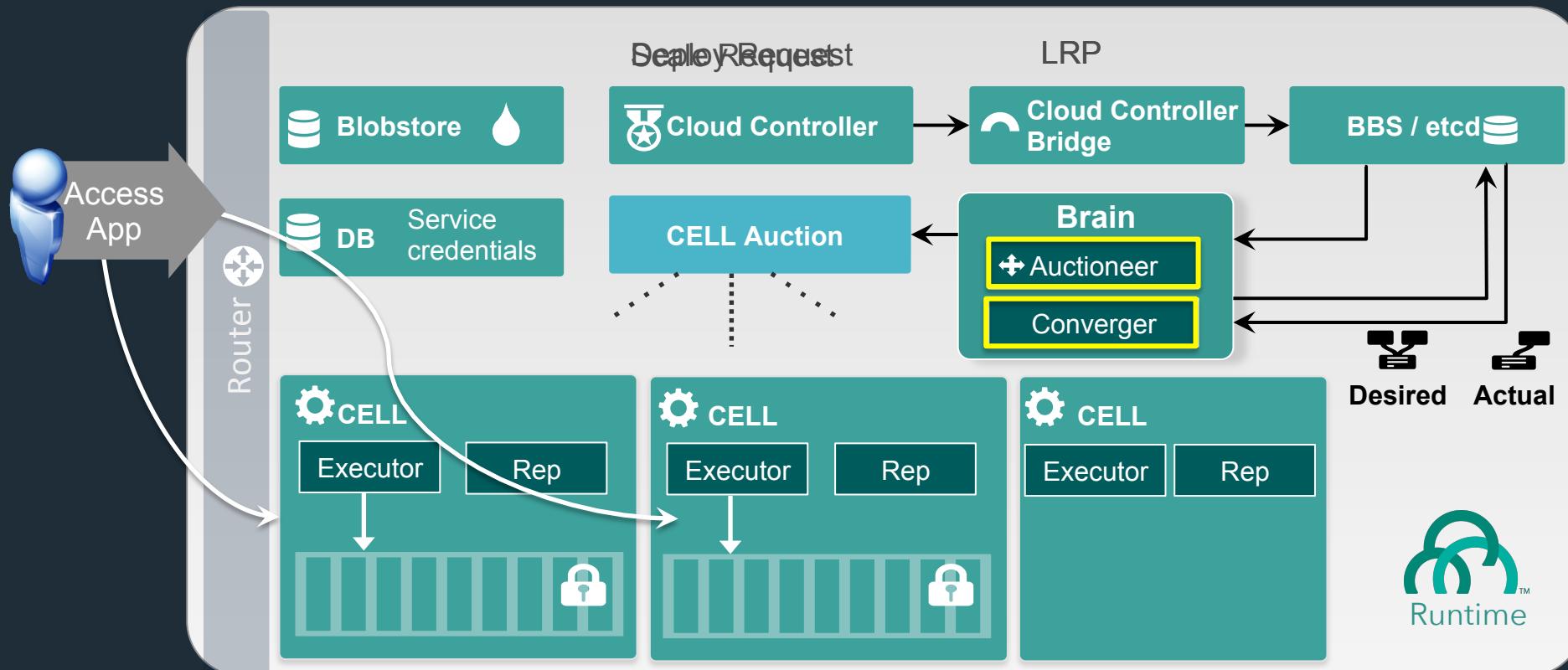
Pivotal Cloud Foundry

Labs Review – Scaling, Services, Logs, HA,
Zero Downtime Deployment

Scaling

Overview

Application Containers and Scaling



Services

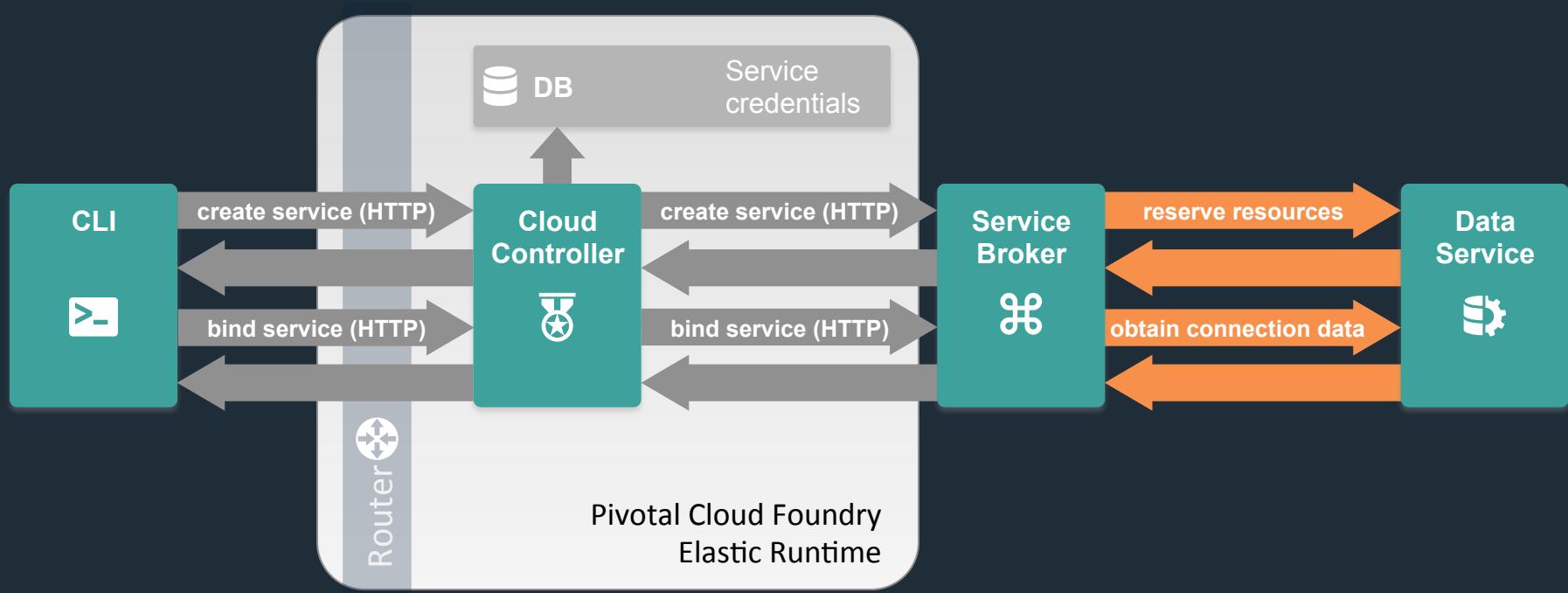
Overview

Three Types of Services

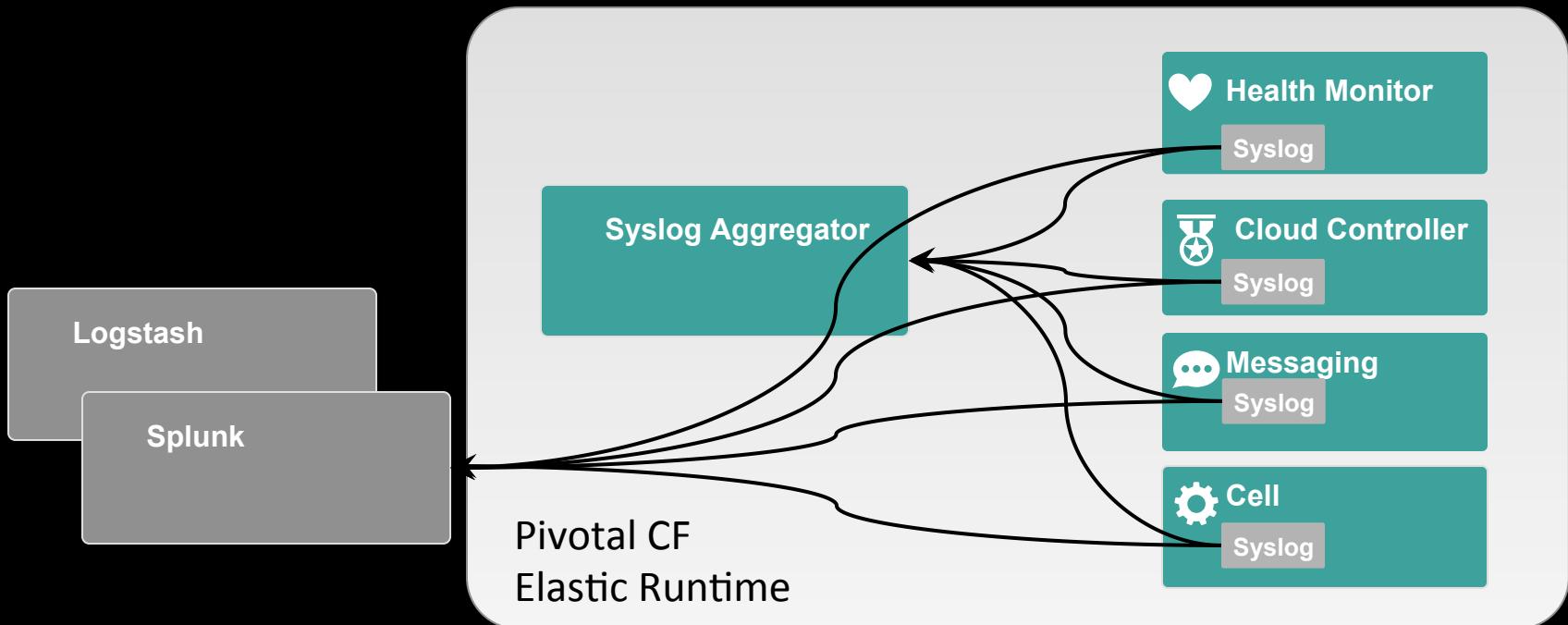


- **Managed** - Fully integrated, with full lifecycle management
- **Brokered** – Uses a service broker but is external to the platform
- **User-Provided** – Created and managed external to the platform

Creating and Binding a Service



Log Aggregation and CF Components



Logs and Metrics Firehose

One stream for all app logs and metrics

- **Log lines**
 - From applications and system components
- **HTTP Events**
 - Raw http events to generate performance analysis
- **Counters**
 - Track the number of increments in a time window
- **Gauges**
 - Monitor a value that varies over time
- **Errors**
 - Capture error source, code and message



Four Levels of HA

Built In!

Four Layers of High Availability – Built In

Application Instance

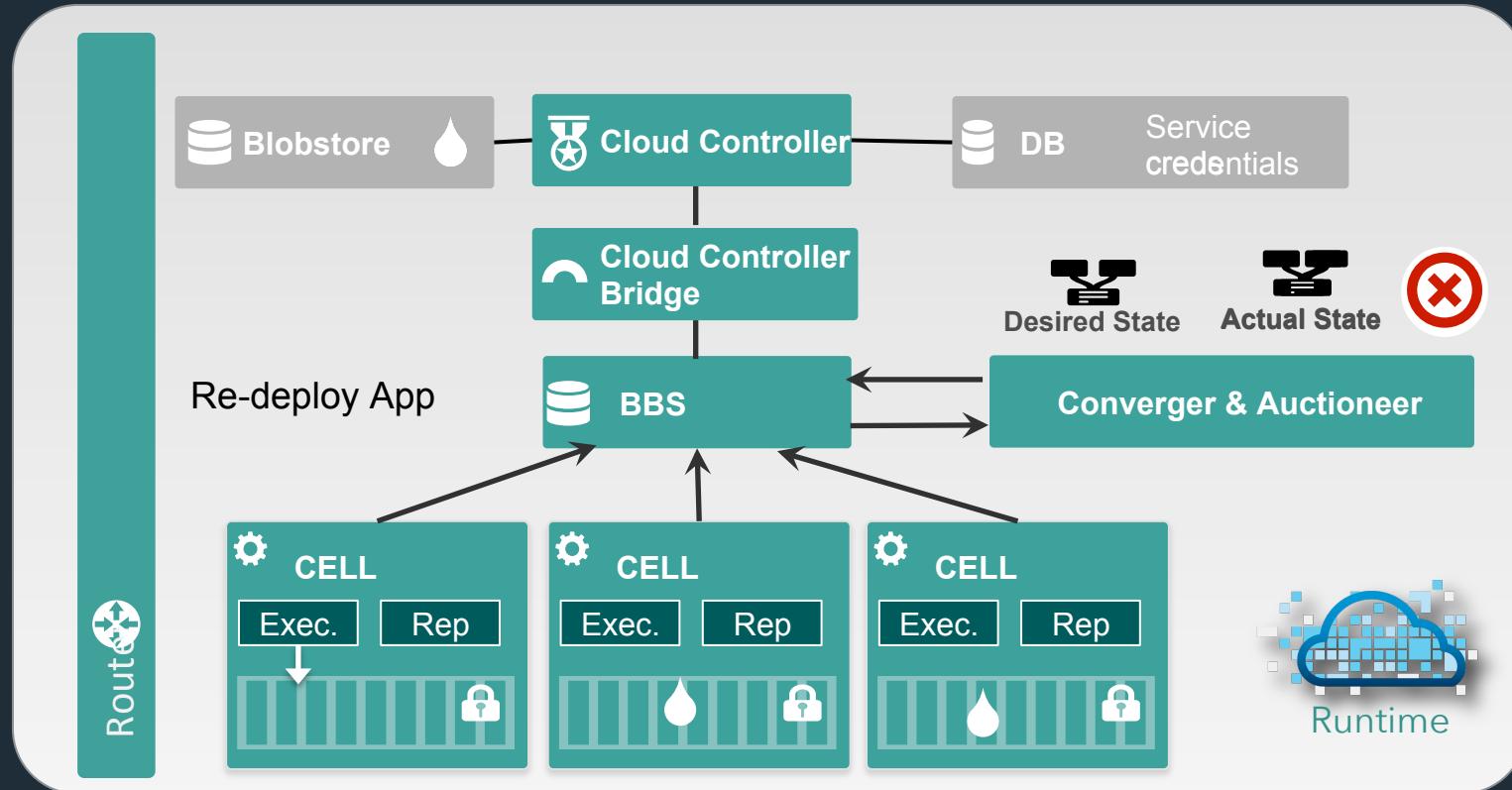
Platform Processes

Platform VMs

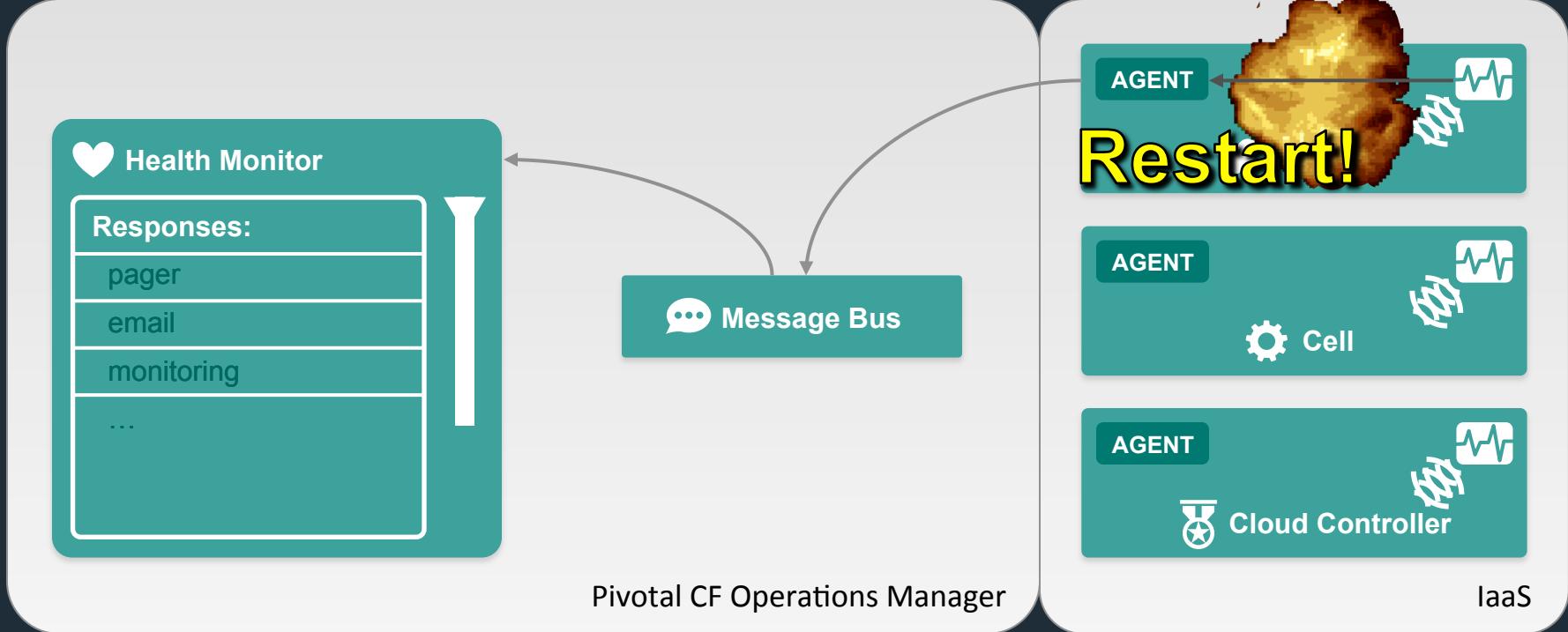
Availability Zones



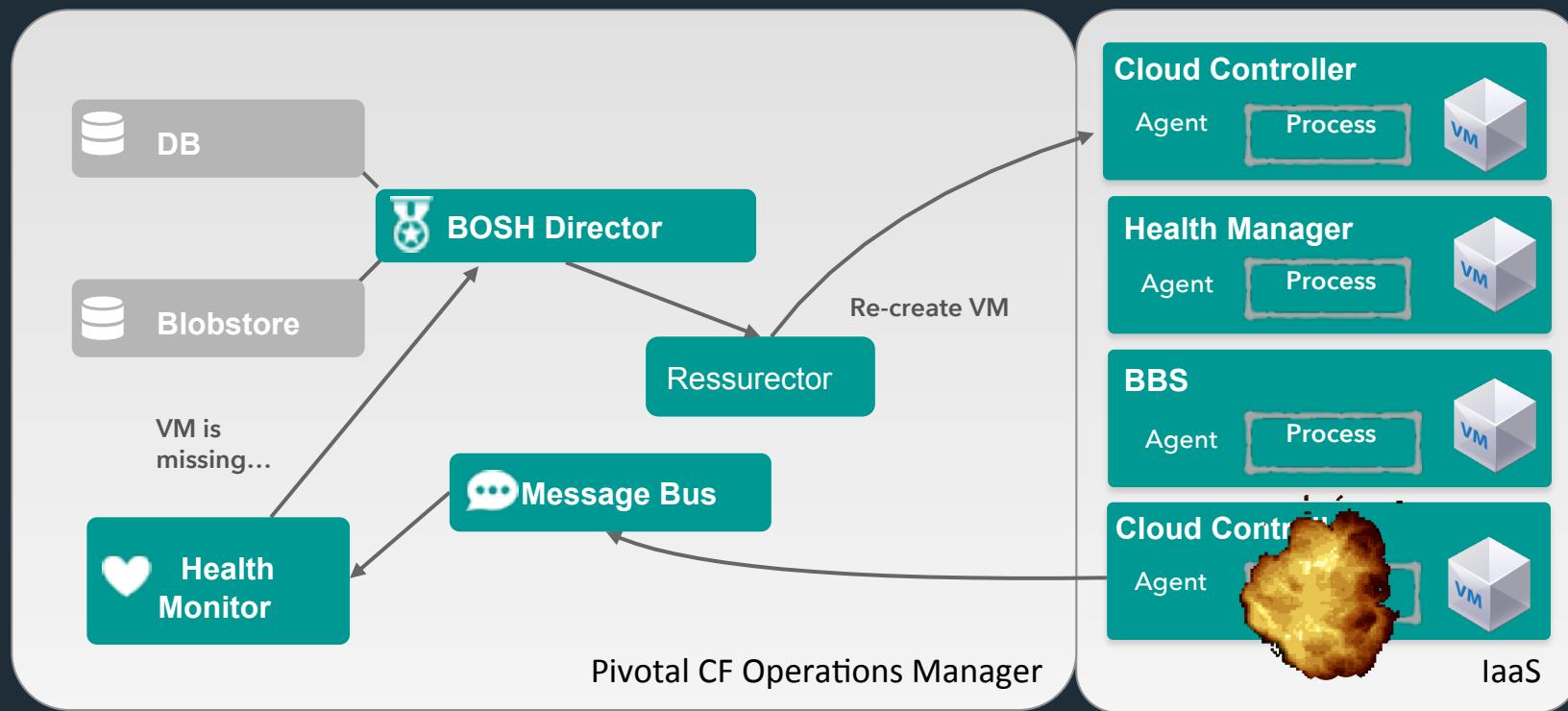
Application Instance HA



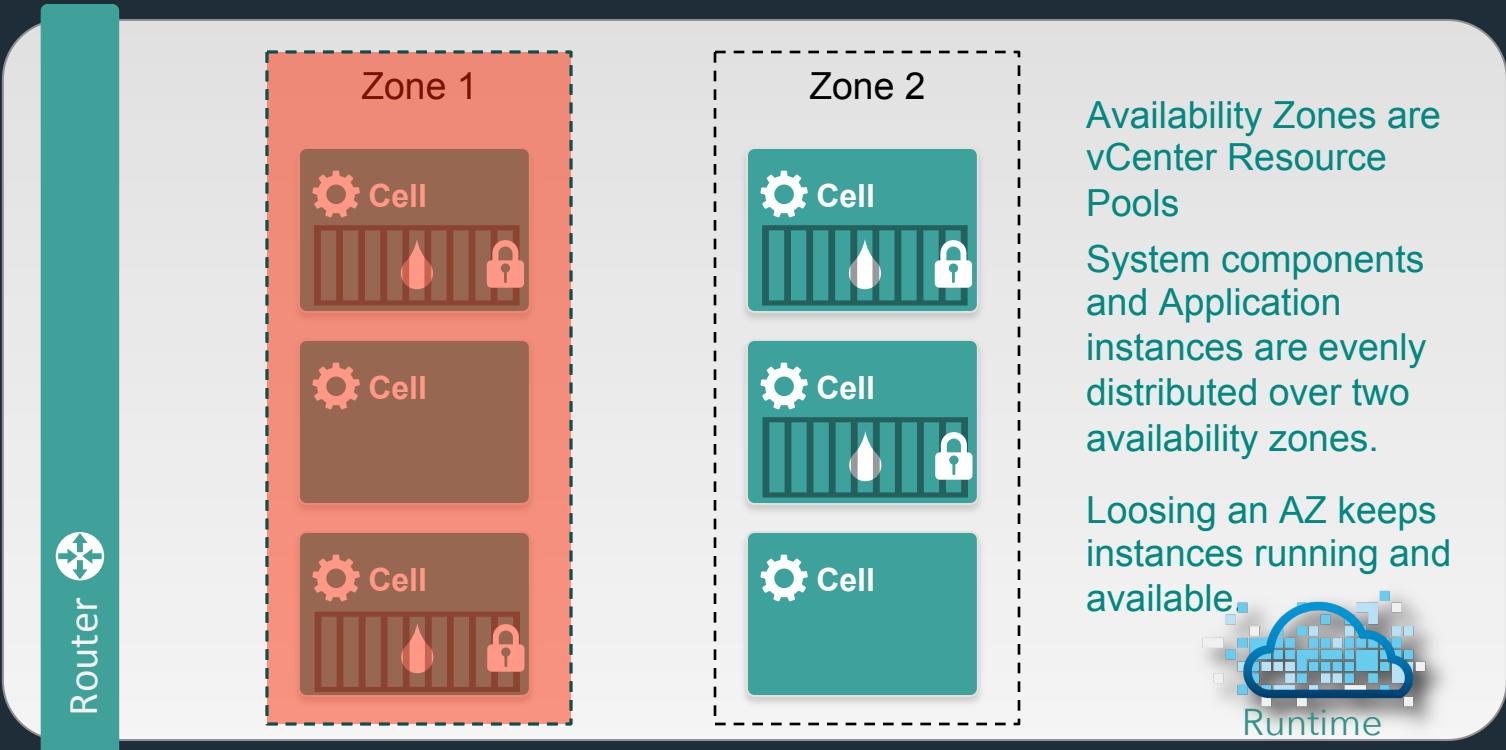
Platform Process HA



Platform Virtual Machine HA



Availability Zone HA





DOMAINS AND ROUTES

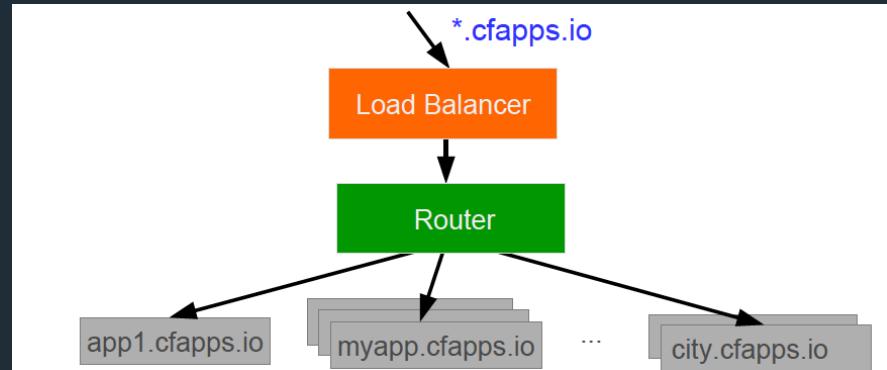
Domains

- Each Cloud Foundry installation has a default *app domain*
- Domains provide a namespace from which to create routes
- Requests for any routes created from the domain will be routed to Elastic Runtime.
- Domains can be shared or private in regards to PCF organizations

The screenshot shows the Pivotal Apps Manager interface. On the left, a sidebar lists the organization 'mborges-org' (selected), spaces ('development', 'production', 'Marketplace'), and links to 'Docs', 'Support', and 'Tools'. The main content area displays organization details: 'ORG mborges-org', 'QUOTA 2%', '128 MB of 5 GB Limit', '2 Spaces', '1 Domain', '2 Members', and a 'DOMAINS' section with a button 'Add a Domain'. A table lists domains under 'NAME': 'south.fe.pivot... (SHARED)' (with 'SHARED' highlighted by a red box). The top right corner shows a 'Usage Report' link.

Domains – Behind the Scenes

- A wildcard entry (*) is added to the DNS for the app domain
- That DNS entry points to a load balancer (or Cloud Foundry's HA Proxy), which points to the Cloud Foundry's Router
- The Router uses the subdomain to map to application instance(s)



Routes

- HTTP requests are routed to apps pushed by associating an application with a URL, known as route
- Many apps can be mapped to a single route resulting in load balanced requests
- Routes belong to a space
- Application can have multiple routes

The screenshot shows the Pivotal Apps Manager interface for the application 'pcf-scale-prod' in the 'development' space of the 'mborges-org' organization. The application has one instance running with 128 MB of memory and 1 GB of disk. The configuration shows the last push was on 12/22/15 at 23:56 UTC. The application is mapped to two routes: <https://pcf-scale-prod.south.fe.pivot.io> and https://pcf-scale-v1_2.south.fe.pivot.io. A large green circle highlights the application name 'pcf-scale-prod'.

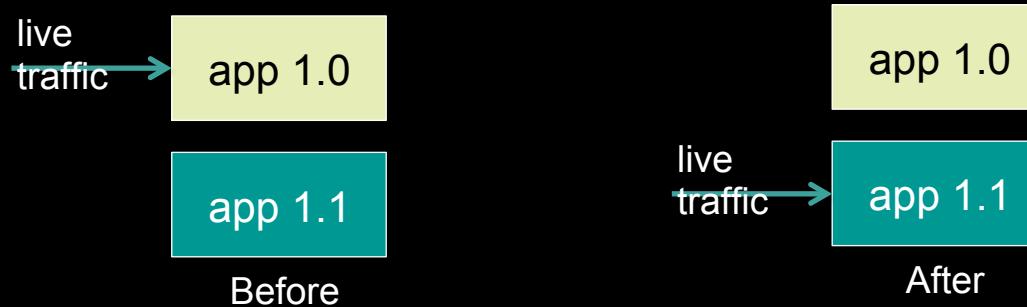


BLUE/GREEN DEPLOYMENT

Pivotal

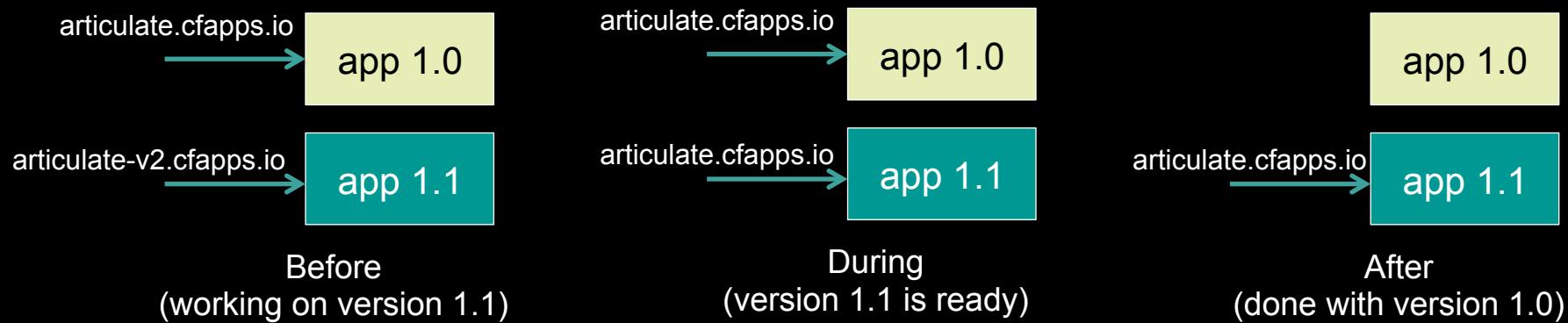
Zero Downtime (a.k.a. Blue Green) Deployments

- Blue-Green deployment is an approach to upgrading application with minimal downtime.
- It also enables easy rollback to the old version if the new version experiences problems
- It works by keeping both versions online, and switching from the old version to the new version



Blue-Green Deployments using Routes

- Main idea: you always want ***articulate.cfapps.io*** to be good
- Use routes to achieve this
- Because you are in a single space, multiple application can use the same routes



Slowly Turning on Traffic using Instances

- Start with three instance of blue, one instance of green
 - 2/3 of traffic will use version 1.0
- Decrease blue instance, increase green instances as confidence builds



Pivotal Cloud Foundry

Architecture – Labs Review