Deploying Cloud Foundry

Overview
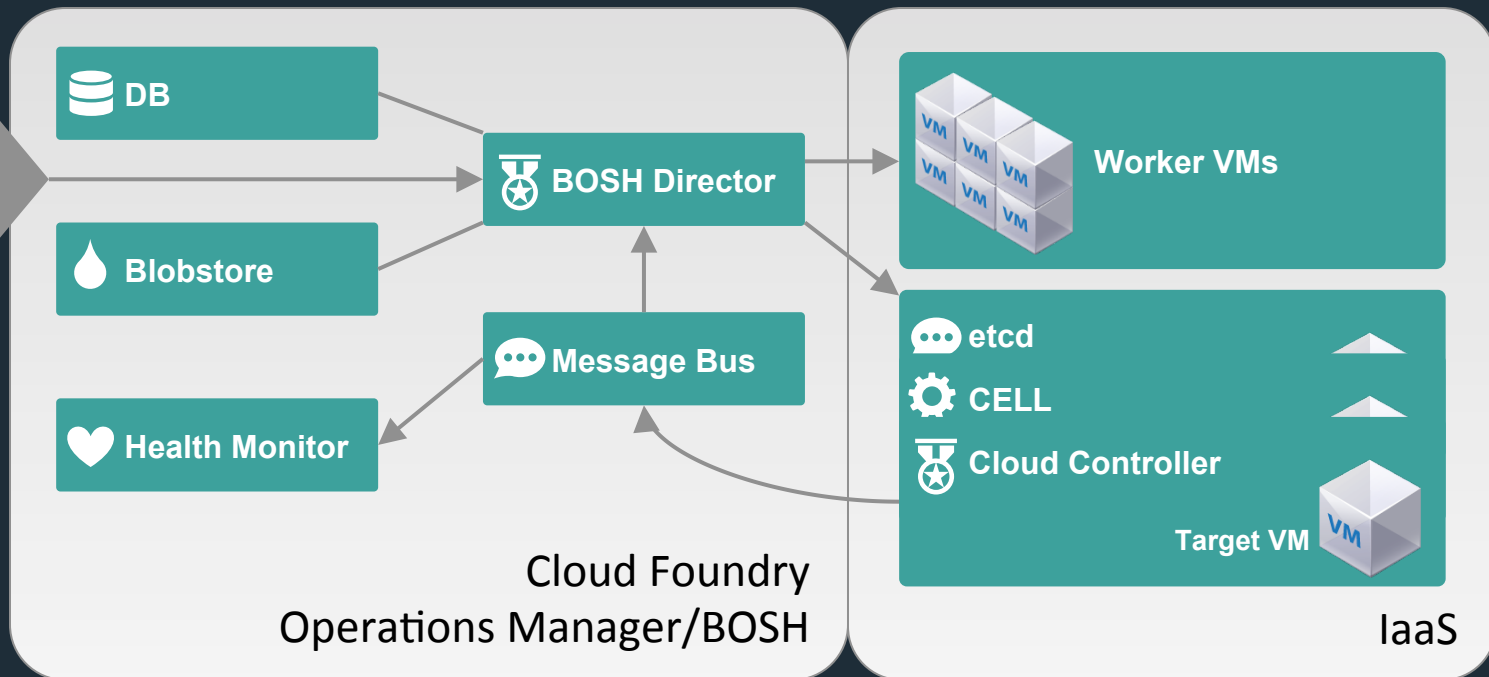
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Deploying the CF Runtime with Cloud Foundry BOSH

BOSH

Deploy new
CF Instance

Deployment
- Packages
  - Blobs
  - Source
- Jobs
- Manifest
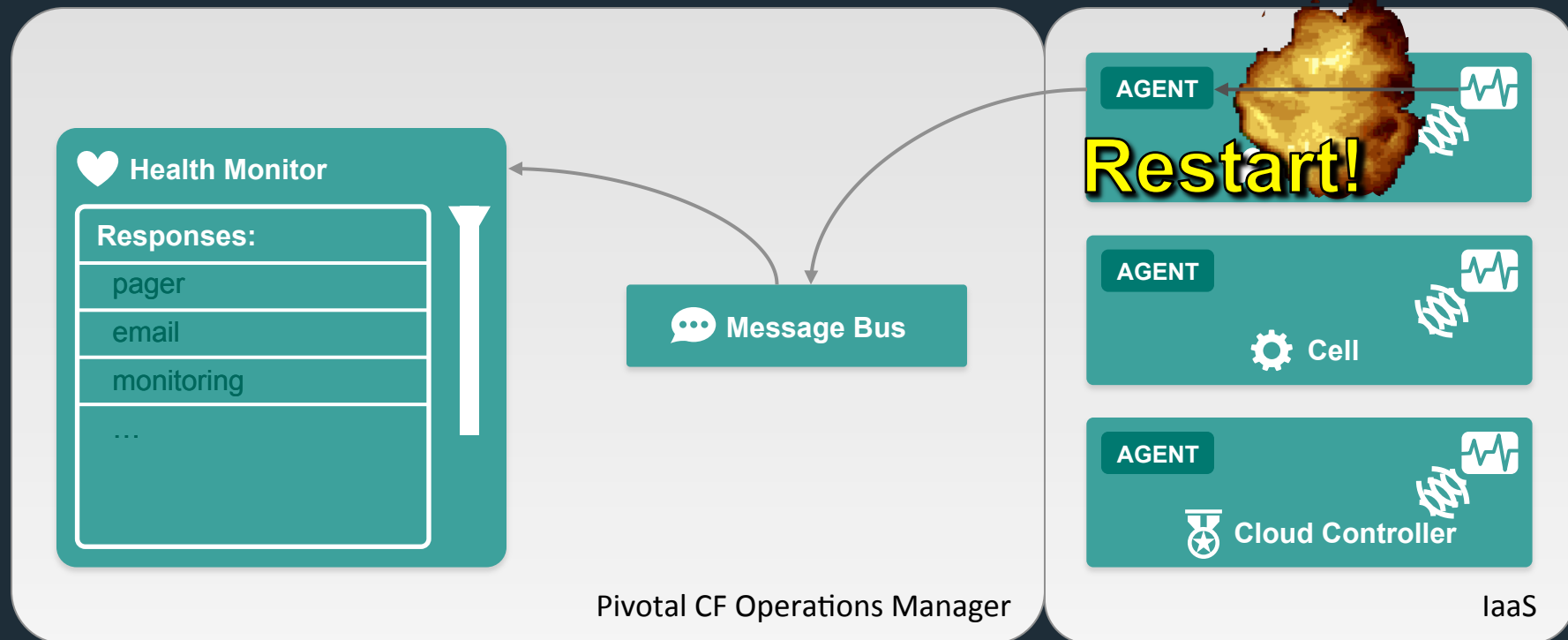
DB

Blobstore

Health Monitor

BOSH Director

Message Bus

Cloud Foundry
Operations Manager/BOSH

Worker VMs

VM VM VM
VM VM VM

etcd

CELL

Cloud Controller

Target VM VM

IaaS

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Four Levels of HA

Built In!

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Application Instance HA

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4

Platform Process HA

Pivotal CF Operations Manager

Health Monitor

Responses:
- pager
- email
- monitoring
- …

Message Bus

IaaS

AGENT Restart!

AGENT Cell

AGENT Cloud Controller
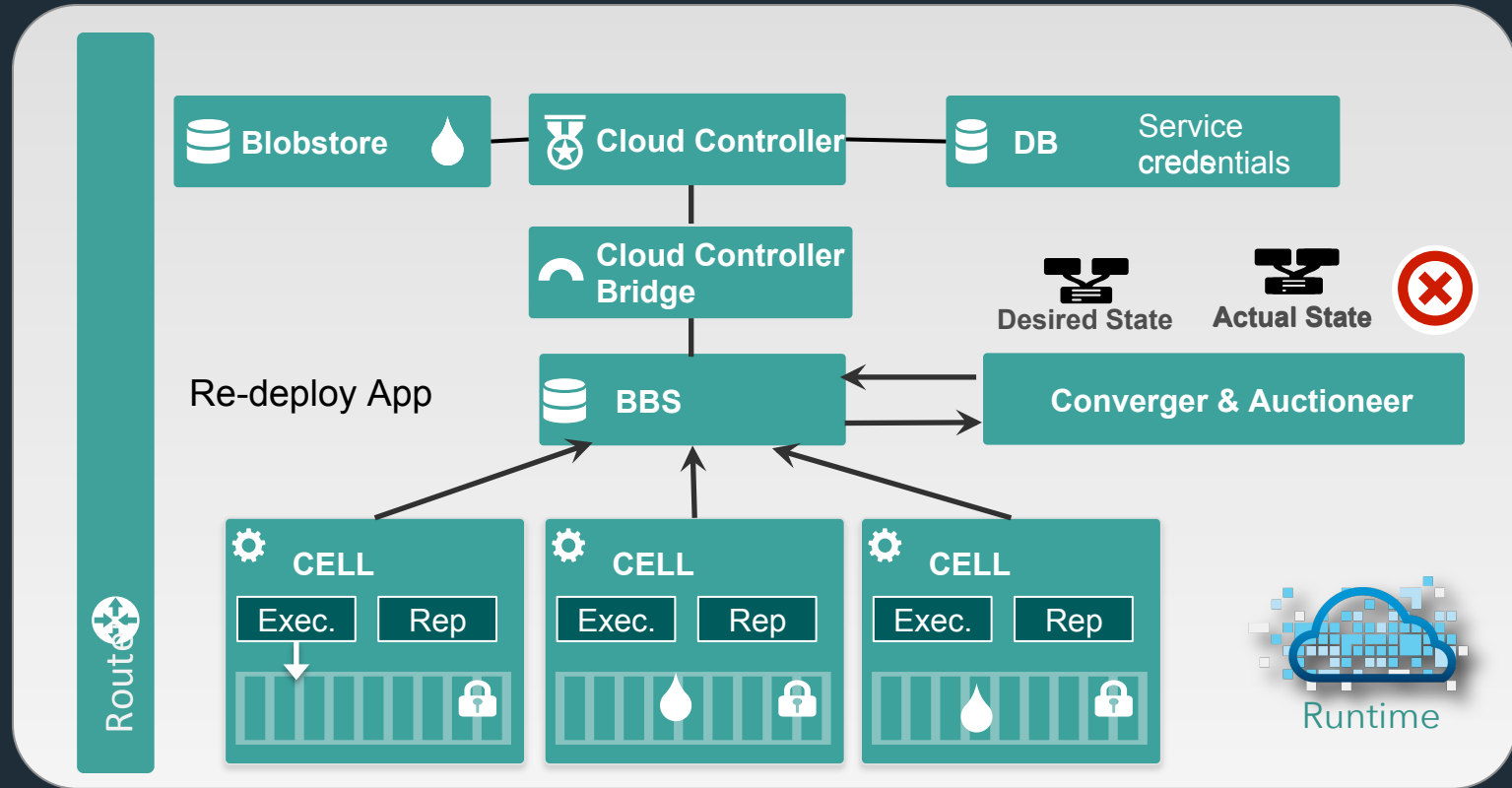
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Platform Virtual Machine HA

Availability Zone HA

Zone 1

Zone 2

Cell

Cell

Cell

Cell

Cell

Cell

Router

Availability Zones are vCenter Resource Pools

System components and Application instances are evenly distributed over two availability zones.

Loosing an AZ keeps instances running and available.
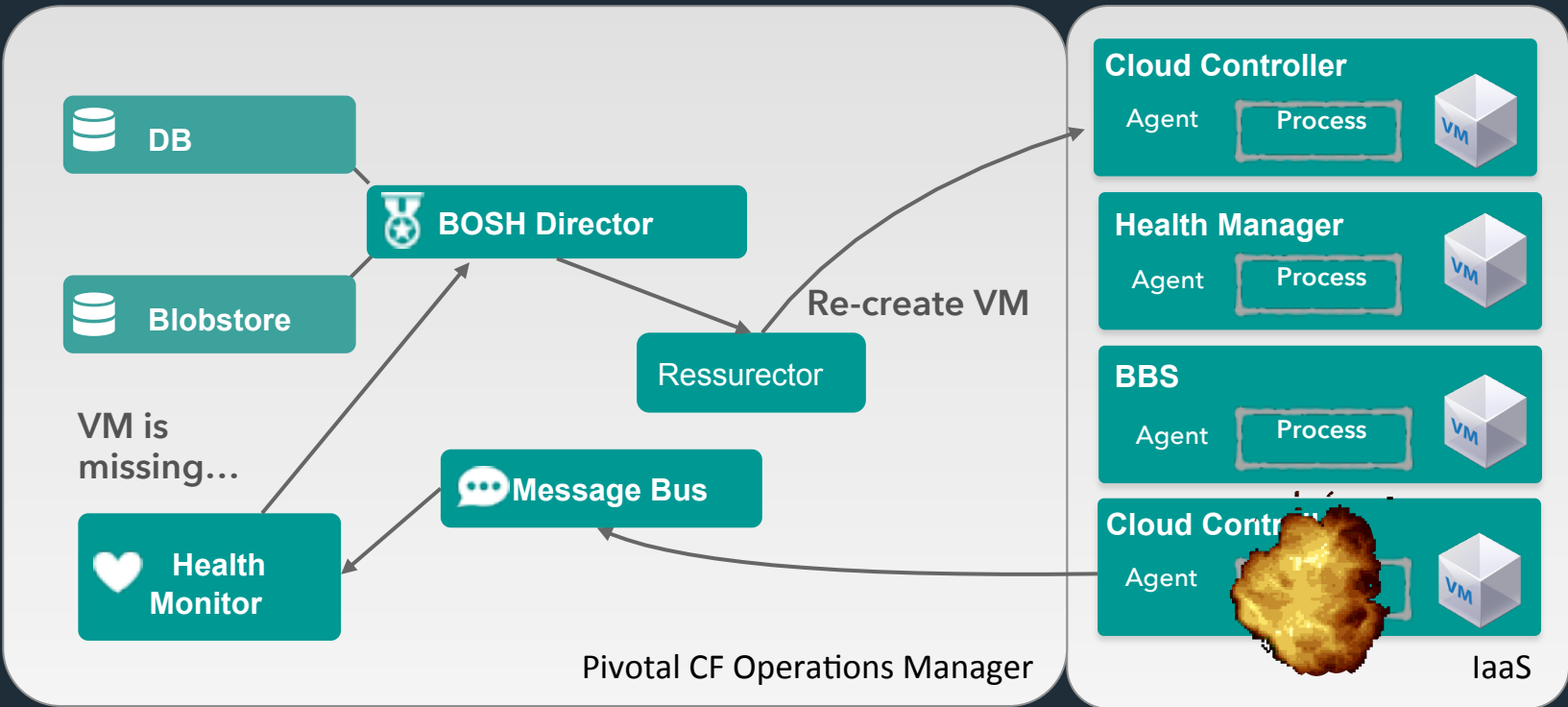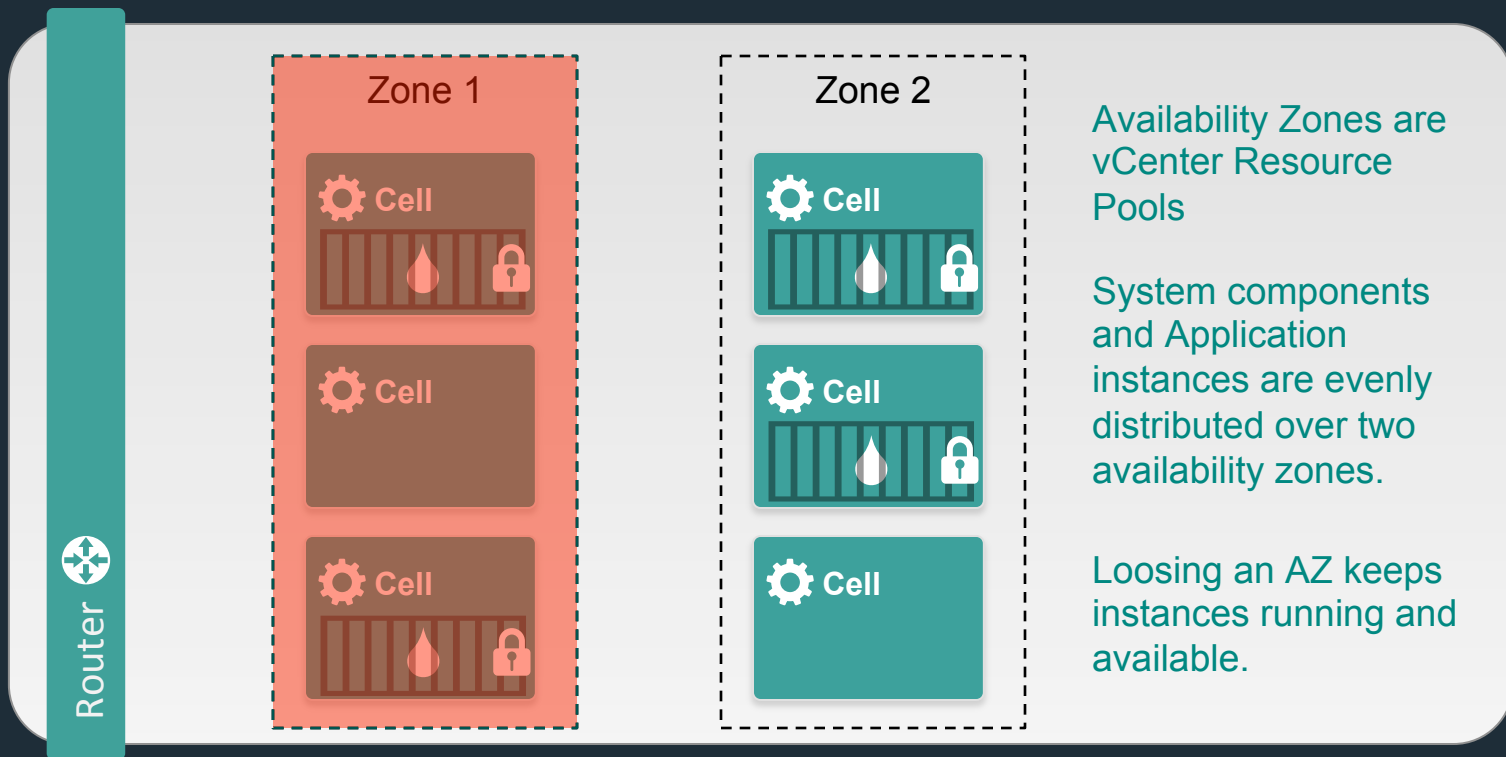
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How Pivotal CF enables four layers of HA

1.

PCF

A B C

B
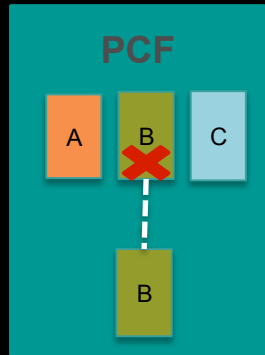
If an app fails, PCF reboots app in a new container.

App Fail

2.

PCF

A B C

Process

VM1 VM2
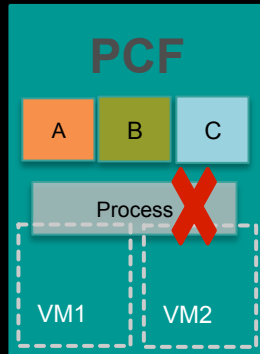
If a process fails, PCF restarts the process

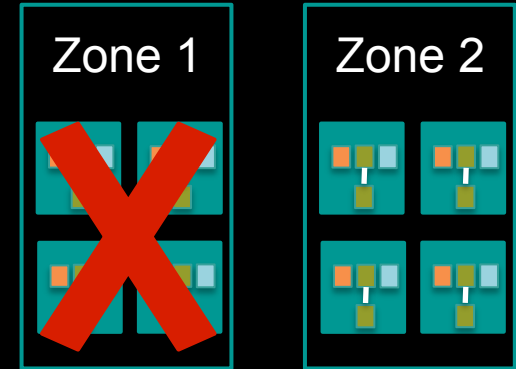**Process Fail**

3.

PCF

A B C

VM1 VM2 VM3

OS, Mware   OS, Mware   OS, Mware
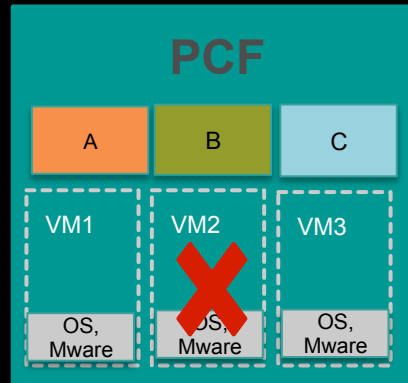
If an **OS or network failure occurs** PCF kills the VM and reboots the host in a new Virtual machine.
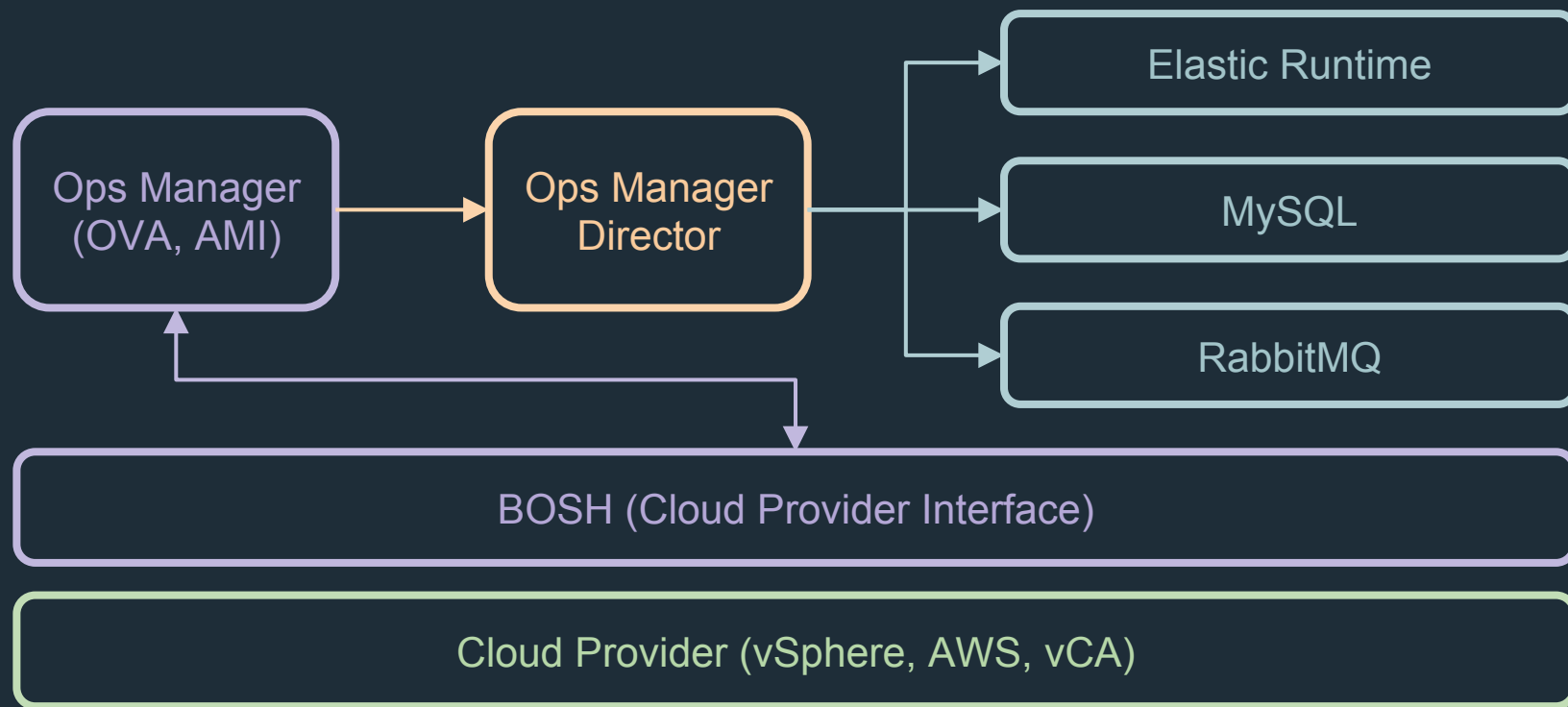
VM Fail

4.

Zone 1

Zone 2

If **a datacenter rack fails**, PCF ensures applications stay running in multiple availability zones

Rack Fail

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PCF Installation

Ops Manager (OVA, AMI) → Ops Manager Director → Elastic Runtime, MySQL, RabbitMQ

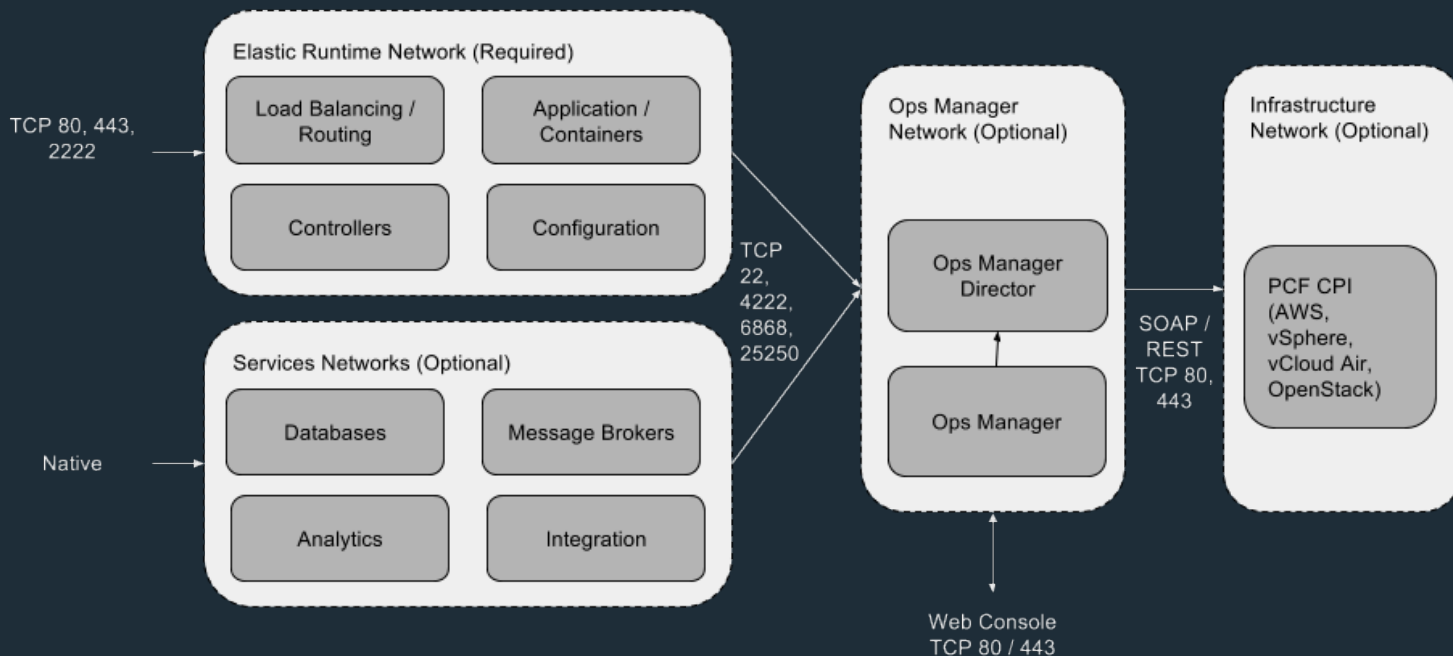BOSH (Cloud Provider Interface)
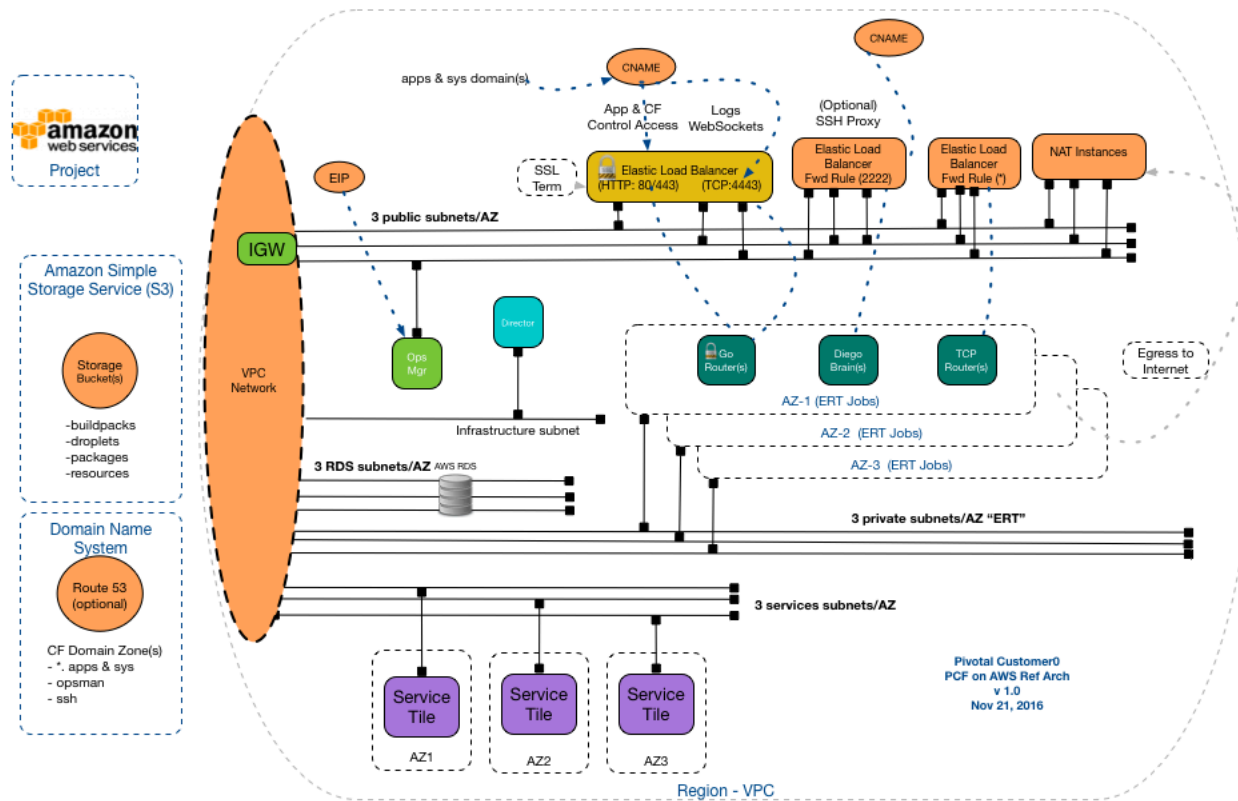
Cloud Provider (vSphere, AWS, vCA)

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Installation & Configuration

1. Create Ops Manager Instance (AMI, OVA)
2. Configure Ops Manager Director
3. Install Ops Manager Director
4. Upload Elastic Runtime Product
5. Configure Elastic Runtime
6. Install Elastic Runtime
7. Upload, Configure, & Install Other Products

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Network Topology

TCP 80, 443, 2222

Elastic Runtime Network (Required)
- Load Balancing / Routing
- Application / Containers
- Controllers
- Configuration

TCP 22, 4222, 6868, 25250

Services Networks (Optional)
- Databases
- Message Brokers
- Analytics
- Integration

Native

Ops Manager Network (Optional)
- Ops Manager Director
- Ops Manager

Web Console TCP 80 / 443

SOAP / REST TCP 80, 443

Infrastructure Network (Optional)
- PCF CPI (AWS, vSphere, vCloud Air, OpenStack)

Detailed topologies for AWS & vSphere can be found here: https://drive.google.com/open?id=0B4KCenwl13JOcUJjUXdsVzNxZlkF

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Additional resources

Sizing & Capacity Planning: Shekel Tool for Sizing Environments
https://pcfsizer.cfapps.pez.pivotal.io

PCF on AWS Reference Architecture
http://docs.pivotal.io/pivotalcf/1-10/refarch/aws/aws_ref_arch.html

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