THE DEVELOPER'S CONFERENCE

Desenvolvimento e Automação na Plataforma Cloud Foundry

Cloves Langendorf Barcellos Junior

Dell Technologies Inc.

Rafael Benhur do Prado

Resource IT Solutions

Quem Somos

Austin, TX
Boston, MA

Bangalore, IN

Eldorado do Sul, BR

Services and Marketing IT

Quem Somos

80M+
Ativos por ano

220M+
Contratos por ano

130+
Desenvolvedores

1M+
Mensagens por dia pub/sub

21
Diferentes ambientes de implantação

30+
Aplicações Java, Groovy, Angular, Python ...

Cloud Foundry

- Existe a 7 anos
- Open source cloud deployment environment
- Container-based
- Code-centric
- Multi-cloud deployment (On-premises, AWS, Azure...)
- Opções de provedores CF privados (Pivotal, IBM...)
- É a opção de muitas companhias para adoção de cloud em sua própria infraestrutura
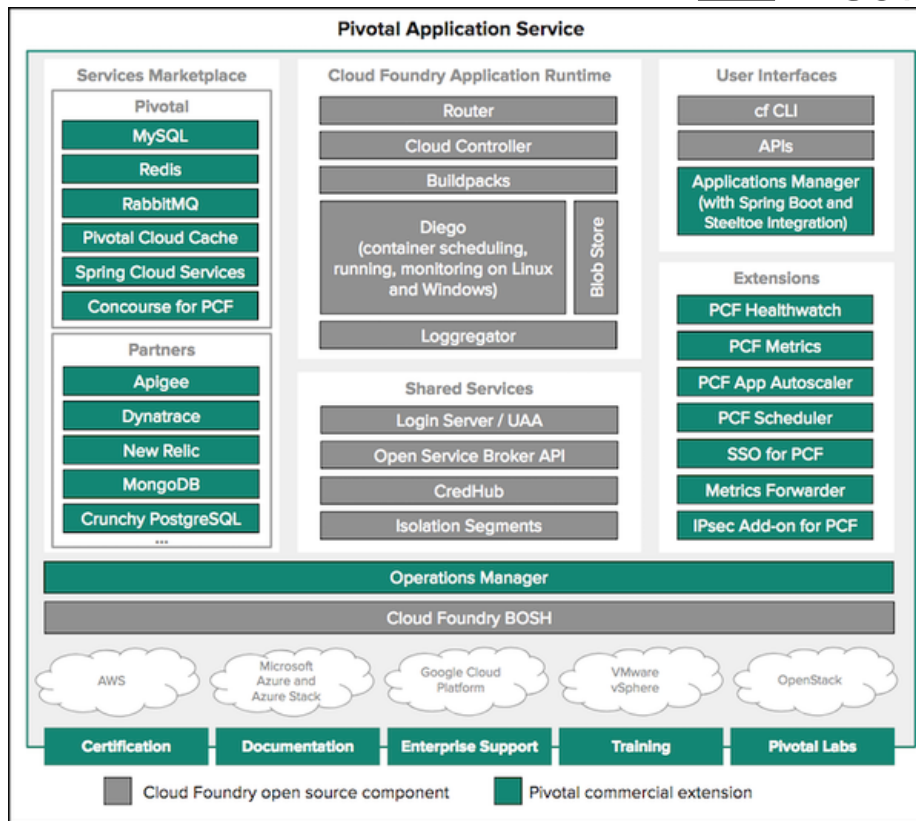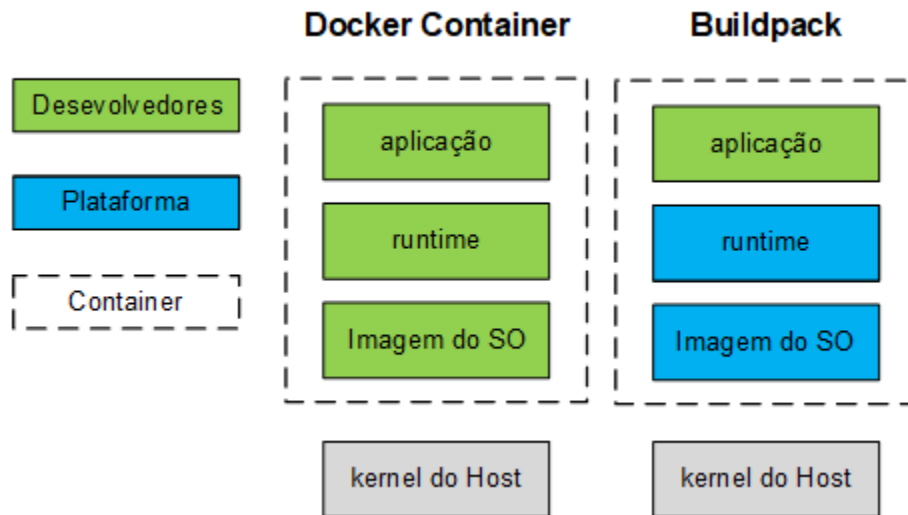
Pivotal Cloud Foundry

> Container-based
> Code-centric
> Marketplace

Platform

Applications
Data
Runtime
Middleware
O/S
Virtualization
Servers
Storage
Networking

Pivotal Application Service

Services Marketplace	Cloud Foundry Application Runtime	User Interfaces
Pivotal	Router	cf CLI
MySQL	Cloud Controller	APIs
Redis	Buildpacks	Applications Manager (with Spring Boot and Steeltoe Integration)
RabbitMQ	Diego (container scheduling, running, monitoring on Linux and Windows) / Blob Store	
Pivotal Cloud Cache		Extensions
Spring Cloud Services		PCF Healthwatch
Concourse for PCF	Loggregator	PCF Metrics
Partners		PCF App Autoscaler
Apigee	Shared Services	PCF Scheduler
Dynatrace	Login Server / UAA	SSO for PCF
New Relic	Open Service Broker API	Metrics Forwarder
MongoDB	CredHub	IPsec Add-on for PCF
Crunchy PostgreSQL	Isolation Segments	

Operations Manager

Cloud Foundry BOSH

AWS | Microsoft Azure and Azure Stack | Google Cloud Platform | VMware vSphere | OpenStack

| Certification | Documentation | Enterprise Support | Training | Pivotal Labs |

Cloud Foundry open source component | Pivotal commercial extension

THE DEVELOPER'S CONFERENCE

Buildpacks vs Containers

Docker Container

Buildpack

Desevolvedores

Plataforma

Container

aplicação

runtime

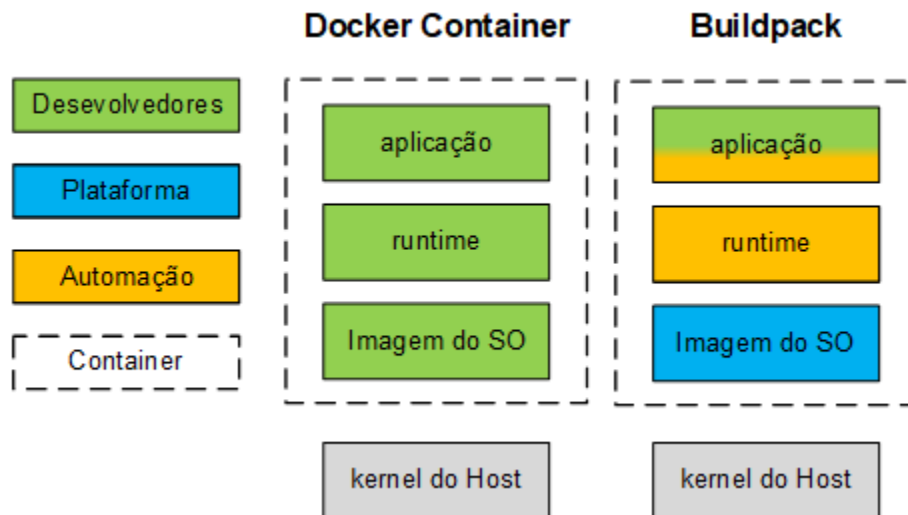Imagem do SO

kernel do Host

aplicação

runtime

Imagem do SO

kernel do Host

❯ Provê frameworks + runtime

❯ 20+ buildpacks disponíveis Java, PHP, Node, .Net, Ruby, Python, Static Content, Custom ...

Buildpacks vs Containers

> Provê frameworks + runtime

> 20+ buildpacks disponíveis Java, PHP, Node, .Net, Ruby, Python, Static Content, Custom ...

Pivotal Cloud Foundry - Spaces

SPACES

dev1

dev2

dev3

dev4

devops

dit1

dit2

dit3

dit4

ge1

ge1201

ge2

ge3

Spaces (18)   Domains (5)   Members (93)   Settings

ge1

APPS		SERVICES
15	● 15 ● 0 ● 0	4

7% of Org Quota

ge1201

APPS		SERVICES
9	● 7 ● 2 ● 0	2

5% of Org Quota

ge3

APPS		SERVICES
6	● 4 ● 0 ● 2	4

3% of Org Quota

ge4

APPS		SERVICES
18	● 18 ● 0 ● 0	4

9% of Org Quota

THE DEVELOPER'S CONFERENCE

> Spaces
>> Organização lógica

Um simples deploy de aplicação


```
2018-03-02 16:55:41 ⊙    driftwood in ~
○ →  ▯
```

Muito simples... Então, por que automatizar?

❯ 130+ desenvolvedores em 3+ localidades

❯ 21+ ambientes

❯ 30+ aplicações

  ❯ 300 builds por dia

  ❯ 100 artefatos testados e publicados por dia

Automação e PCF

> CF toolkit, CF REST API, Python, OptParser, Jenkins...

Automação e PCF

> Usuário utiliza um Job Jenkins para dar início a implantaçao do artefato

Automação e PCF

> Algoritmo é iniciado realizando o download do artefato armazenado no repositório

Console Output

```
########################################
### Stating python deployment automation ###
########################################
+ /sbil/ci/jenkins-slave/workspace/deployment-cf/deploy-module/cf-deploy-module.py
--cf-domain ausvdc02.pcf.dell.com --cf-api-url api.sausvdc02.pcf.dell.com --cf-
username ******** --cf-password '********' --cf-balancer ausvdc02.pcf.dell.com --
app-name sbil-ae-maintenance-dev1 --app-module sbil-ae-maintenance-ng --app-org
SvcsIT-AnEorg --app-space dev1 --app-profile dev1 --app-version 2.12.3-
201811301255 --app-auth security-oauth2 --app-instances 2 --app-disk 1G --app-
memory 1G --show-logs false --blue-green true --no-route false --no-start false --
bind-configserver true --bind-ssoservice false --bind-messagebroker true --
workspace /sbil/ci/jenkins-slave/workspace/deployment-cf/deploy-module --verbose


########################################
### Downloading app from artifactory ###
########################################
wget -nv -P /sbil/ci/jenkins-slave/workspace/deployment-cf/deploy-module
http://ausdlbilci2.us.dell.com:8081/artifactory/main-
repo/com/dell/services/bil//sbil-ae-maintenance-ng/2.12.3/sbil-ae-maintenance-ng-
2.12.3-201811301255.jar
```

Automação e PCF

> O tipo de aplicação e o ambiente de implantação são identificados.

> É inicializada a composição e escrita do arquivo **manifest.yml**

```
#########################################
### Generating APP + ENV manifest.yml ###
#########################################
applications:
- buildpack: dicf_java_buildpack_4_offline_latest
  disk_quota: 1G
  env:
    JAVA_OPTS: ' -Dspring.boot.admin.client.url=https://services-sba-
dev.ausvdc02.pcf.dell.com
      -Dspring.boot.admin.client.instance.name=sbil-ae-maintenance-dev1 -
Dspring.boot.admin.client.instance.management-url=https://sbil-ae-maintenance-
dev1.ausvdc02.pcf.dell.com
      -Dspring.boot.admin.client.instance.health-url=https://sbil-ae-maintenance-
dev1.ausvdc02.pcf.dell.com/health
      -Dspring.boot.admin.client.instance.service-url=https://sbil-ae-maintenance-
dev1.ausvdc02.pcf.dell.com
      -Dmanagement.endpoints.web.exposure.include:* -
Dspring.profiles.active=dev1,security-oauth2
      -Dinfo.version=2.12.3-201811301255'
    SPRING_PROFILES_ACTIVE: dev1,security-oauth2
    TZ: CST
  instances: 1
  memory: 1G
  name: sbil-ae-maintenance-dev1
  no-route: false
  path: sbil-ae-maintenance-ng-2.12.3-201811301255.jar
  services:
  - sbil-config-server
  - sbil-message-broker
```

Automação e PCF

> Conectando a API PCF

> Diferentes API's de acordo com o ambiente escolhido

Console Output

```
###############################################################
### Executing login on PCF for SvcsIT-AnEorg org and dev1 space ###
###############################################################
/sbil/ci/bin/pcf/cf login -a api.sausvdc02.pcf.dell.com -u ******** -p ******** -o
SvcsIT-AnEorg -s dev1
API endpoint: api.sausvdc02.pcf.dell.com
Authenticating...
OK
```

● Running	sbil-ae-maintenance-dev1	1	1 GB	an hour ago	https://sbil-ae-maintenance-dev1.ausv... ↗
● Stopped	sbil-ae-maintenance-dev1-old	1	1 GB	2 months ago	no bound route

Automação e PCF

> Processo de implantação **Blue**/**Green** é iniciado

> Nova versão começa a ser implantada enquanto versão anterior permanece rodando

Console Output

```
#####################################
### Starting Blue-Green Deployment ###
#####################################
/sbil/ci/bin/pcf/cf bgd sbil-ae-maintenance-dev1 -f /sbil/ci/jenkins-
slave/workspace/deployment-cf/deploy-module/manifest.yml -smoke-test
/sbil/ci/jenkins-slave/workspace/deployment-cf/deploy-module/smoketest.sh 2>&1
Using manifest file /sbil/ci/jenkins-slave/workspace/deployment-cf/deploy-
module/manifest.yml

Creating app sbil-ae-maintenance-dev1-new in org SvcsIT-AnEOrg / space dev1 as
********...
OK

Using route sbil-ae-maintenance-dev1-new.ausvdc02.pcf.dell.com
Binding sbil-ae-maintenance-dev1-new.ausvdc02.pcf.dell.com to sbil-ae-maintenance-
dev1-new...
OK

Uploading sbil-ae-maintenance-dev1-new...

Done uploading
OK

Starting app sbil-ae-maintenance-dev1-new in org SvcsIT-AnEOrg / space dev1 as
********...
```

● Running	sbil-ae-maintenance-dev1	1	1 GB	an hour ago	https://sbil-ae-maintenance-dev1.ausv...
● Starting	sbil-ae-maintenance-dev1-new	1	1 GB	a few seconds ago	https://sbil-ae-maintenance-dev1-new....

Automação e PCF

> Nova versão está online

> Health check iniciado

> Smoke test iniciado

✓ **Console Output**

```
#########################
### Smoketest result ###
#########################
https://sbil-ae-maintenance-dev1-new.ausvdc02.pcf.dell.com/actuator/health: 401
https://sbil-ae-maintenance-dev1-new.ausvdc02.pcf.dell.com/health:            200
https://sbil-ae-maintenance-dev1-new.ausvdc02.pcf.dell.com/smoke:             200
```

● Running	sbil-ae-maintenance-dev1	1	1 GB	an hour ago	https://sbil-ae-maintenance-dev1.ausv... 🔗
● Running	sbil-ae-maintenance-dev1-new	1	1 GB	a minute ago	https://sbil-ae-maintenance-dev1-new.... 🔗

Automação e PCF

Console Output

> Health check **aprovado**
> Smoke test **aprovado**
> Nova versão substitui a anterior

```
#########################
### Smoketest result ###
#########################
https://sbil-ae-maintenance-dev1-new.ausvdc02.pcf.dell.com/actuator/health: 401
https://sbil-ae-maintenance-dev1-new.ausvdc02.pcf.dell.com/health:           200
https://sbil-ae-maintenance-dev1-new.ausvdc02.pcf.dell.com/smoke:            200


Removing route sbil-ae-maintenance-dev1-new.ausvdc02.pcf.dell.com from app sbil-ae-
maintenance-dev1-new in org SvcsIT-AnEOrg / space dev1 as ********...
OK
Creating route sbil-ae-maintenance-dev1.ausvdc02.pcf.dell.com for org SvcsIT-AnEOrg
/ space dev1 as ********...
OK
Route sbil-ae-maintenance-dev1.ausvdc02.pcf.dell.com already exists
Adding route sbil-ae-maintenance-dev1.ausvdc02.pcf.dell.com to app sbil-ae-
maintenance-dev1-new in org SvcsIT-AnEOrg / space dev1 as ********...
OK
Renaming app sbil-ae-maintenance-dev1 to sbil-ae-maintenance-dev1-old in org
SvcsIT-AnEOrg / space dev1 as ********...
OK
Renaming app sbil-ae-maintenance-dev1-new to sbil-ae-maintenance-dev1 in org
SvcsIT-AnEOrg / space dev1 as ********...
OK
Removing route sbil-ae-maintenance-dev1.ausvdc02.pcf.dell.com from app sbil-ae-
maintenance-dev1-old in org SvcsIT-AnEOrg / space dev1 as ********...
OK
```

● Running	sbil-ae-maintenance-dev1	1	1 GB	2 minutes ago	https://sbil-ae-maintenance-dev1.ausv... ⧉
● Running	sbil-ae-maintenance-dev1-old	1	1 GB	6 minutes ago	no bound route

Automação e PCF

> Versão anterior é
> desativada e
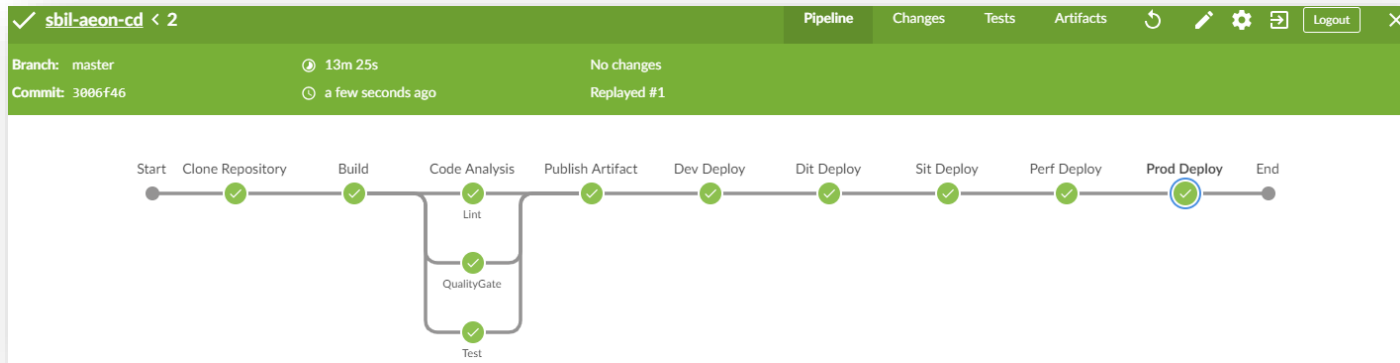> rotas são
> removidas

✅ **Console Output**

```
/sbil/ci/bin/pcf/cf stop sbil-ae-maintenance-dev1-old
Stopping app sbil-ae-maintenance-dev1-old in org SvcsIT-AnEOrg / space dev1 as
********...
OK

#########################################
### sbil-ae-maintenance-dev1-old stopped ###
#########################################
#################################################################
### sbil-ae-maintenance-dev1 Blue-Green Deployment Succeeded ###
#################################################################
```

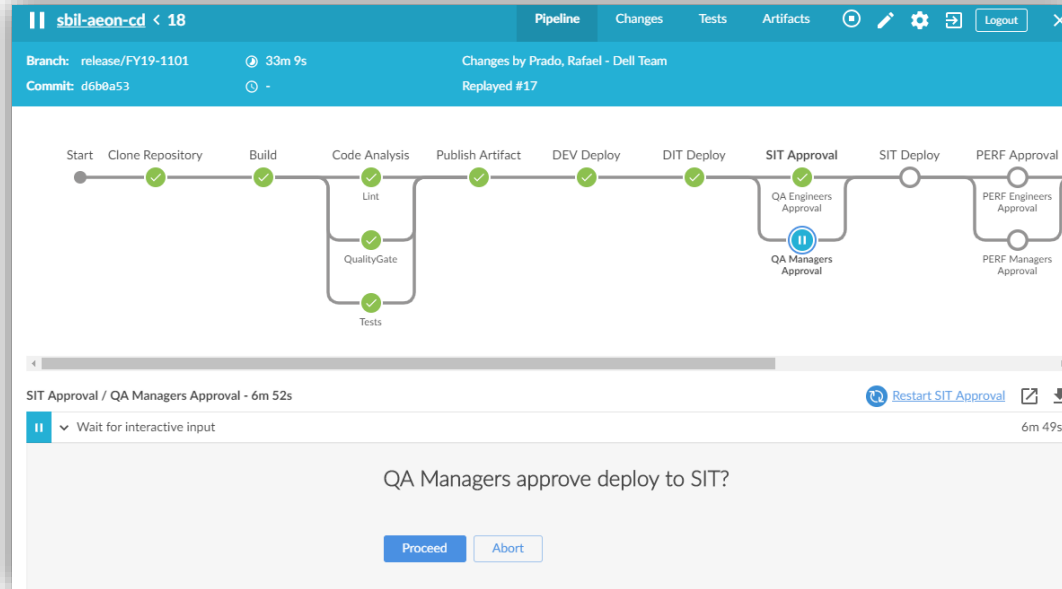| ● Running | sbil-ae-maintenance-dev1 | 1 | 1 GB | 6 minutes ago | https://sbil-ae-maintenance-dev1.ausv... ↗ |
| ● Stopped | sbil-ae-maintenance-dev1-old | 1 | 1 GB | 10 minutes ago | no bound route |

Automação e PCF - Pipelines

› CI/CD facilitada com a automação
  › Jenkins Blue Ocean

Automação e PCF - Pipelines

› CI/CD facilitada com a automação
  › Jenkins Blue Ocean

Obrigado

Cloves Langendorf Barcellos Junior

Dell Technologies Inc.

clovesbarcellos@gmail.com

linkedin.com/in/cloves

Rafael Benhur do Prado

Resource IT Solutions

rbprado@gmail.com

linkedin.com/in/rbprado