Cloud Foundry

About This Book

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Thanks, Yall

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Latest Version

The latest source of this book is available at:

http://github.com/letolabs/the-little-cloud-foundry-book.

Introduction

Graecum est; non legitur -- ``It's Greek to me''

What is a Platform-As-A-Service (PAAS)?

A PAAS is middleware between the low-level infrastructure (i.e. the actual CPUs, hard-drives, RAM, etc) and the high-level applications that run on top of the platform. The boundary between the platform and the application is clear, but the boundary between the infrastructure and the platform is still in flux and in active development.

What is Cloud Foundry?

Cloud Foundry consists of a large amount of Ruby code along with a small amount of C and Shell scripts that run on top of Ubuntu LTS. The C code is used to manage Linux containers at the kernel level using a similar strategy as the Linux kernel user space program ``lxc''. CF also consists of many configuration files in YAML format.

Features

Current languages supported: Ruby, Java, NodeJS, PHP

Frameworks supported: Rails, Spring, etc..

Python and Perl supported in forks but not yet upstreamed.

Glosssary

ACM

Access Control Manager. A general system for implementing access control features for applications.

caldecott

A Ruby gem which allows you to ``tunnel'' into the various services attached to your application. As an example, you can use caldecott to connect to the mysql command-line of your application running in the cloud with a command similar to

```
vmc tunnel mysql-12345
```

cloud controller

The Cloud Controller can be thought of as the maestro or orchestrator. It also includes the endpoints which vmc communicates with.

Chef
DEA

Droplet Execution Agent. A process which manages the running application instances.

devops

The boundary layer between development and operations is referred to as ``devops''.

droplet

An application, along with all dependencies, in a compressed archive file.

Gerrit

A code review tool based on Git. Gerrit was originally written for the Android Open Source Project and allows many kinds of complex requirements and business rules to be taken into account when reviewing code.

health

Applications can exhibit different states of ``health'' which include:

- healthy

- stopped

- flapping

- restarting

health manager

The subsystem of CF which monitors the health of applications and classifies them into a certain number of ``states'', such as ``healthy'' or ``stopped''.

IAAS

Infrastructure-as-a-service. This is the layer below Platform-as-a-service. An example is Amazon EC2, which takes care of the ``infrastructure'' of the actual physical hardware.

lxc

Linux ``containers'' which are similar to FreeBSD ``jails''. They allow many ``virtual'' instances of Linux to run inside of a ``host'' Linux, which is actually running on hardware. These have been available in the mainline Linux kernel since 2.6.29.

manifest

A Manifest is a YAML configuration file which lists various properties and metadata about the application, such as endpoint URLs, package versions and checksums.

PAAS

Platform-as-a-service. Examples of this are Cloud Foundry, OpenShift, Rackspace, Google App Engine and many more.

router

The Router takes HTTP requests and sends them to the appropriate running application instance. It usually sits behind one or more load balancers.

stager

The stager takes an application, which is often a directory of files on disk, and turns it into a package that can be deployed to an application instance as part of an update or initial deploy.

Ubuntu LTS

Long-term supported releases of Ubuntu are supported for 2 years by Canonical.

UAA

User Account and Authentication

vcap

VMware's Cloud Application Platform. This is the central Git repository which contains the Cloud Foundry codebase.

vmc

Stands for ``VMware Cloud'' or ``VMware controller'' or whatever you want it to mean, really. It is a ruby gem which is the command-line client to endpoints which implement the Cloud Foundry API.

warden

Warden is the security subsystem. It manages Linux containers, including their creation, destruction and monitoring. It can be thought of as a delicious layer of Ruby on top of klxc.

Community

How does one get involved with Cloud Foundry? That is currently unclear. The community is eagerly awaiting a public Gerrit instance so that developers at VMware can work in the open along with outside developers. Many Github pull requests have been submitted, but most have not been dealt with. This is partly explained by the fact that it was VMware's practice to sync to their public Github mirror roughly monthly which greatly increases the likelihood of merge conflicts.

A public Gerrit instance is in the works. This will allow internal VMware CF developers and external CF developers to work together, in publice, which is a huge step in the right direction for VMware.

There is an ``unofficial'' cloudfoundry IRC channel on Freenode at #cloudfoundry.

Cloud Foundry

History of Cloud Foundry
Case Studies
ql.io
node.js grumbles

IRC interview #1
???

NTT
Contributed memcached pull request on Github, has large internal CF cloud.

Links
http://cloudfoundry.org

https://github.com/cloudfoundry

http://apidocs.cloudfoundry.com