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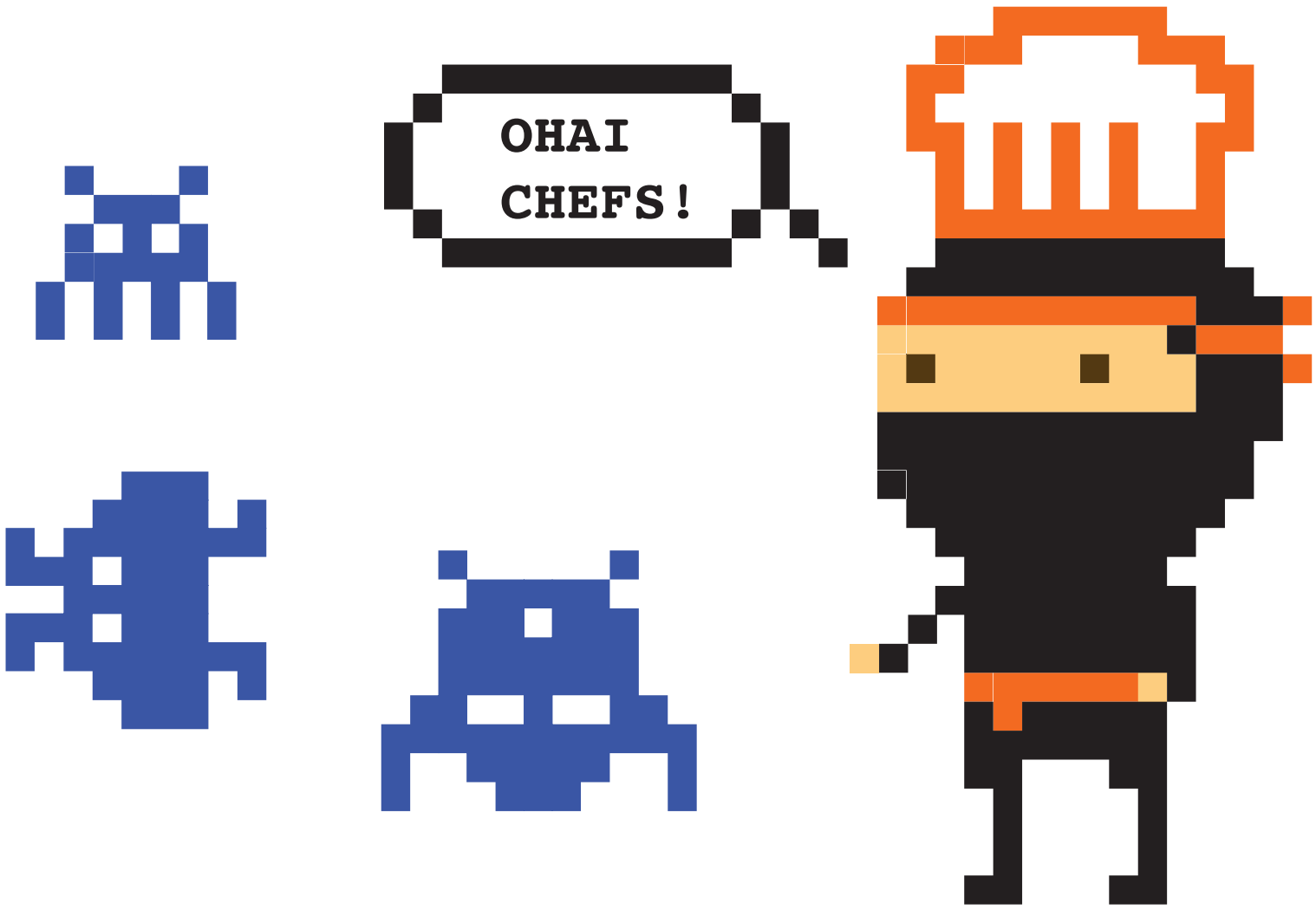
CHEF BY EXAMPLE



Practical Exercises in a Successful Chef Deployment

Chef by example

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Carlos Camacho

Contents

Preface

A Chef Style DevOps Kung-fu implementation, inspired in the Adam Jacob keynote from Chefconf 2015. A practical to work with infrastructure automaion, continuous delivery, continuous deployments and the platform maintenance life cyle.

The source code of this book is hosted in Github, everyone can fork and make pull requests; you are all invited.

0.1 What is DevOps?

There isnt an agreed definition for DevOps yet. DevOps is a cultural and professional movement, focused on how we build and operate high velocity organizations, born from the experience of its practitioners. Is a unique approach, based in previous experience and focused on customers.

- Principles (Universal)
  - Based on prioritize people over products over companies.
  - Design for the safety, contentment, knowledge and freedom of both your peers and your customers.
  - Eliminate non-value-added actions and processes.
  - Continuously improve your processes.
  - Adapt to needs.
  - Small improvements over the time.

  - Fail faster to learn faster. Be calm, fix things and improve your processes.
  - Workflows automation.
  - Diversity, gets feedback, have different opinions, argue, make demonstrations on your points of view.
  - Demo all the things you have or you are working in.
  - Be the owner of your work, love your work, and find reasons to do your work.
  - Improve and do things right even if is hard (At first).
  - Make decisions based on your experience and proof your point of view.

- Forms (Shared)
- Applications (Unique)

0.2 What this book covers

0.3 What you need for this book

0.4 Who this book is for

0.5 Conventions

Chapter 1

Getting Started

1.1 Defining the scenario

1.2 Development process

1.3 Infrastructure automation

1.4 Continuos deployments

1.5 Continuos delivery

1.6 Maintenance cycle

Chapter 2

Chef

2.1 Chef components

2.2 Knife

2.3 OHAI

2.4 Atributes

2.5 Databags

2.6 Environments

2.7 LIghtweight resources and providers

2.8 Cookbooks

2.9 Recipes

2.10 Install CHEF

The first step is to check the server host name.

Listing 2.1

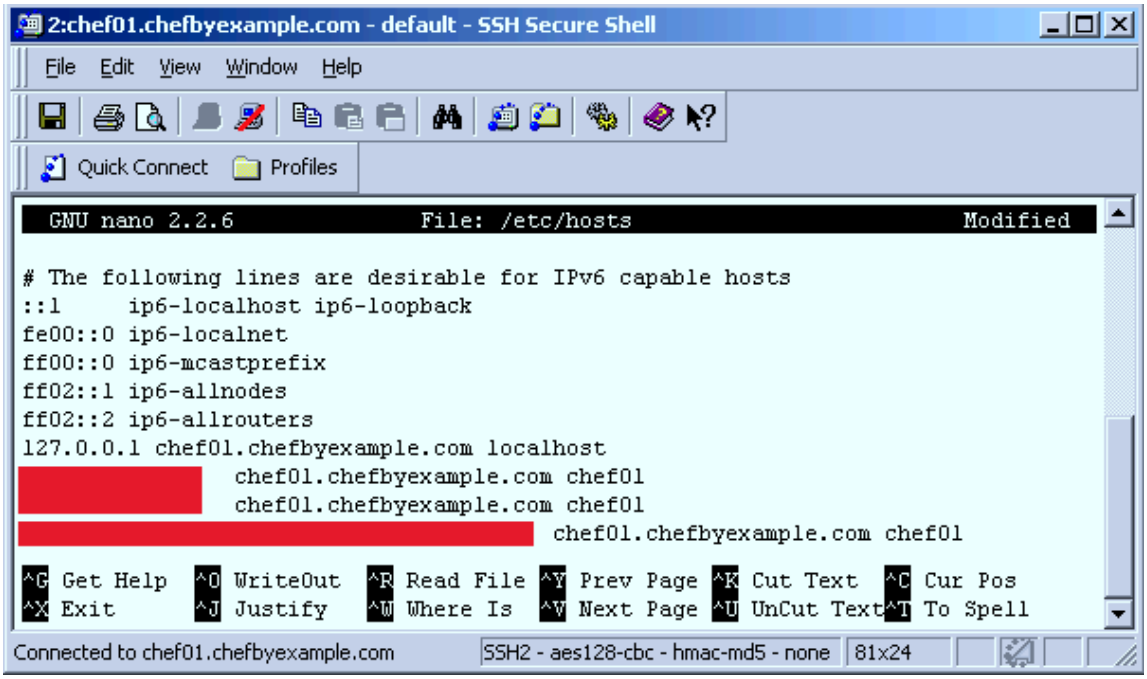
```
root@chef01:~# hostname -f
```

Now we need to edit the host name configuration file in order to add the FQDN of the server.

Listing 2.2

```
root@chef01:~# sudo nano /etc/hosts
```

Your configuration file should be something similar to this one.



Update the packages list and update the server.

Listing 2.3

```
root@chef01:~# sudo aptitude update
root@chef01:~# sudo aptitude upgrade
```

Download the latest version of the chef server to the root folder of the current user.

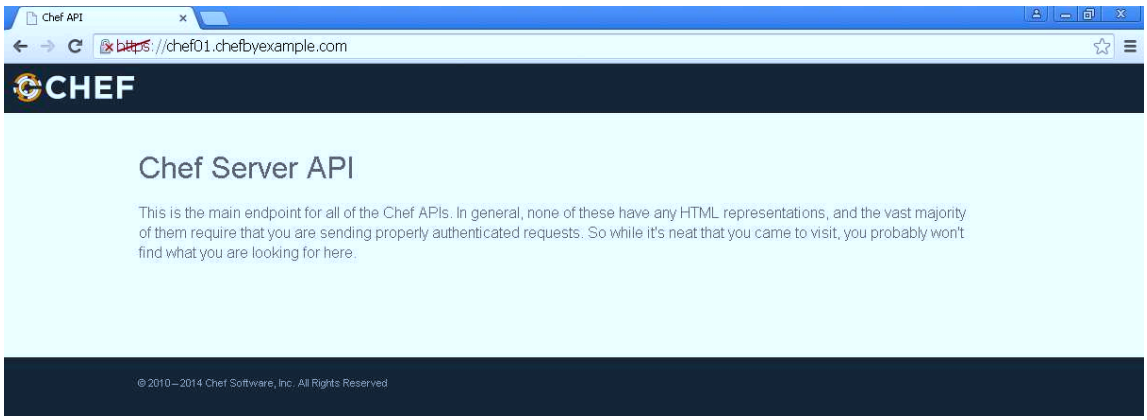
Listing 2.4

```
root@chef01:~# wget https://web-dl.packagecloud.io/chef/stable/packages/ubuntu/trusty/chef-serv
```

Install the Chef Server.

Listing 2.5

```
root@chef01:~# sudo dpkg -i chef-server-core_*.deb
root@chef01:~# sudo chef-server-ctl reconfigure
```



This should be the result. . . .
Install additional modules.
(Premium freatures up to 25 nodes..)

Listing 2.6

```
root@chef01:~# chef-server-ctl install opscode-manage;
root@chef01:~# chef-server-ctl install opscode-push-jobs-server;
root@chef01:~# chef-server-ctl install opscode-reporting;
root@chef01:~# opscode-manage-ctl reconfigure;
root@chef01:~# opscode-push-jobs-server-ctl reconfigure;
root@chef01:~# opscode-reporting-ctl reconfigure;
root@chef01:~# chef-server-ctl reconfigure;
```

We need to create the first user (Admin user)

Listing 2.7

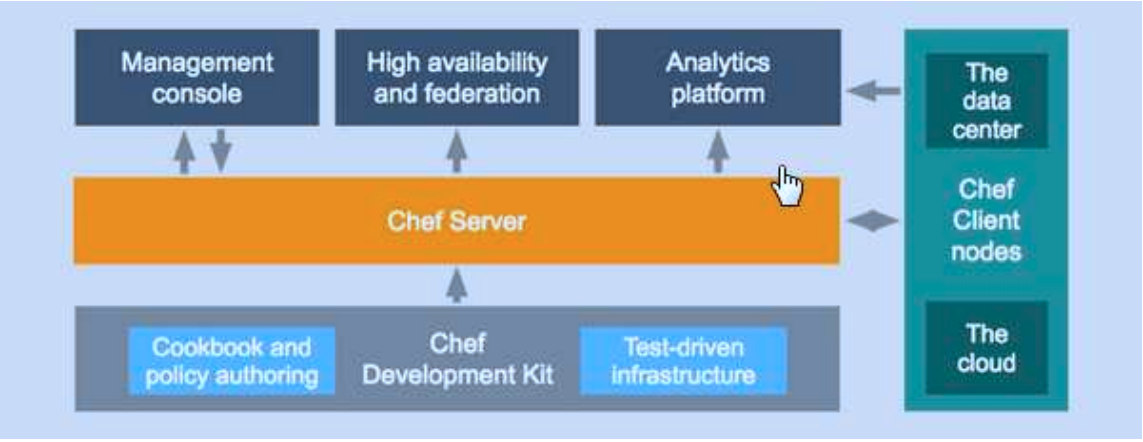
```
root@chef01:~# chef-server-ctl user-create admin the administrator the_good@chefbyexample.com 4
```

WE need to create the first organization and add the first created user to it. REmember to change:

- Your organization name name.
- The display name for the organization.
- The name of the validator key.

Listing 2.8

```
root@chef01:~# sudo chef-server-ctl org-create chefbyexample "ChefByExample.com" --association_
```



Now the Chef SErver is fully operative, now we need to add the Workstation.

2.11 Install the Workstation

From the computer/vurtual machine that you are going to use as your workstation execute.

This will install chefdk, generate the chef repository template and copy the keys.

Listing 2.9

```
root@workstation01:~# sudo wget https://opscode-omnibus-packages.s3.amazonaws.com/ubuntu/12.04/
root@workstation01:~# sudo dpkg -i chefdk_*.deb
root@workstation01:~# sudo chef generate repo chef-repo
root@workstation01:~# mkdir ~/chef-repo/.chef
root@workstation01:~# scp root@chef01.chefbyexample.com:/root/admin.pem ~/chef-repo/.chef
root@workstation01:~# scp root@chef01.chefbyexample.com:/root/chefbyexample-validator.pem ~/che
```

Now update the knife config file (root@workstation01:∼# nano ∼/chef-repo/.chef/knife.rb)

Listing 2.10

```
current_dir = File.dirname(__FILE__)
log_level                :info
log_location             STDOUT
node_name                "admin"
client_key               "#{current_dir}/admin.pem"
validation_client_name   "chefbyexample-validator"
validation_key           "#{current_dir}/chefbyexample-validator.pem"
chef_server_url          "https://chef01.chefbyexample.com/organizations/chefbyexample"
syntax_check_cache_path  "#{ENV['HOME']}/.chef/syntaxcache"
cookbook_path            ["#{current_dir}/../cookbooks"]
```

Get the certificate from the chef server

Listing 2.11

```
root@workstation01:~# knife ssl fetch
```

2.12 Bootstraping nodes

Bootsrap one node to test if everithing is working fine.

Listing 2.12

```
root@workstation01:~# knife bootstrap node01.chefbyexample.com -N node01
```

After this, list the registered nodes.

Listing 2.13

```
root@workstation01:~# knife node list
```

2.13 Installing the Open Source Web Interface

First, check the status of this project (Work in progress) as Im adapting the web interface to support CHef Server 12

2.13.1 Requirements installation

Installation steps, just run:

Listing 2.14

```
aptitude install git rubygems1.9.1 ruby1.9.1-dev build-essential;
mkdir -p /var/www/; cd /var/www/; git clone https://github.com/carlosdcg/chefbyexample_webui; c
gem install bundler;
bundle install;
```

2.13.2 Configure the default paramenters

Configure the web app in /var/www/chefbyexample_webui/config/application.rb

Listing 2.15

```
config.chef_server_url = "http://127.0.0.1"
config.rest_client_name = "pivotal"
config.rest_client_key = "/etc/opscode/pivotal.pem"
config.admin_user_name =  "admin"
config.admin_default_password = "4dm1n1str4t0r"
config.rest_client_custom_http_headers = {}
#This app only supports one organization, like the Open Source Chef Server 11
config.default_organization = "organizations/chefbyexample/"
```

2.13.3 Use the interface on demand or install it as a service

Once the Web UI is installed, from /var/www/chefbyexample_webui run:

To test in the default port 9292:

Listing 2.16

```
rackup config.ru
```

To run as a daemon in another port to test:

Listing 2.17

```
rackup config.ru -D -p 1234
```

Once you have tested it, to create the init scripts and install the run levels—

Listing 2.18

```
#TO remove the script from the default run-levels
#sudo update-rc.d -f chefbyexample_webui remove
sudo chmod 755 /var/www/chefbyexample_webui/init/chefbyexample_webui.sh
ln -s /var/www/chefbyexample_webui/init/chefbyexample_webui.sh /etc/init.d/chefbyexample_webui
sudo chmod 755 /etc/init.d/chefbyexample_webui
sudo chown root:root /etc/init.d/chefbyexample_webui
sudo update-rc.d chefbyexample_webui defaults
```

Chapter 3

Development environment

3.1 Source repository

3.2 Package repository

3.3 CI Server

Chapter 4

Deployment environments

4.1 Physical or CLoud environments

4.2 Continous Integration

4.3 Integration

4.4 Test

4.5 Go-Live!

Chapter 5

Automating delivery pipelines

Chapter 6

Maintenance cycle

- General configuration structure for the chef-repo:
  - chef-repo/environments/banana.rb
  - chef-repo/environments/potato.rb
  - chef-repo/environments/kiwi.rb
  - chef-repo/data_bags/banana.rb
  - chef-repo/data_bags/potato.rb
  - chef-repo/data_bags/kiwi.rb:
  - chef-repo/roles/base.rb
  - chef-repo/roles/web.rb
  - chef-repo/roles/db.rb
- Banana cookbook structure:
  - chef-repo/cookbooks/banana/templates/default/*.erb
  - chef-repo/cookbooks/banana/attributes/default.rb
- Potato cookbook structure:
  - chef-repo/cookbooks/potato/templates/default/*.erb

- chef-repo/cookbooks/potato/attributes/default.rb

-Kiwi cookbook structure: * chef-repo/cookbooks/kiwi/templates/default/*.erb * chef-repo/cookbooks/kiwi/attributes/default.rb

A node belongs to an environment in which case, will override the default configuration per the corresponding one.

Override app attributes for kiwi (Non sensitive info) Override app attributes for kiwi (Sensitive info) Define the recipes for the xxx role

Default configuration templates for kiwi Default configuration values according the templates for kiwi