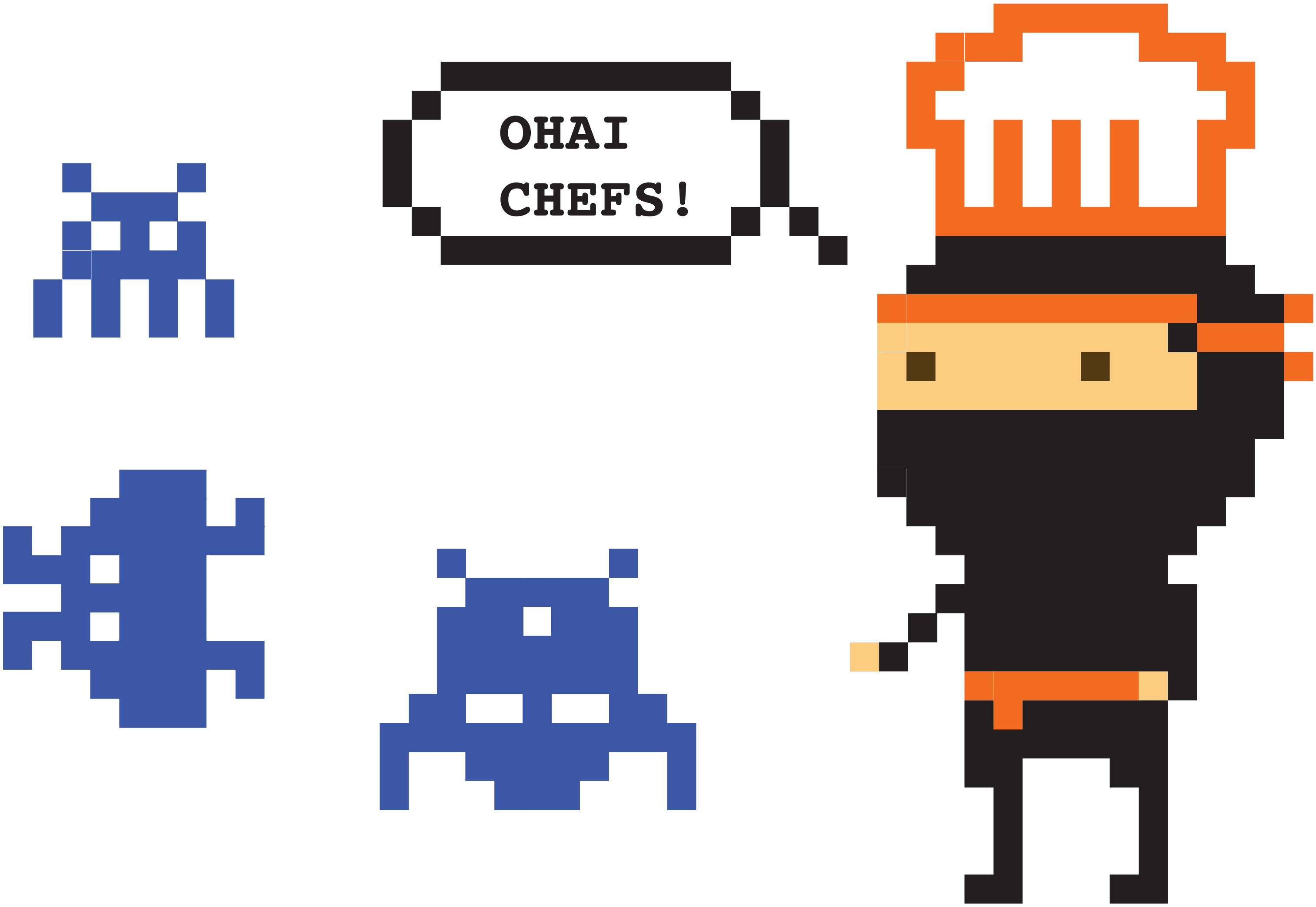
Carlos D. Camacho

CHEF BY EXAMPLE



Practical Exercises in a Successful Chef Deployment

Chef by example

Practical Exercises in a Successful Chef Deployment.

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

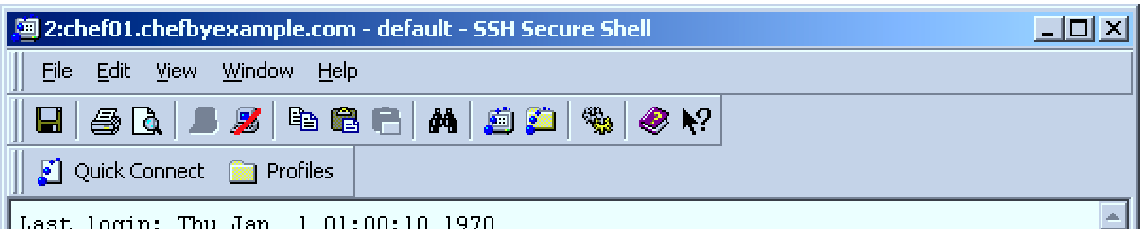
2.6 Environments

2.7 LIghtweight resources and providers

2.8 Cookbooks

2.9 Recipes

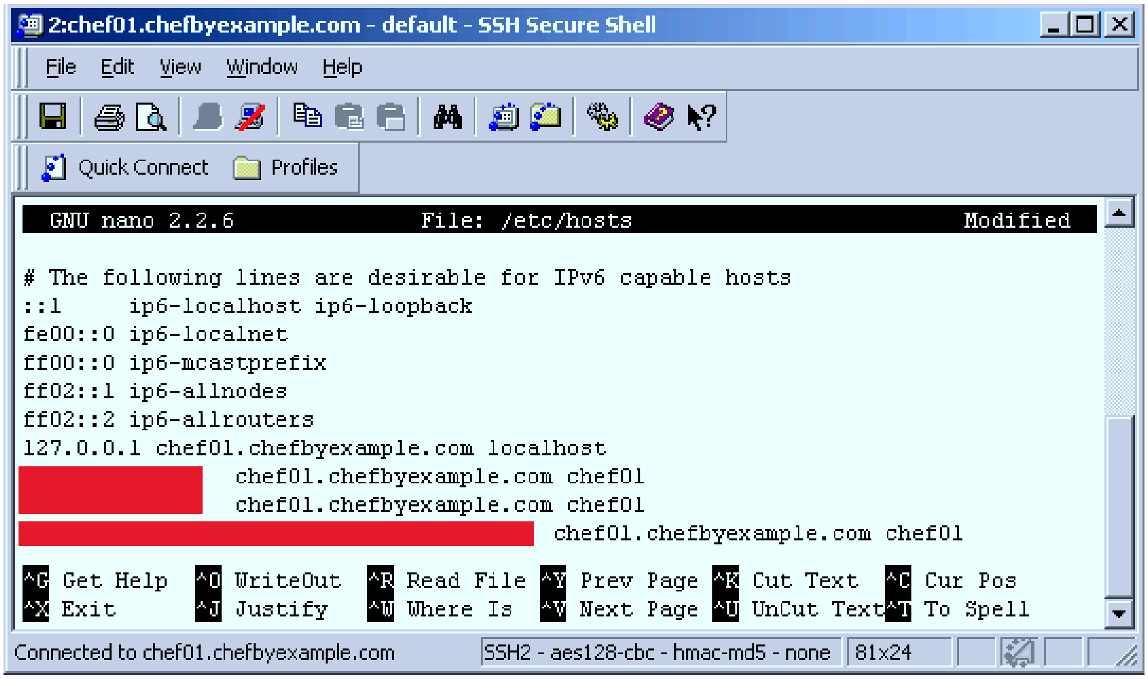
2.10 Install CHEF


2:chef01.chefbyexample.com - default - SSH Secure Shell
File Edit View Window Help
Quick Connect
Profiles

```
Last login: Thu Jan  1 01:00:10 1970
```

Listing 2.1

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


2:chef01.chefbyexample.com - default - SSH Secure Shell
File Edit View Window Help
Quick Connect Profiles
Connected to chef01.chefbyexample.com
SSH2 - aes128-cbc - hmac-md5 - none
81x24

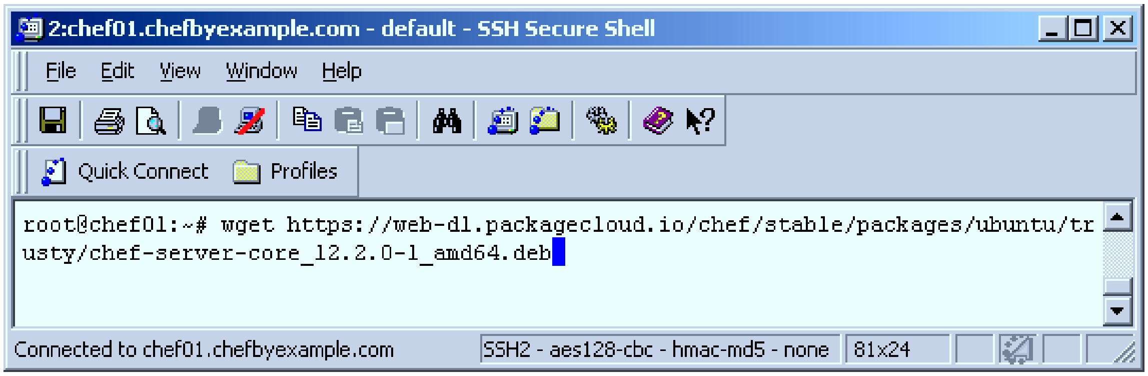
```
  GNU nano 2.2.6              File: /etc/hosts                        Modified

# The following lines are desirable for IPv6 capable hosts
::1     ip6-localhost ip6-loopback
fe00::0 ip6-localnet
ff00::0 ip6-mcastprefix
ff02::1 ip6-allnodes
ff02::2 ip6-allrouters
127.0.0.1 chef01.chefbyexample.com localhost
[redacted]    chef01.chefbyexample.com chef01
              chef01.chefbyexample.com chef01
[redacted]                                chef01.chefbyexample.com chef01

^G Get Help  ^O WriteOut  ^R Read File ^Y Prev Page ^K Cut Text  ^C Cur Pos
^X Exit      ^J Justify   ^W Where Is  ^V Next Page ^U UnCut Text^T To Spell
```

Listing 2.2

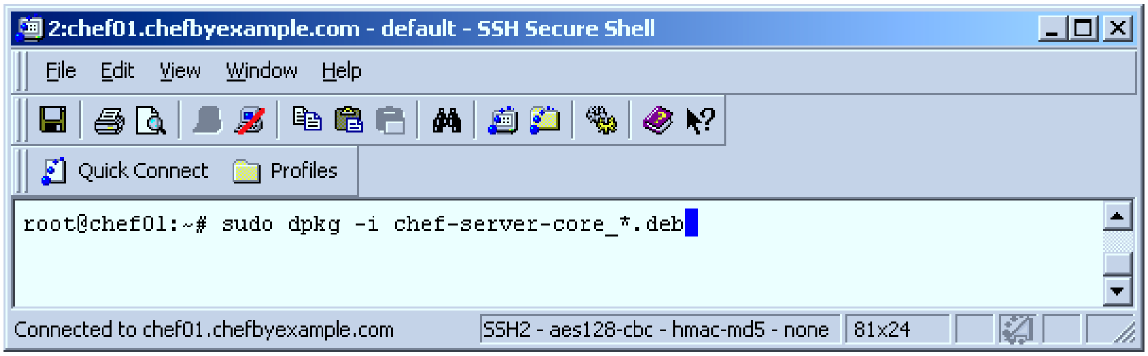
```
root@chef01:~# sudo nano /etc/hosts
```


2:chef01.chefbyexample.com - default - SSH Secure Shell
File Edit View Window Help
Quick Connect Profiles
Connected to chef01.chefbyexample.com
SSH2 - aes128-cbc - hmac-md5 - none
81x24

```
root@chef01:~# wget https://web-dl.packagecloud.io/chef/stable/packages/ubuntu/tr
usty/chef-server-core_12.2.0-1_amd64.deb
```

Listing 2.3

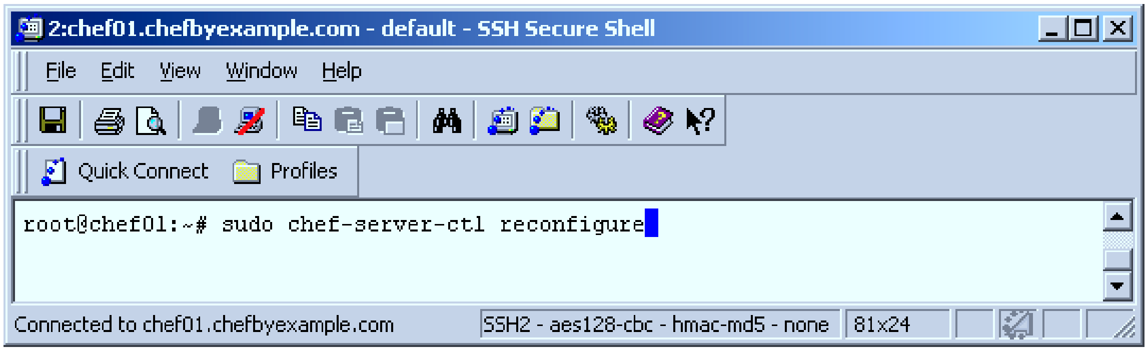
```
root@chef01:~# wget https://web-dl.packagecloud.io/chef/stable/packages/ubuntu/trusty/chef-serv
```


2:chef01.chefbyexample.com - default - SSH Secure Shell
File Edit View Window Help
Quick Connect
Profiles
Connected to chef01.chefbyexample.com
SSH2 - aes128-cbc - hmac-md5 - none
81x24

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

Listing 2.4

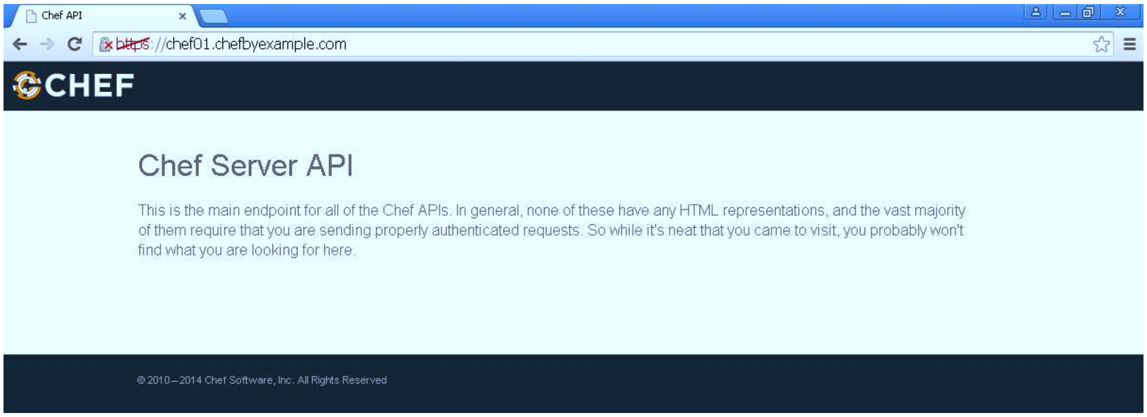
```
root@chef01:~# sudo dpkg -i chef-server-core_*.deb
```


2:chef01.chefbyexample.com - default - SSH Secure Shell
File Edit View Window Help
Quick Connect
Profiles
Connected to chef01.chefbyexample.com
SSH2 - aes128-cbc - hmac-md5 - none
81x24

```
root@chef01:~# sudo chef-server-ctl reconfigure
```

Listing 2.5

```
root@chef01:~# sudo chef-server-ctl reconfigure
```

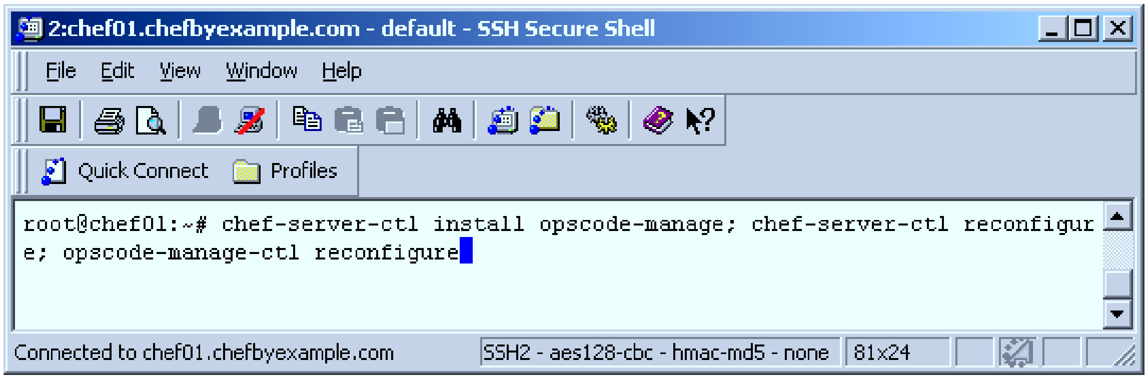


Chef Server API

This is the main endpoint for all of the Chef APIs. In general, none of these have any HTML representations, and the vast majority of them require that you are sending properly authenticated requests. So while it's neat that you came to visit, you probably won't find what you are looking for here.

© 2010 – 2014 Chef Software, Inc. All Rights Reserved

Web interface


2:chef01.chefbyexample.com - default - SSH Secure Shell
File Edit View Window Help
Quick Connect
Profiles

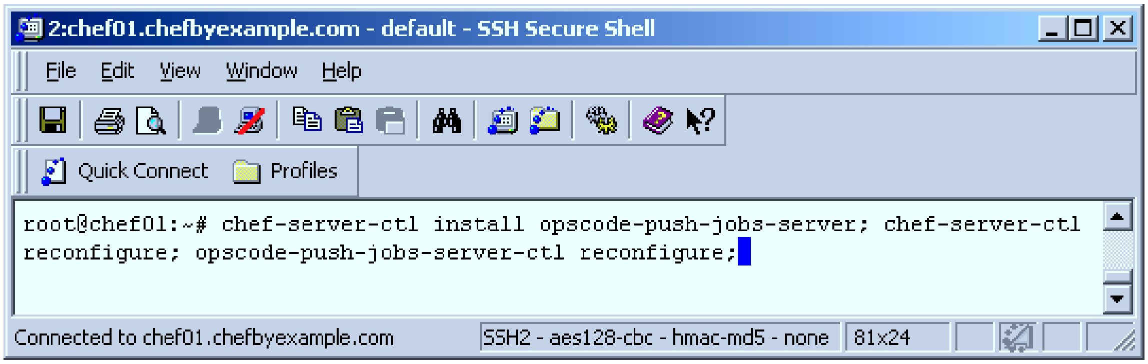
```
root@chef01:~# chef-server-ctl install opscode-manage; chef-server-ctl reconfigur
e; opscode-manage-ctl reconfigure
```

Connected to chef01.chefbyexample.com
SSH2 - aes128-cbc - hmac-md5 - none
81x24

(Premium freature up to 25 nodes..)

Listing 2.6

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

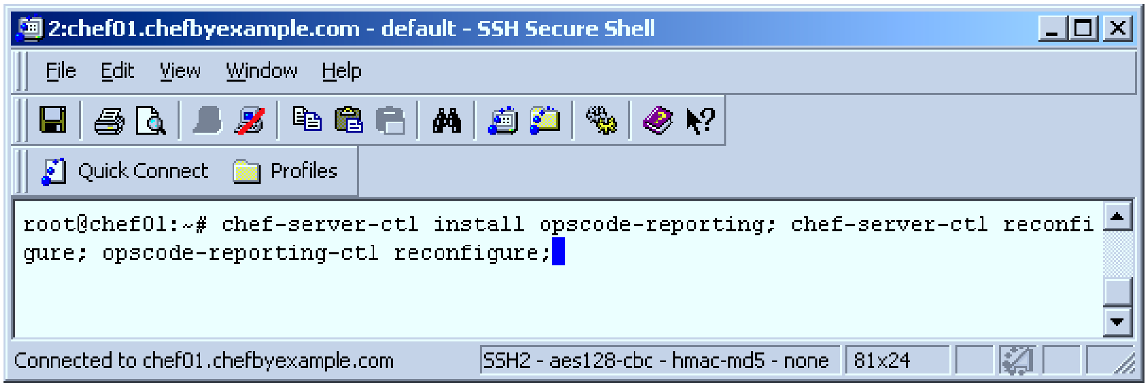

2:chef01.chefbyexample.com - default - SSH Secure Shell
File Edit View Window Help
Quick Connect
Profiles

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

Connected to chef01.chefbyexample.com
SSH2 - aes128-cbc - hmac-md5 - none
81x24

Listing 2.7

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

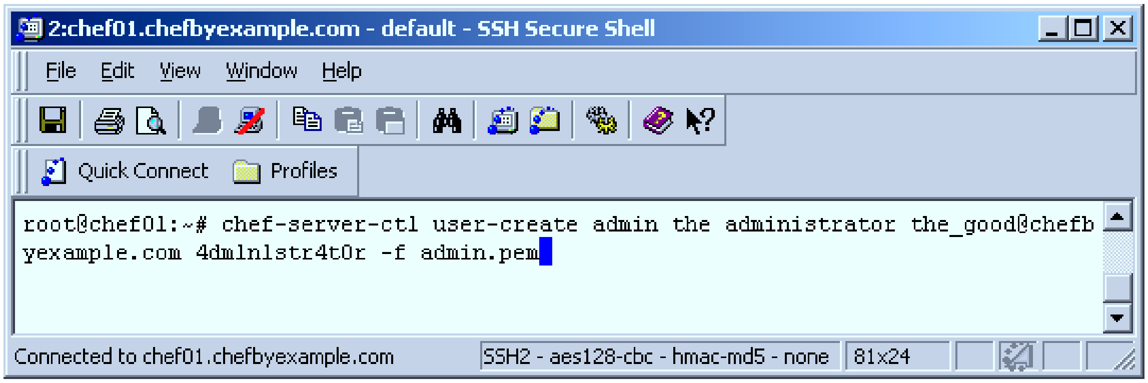

2:chef01.chefbyexample.com - default - SSH Secure Shell
File Edit View Window Help
Quick Connect
Profiles
Connected to chef01.chefbyexample.com
SSH2 - aes128-cbc - hmac-md5 - none
81x24

```
root@chef01:~# chef-server-ctl install opscode-reporting; chef-server-ctl reconfi
gure; opscode-reporting-ctl reconfigure;
```

(Premium freature up to 25 nodes..)

Listing 2.8

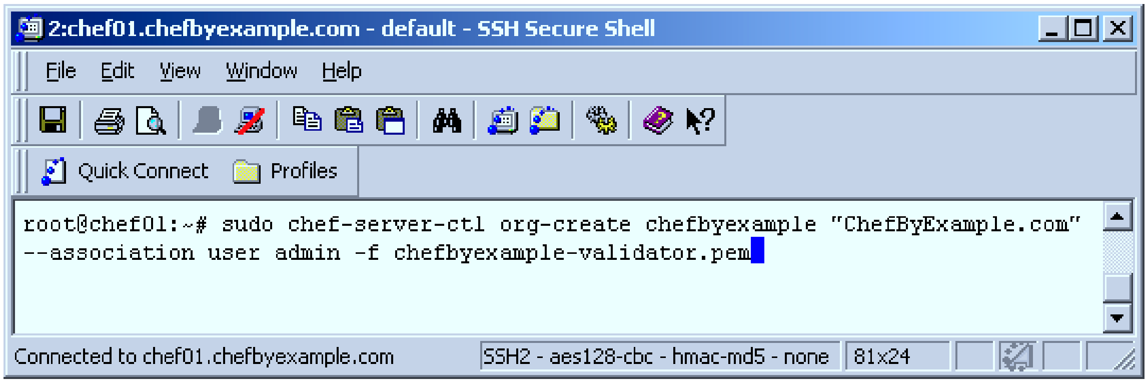
```
root@chef01:~# chef-server-ctl install opscode-reporting; chef-server-ctl reconfigure; opscode-
```


2:chef01.chefbyexample.com - default - SSH Secure Shell
File Edit View Window Help
Quick Connect
Profiles
Connected to chef01.chefbyexample.com
SSH2 - aes128-cbc - hmac-md5 - none
81x24

```
root@chef01:~# chef-server-ctl user-create admin the administrator the_good@chefb
yexample.com 4dmlnlstr4t0r -f admin.pem
```

Listing 2.9

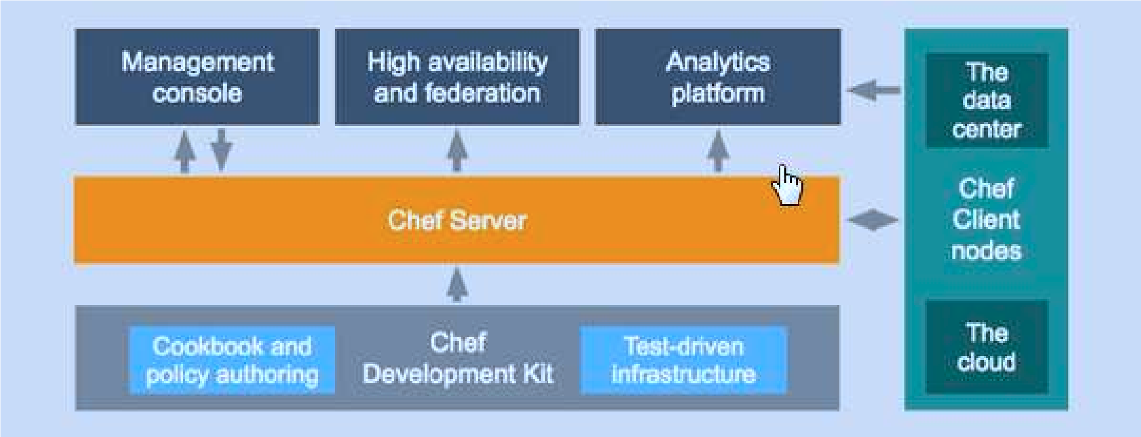
```
root@chef01:~# chef-server-ctl user-create admin the administrator the_good@chefbyexample.com 4
```


2:chef01.chefbyexample.com - default - SSH Secure Shell
File Edit View Window Help
Quick Connect
Profiles
Connected to chef01.chefbyexample.com
SSH2 - aes128-cbc - hmac-md5 - none
81x24

```
root@chef01:~# sudo chef-server-ctl org-create chefbyexample "ChefByExample.com"
--association user admin -f chefbyexample-validator.pem
```

Listing 2.10

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



Chef Server installed..

2.11 Install one Workstation

Listing 2.11

```
sudo wget https://opscode-omnibus-packages.s3.amazonaws.com/ubuntu/12.04/x86_64/chefdk_0.7.0-1_

sudo dpkg -i chefdk_*.deb

sudo chef generate repo chef-repo
```

```
mkdir ~/chef-repo/.chef
scp root@chef01.chefbyexample.com:/root/admin.pem ~/chef-repo/.chef
scp root@chef01.chefbyexample.com:/root/chefbyexample-validator.pem ~/chef-repo/.chef

nano ~/chef-repo/.chef/knife.rb


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"]


knife ssl fetch

Bootstraping the first node

knife bootstrap node01.chefbyexample.com -N node01
```

2.12 Install

Installation steps, just run:

Listing 2.12

```
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/chef-server-webui
cd chef-server-webui
gem install bundler
bundle install
```

Configure the web app in /var/www/chef-server-webui/config/application.rb

Listing 2.13

```
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 Use

Once the Web UI is installed, from /var/www/chef-server-webui run:

To test in the default port 9292:

Listing 2.14

```
rackup config.ru
```

To run as a daemon in another port to test:

Listing 2.15

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

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

Listing 2.16

```
chmod +x /var/www/chef-server-webui/init/chef-server-webui.sh
ln -s /var/www/chef-server-webui/init/chef-server-webui.sh /etc/init.d/chef-server-webui
sudo chmod +x /etc/init.d/chef-server-webui
sudo chown root:root /etc/init.d/chef-server-webui
sudo update-rc.d chef-server-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