



# COOKING UP YOUR ENVIRONMENT

Scripted Infrastructure

# WHO AM I

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- Lead projects for a number of large European companies
- Zend Certified Engineer
- Over 11 years commercial experience developing in PHP and



# DEVELOPMENT ENVIRONMENT

This is where you work & you take good care of it?



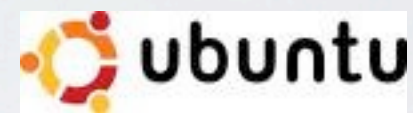


# YOUR SOFTWARE STACK

Does it matter?



# BASE OS OPTIONS







IS EVERYONE ON  
YOUR TEAM A SYSTEM  
ADMINISTRATOR

*Really?*



# CAN YOU MAINTAIN THIS?

Across the a large or distributed team?

# VIRTUALISATION

Virtual Machines roll out some of the bumps







# VIRTUAL MACHINES

Distribution can be just as big a problem!

# EVERYONE IS STILL A SYSTEM ADMINISTRATOR

*"I'd rather be building the application!"*





# THERE MUST BE A BETTER WAY?

A scripted solution that can be repeated perhaps?

# BASH

Kickstart preseed.cfg and postinstall.sh





# CAPISTRANO

Push ssh commands to many servers at once.

# PLATFORM DIFFERENCES

Can we abstract away the differences in the base platforms?





# PUPPET

<http://www.puppetlabs.com/>



OPSCODE

# CHEF

<http://www.opscode.com/>



# LIVE DEMO

Please let this work!

# CHEF-SOLO

Distributed infrastructure management



# CHEF-SERVER

Centralised infrastructure management

**Note:** Chef-client 0.10.0 or above is required to use the Environments feature. Changes made in the Management Console will not be reflected and may be undone if lower versions of chef-client is used. Please upgrade if you are using an earlier version. Most recent gem can be installed by running 'gem install chef'.

Need Help?

If you have questions, or you're stuck, we're here to help.

[Get Help](#) or [Leave Feedback](#)

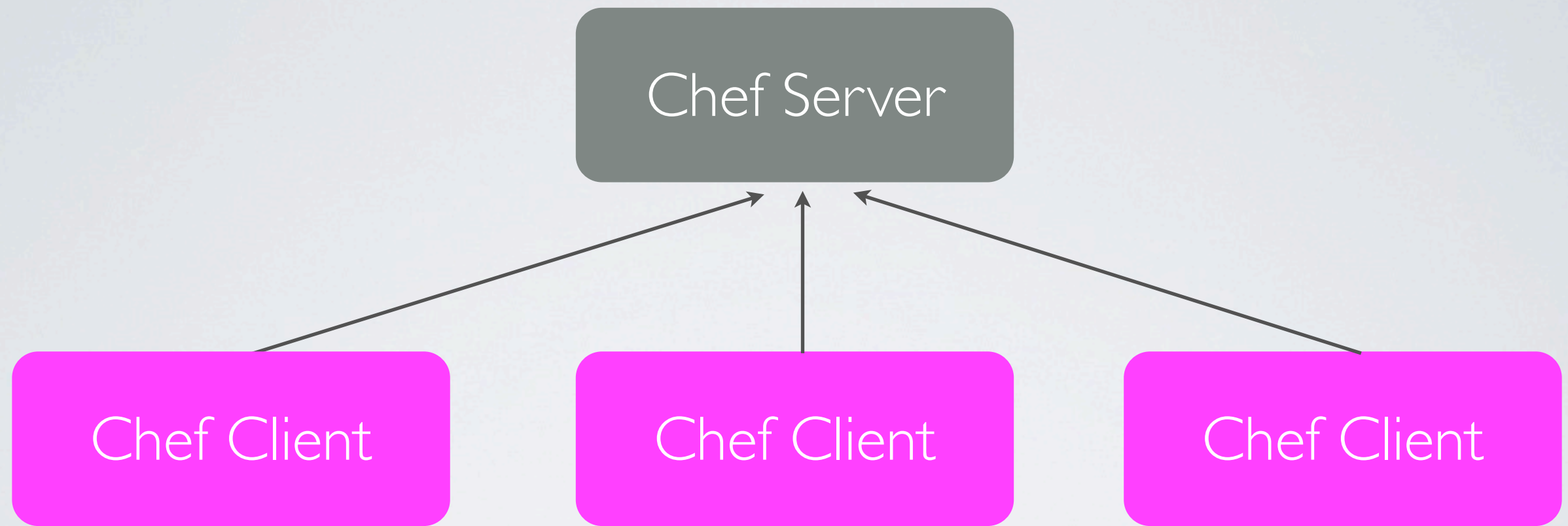
Node List for All Environments

List	Create	Permissions
Name		
<a href="#">all-centos</a>		<a href="#">Edit</a>   <a href="#">Delete</a>
<a href="#">ed-centos</a>		<a href="#">Edit</a>   <a href="#">Delete</a>



# CHEF ARCHITECTURE

I know it is ruby don't shoot me!



Nodes converge on the state defined at the server



# NODE

JSON representation of the client server.  
Details retrieved by Ohai.

# Node JSON

```
{
  "normal": {
    "runit": {
      "chpst_bin": "/usr/bin/chpst",
      "sv_bin": "/usr/bin/sv",
      "service_dir": "/etc/service",
      "sv_dir": "/etc/sv"
    },
    "mysql": {
      "server_debian_password": "sK_fre0IChPsrf7VRXms",
      "old_passwords": 0,
      "server_repl_password": "UeDuoVtga8YJn6iFg0kZ",
      "pid_file": "/var/run/mysqld/mysqld.pid",
      "server_root_password": "0N0pDXQb0Kpers0ZvyZs",
      "socket": "/var/run/mysqld/mysqld.sock"
    },
    "apache": {
      "cache_dir": "/var/cache/apache2",
      "dir": "/etc/apache2",
      "binary": "/usr/sbin/apache2",
      "icondir": "/usr/share/apache2/icons",
      "user": "www-data",
      "log_dir": "/var/log/apache2"
    }
  },
  "name": "my-node",
  "chef_environment": "_default",
  "run_list": [
    "role[development]",
    "role[webserver]"
  ]
}
```



# COOKBOOKS

A place to store your recipes and then share them

# COOKBOOKS CONTAIN

- Attributes - default values to configure the node
- Definitions - create custom resources
- Files - transferred to the node
- Libraries - extend chef functionality with ruby
- Recipes - Specify resources and how they should be managed
- LWRP - Allow you to create your own resources & providers
- Templates - ERB files that generate dynamic config files



# RECIPES

The ordered procedures that will configure resources

# PHP Package Recipe

```
pkgs = value_for_platform(  
  [ "centos", "redhat", "fedora" ] => {  
    "default" => %w{ php53 php53-devel php53-cli php-pear }  
  },  
  [ "debian", "ubuntu" ] => {  
    "default" => %w{ php5-cgi php5 php5-dev php5-cli php-pear }  
  },  
  "default" => %w{ php5-cgi php5 php5-dev php5-cli php-pear }  
)
```

```
pkgs.each do |pkg|  
  package pkg do  
    action :install  
  end  
end
```

```
template "#{node['php']['conf_dir']}/php.ini" do  
  source "php.ini.erb"  
  owner "root"  
  group "root"  
  mode "0644"  
end
```



# RESOURCES

Platform abstraction for the things you wish to configure

# COMMON RESOURCES

- Package
- File
- Directory
- Service
- Template



# COMMON RESOURCE ACTIONS

- Install
- Update
- Enable
- Remove

# Simple Resource Example

```
package "php5" do  
  action :install  
end
```

```
template "#{node['php']['conf_dir']}/php.ini" do  
  source "php.ini.erb"  
  owner "root"  
  group "root"  
  mode "0644"  
end
```



# LWRP

Lightweight Resource Providers

# PHP LWRP

```
include_recipe "php::pear"
```

```
channels = [  
  "pear.symfony-project.com",  
  "components.ez.no"  
]
```

```
channels.each do |chan|  
  php_pear_channel chan do  
    action :discover  
  end  
end
```

```
pu = php_pear_channel "pear.phpunit.de" do  
  action :discover  
end
```

```
php_pear "PHPUnit" do  
  preferred_state "beta"  
  channel pu.channel_name  
  action :install  
end
```



# ATTRIBUTES

Hierarchical configuration values for nodes

# Apache Default.rb Attributes

## # General settings

```
default[:apache][:listen_ports] = [ "80", "443" ]  
default[:apache][:contact] = "ops@example.com"  
default[:apache][:timeout] = 300  
default[:apache][:keepalive] = "On"  
default[:apache][:keepaliverequests] = 100  
default[:apache][:keepalivetimeout] = 5
```

## # Security

```
default[:apache][:servertokens] = "Prod"  
default[:apache][:serversignature] = "On"  
default[:apache][:traceenable] = "On"
```



# ROLES

What will each server be?

# POSSIBLE ROLES

- Webserver
- Database Master
- Database Slave
- Media Server
- Load-balancer



# Webserver.rb Role

```
name "webserver"
description "PHP Webserver"
# List of recipes and roles to apply. Requires Chef 0.8, earlier versions use 'recipes()'.
run_list(
  "php",
  "memcached",
  "apache2",
  "mysql::server",
)
# Attributes applied if the node doesn't have it set already.
default_attributes()
# Attributes applied no matter what the node has set already.
override_attributes()
```

# ENVIRONMENTS

Where is each server?



# POSSIBLE ENVIRONMENTS

- Development
- Staging
- User Acceptance
- Production

# Development.rb Environment

```
name "development"
description "The development environment"
override_attributes ({
  "apache2" => {
    "listen_ports" => [ "80", "443" ]
  },
  "mysql" => {
    "server_root_password" => "root"
  }
})
```



# Environment

Role: Webserver

Role: Database  
Master

# Development

Node: Server# 1

Node: Server#2

Node: Server#3

# Production

Node: Server#4

Node: Server#5

Node Server#6

# SECURITY

Is at the heart of the chef architecture



# KNIFE

The only utensil you need to master chef!



# WITH KNIFE YOU CAN

- Create cookbooks
- Upload cookbooks to your chef-server
- List / Edit client nodes
- Create / Edit Roles
- Create / Edit Environments



# WORKFLOWS

Choose one and stick to it!

# EDIT JSON DIRECTLY

```
$ knife role edit webserver
```

```
{  
  "name": "webserver",  
  "default_attributes": {  
  },  
  "json_class": "Chef::Role",  
  "env_run_lists": {  
  },  
  "run_list": [  
    "recipe[php]",  
    "recipe[memcached]",  
    "recipe[apache2]",  
    "recipe[mysql::server]"  
  ],  
  "description": "PHP Webserver",  
  "chef_type": "role",  
  "override_attributes": {  
  }  
}
```



# UPLOAD .RB FILES

```
name "webserver"
description "PHP Webserver"
# List of recipes and roles to apply. Requires Chef 0.8, earlier versions use 'recipes
()'.
run_list(
  "php",
  "memcached",
  "apache2",
  "mysql::server",
  "magento"
)
# Attributes applied if the node doesn't have it set already.
default_attributes()
# Attributes applied no matter what the node has set already.
override_attributes()
```

\$ knife role from file webserver.rb

# CLOUD PROVISION

Just got even easier!





# Create a new server and bootstrap chef

```
$ knife rackspace server create --server-name myserver --image 62 --flavor 4
```



# SIT BACK

Your infrastructure is  
cooked







# VAGRANT

Automated VM provisioning

# QUESTIONS?

<http://joind.in/talk/view/3227>

<http://slidesha.re/j9MwzA>



# REFERENCES

- <http://www.opscode.com/>
- <http://www.puppetlabs.com/>
- <https://github.com/capistrano/capistrano/wiki>
- <https://github.com/suitmymind/ubuntu-machine>
- <http://vagrantup.com/>

# IMAGE CREDITS

<http://www.flickr.com/photos/krisvandesande/>

<http://www.flickr.com/photos/61928261@N00/>

<http://www.flickr.com/photos/marklarson/>



# WE ARE HIRING!

<http://www.ibuildings.co.uk/about/careers/>