

# Chef Fundamentals

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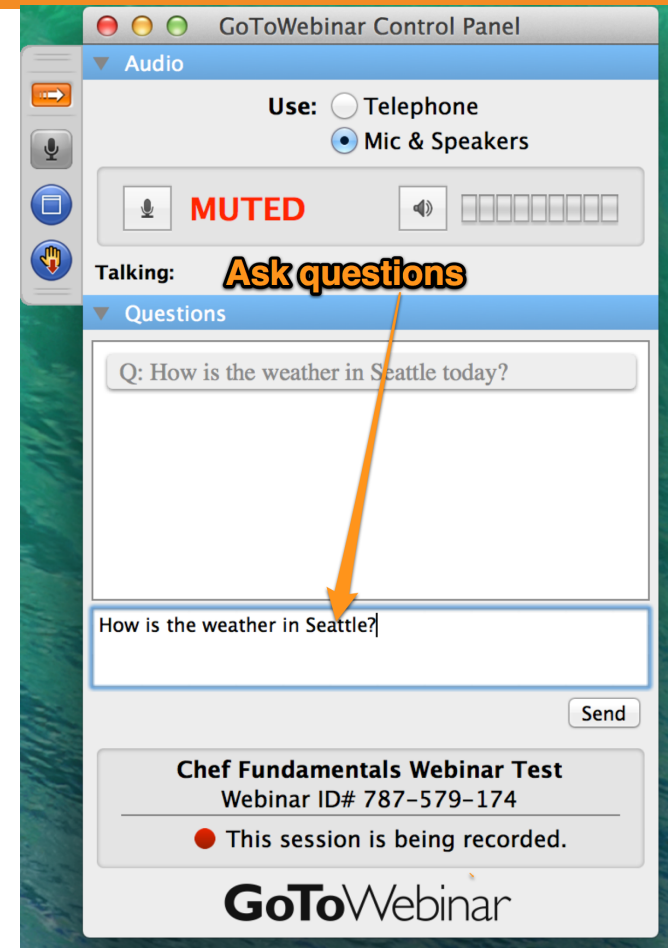
# Nathen Harvey

- Community Director
- Co-host of the Food Fight Show Podcast
- @nathenharvey



# Questions & Answers

- Ask questions in the chat window when they come to you
- We'll answer as many questions as we can at the end of the session



# Questions & Answers

- Ask questions in the Google Discussion Forum
- This can be used during the webinar and outside of the webinar, too.
- <https://groups.google.com/d/forum/learnchef-fundamentals-webinar>








learnchef-fundamentals-webinar Shared publicly

30 of 38 topics (1 unread) ★ 8+1

Welcome to the discussion forum for the [#learnchef Chef Fundamentals w](#)

Use this forum to ask questions about the webinar series, get homework to

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- |                          |  |
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# Slides and Video

- This webinar is being recorded. The video will be made available shortly after the session has ended.
- The slides used throughout this webinar will be made available at the end of each webinar.
- Watch <http://learnchef.com> for updates.

# Agenda

# Topics

- ~~Overview of Chef~~
- ~~Workstation Setup~~
- ~~Node Setup~~
- ~~Chef Resources and Recipes~~
- ~~Working with the Node object~~
- ~~Roles~~
- ~~Common configuration with Data Bags~~
- ~~Environments and knife-ec2~~
- Community Cookbooks and Further Resources

# Quick Recap

Where are we?



# In the last module

- Login to the node in your Chef Training Lab
- Install Chef nodes using "knife bootstrap"
  - Included a `run_list` so that the server was a web server when the bootstrap process completed
- Managed Chef Cookbook versions for each Environment

# Where did my Node go?

- We still need a CentOS machine to manage
- The one we launched last time has likely expired
- Launch a new one using the Chef Lab
  - Hopefully, you've already done this. We're not going to spend time walking through it now.

# Launch Chef Training Lab

The screenshot shows the CloudShare interface for a Chef training lab. At the top, there is a navigation bar with the CloudShare logo and tabs for 'Home', 'Overview', 'CentOS 6.3 Server', and 'Virtual Machines'. Below the navigation bar, a status bar indicates 'Environment is ready' with a green checkmark icon. The main content area features the heading 'learnchef tutorial - CentOS' and a message: 'Your dedicated hands-on environment is just a click away. We believe you shouldn't have to waste time copying gigabytes of software, shipping machines, or traveling, just to get your IT into people's hands. When you click the 'Start Using' button to your right, you'll have instant access worldwide to a full, enterprise-grade IT'. A prominent grey button labeled 'Start Using This Environment' is circled in orange, with an orange arrow pointing to it from the 'Environment is ready' status bar.

cloudshare

Home Overview CentOS 6.3 Server Virtual Machines

Environment is ready

## learnchef tutorial - CentOS

Your dedicated hands-on environment is just a click away.

We believe you shouldn't have to waste time copying gigabytes of software, shipping machines, or traveling, just to get your IT into people's hands.

When you click the 'Start Using' button to your right, you'll have instant access worldwide to a full, enterprise-grade IT

**Start Using This Environment**

# Lab - Login


```
$ ssh root@<EXTERNAL_ADDRESS>
```

```
The authenticity of host 'uvolqrwls0jdgs3blvt.vm.cld.sr
(69.195.232.110)' can't be established.
RSA key fingerprint is d9:95:a3:b9:02:27:e9:cd:
74:e4:a2:34:23:f5:a6:8b.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added 'uvolqrwls0jdgs3blvt.vm.cld.sr,
69.195.232.110' (RSA) to the list of known hosts.
root@uvolqrwls0jdgs3blvt.vm.cld.sr's password:
Last login: Mon Jan 6 16:26:24 2014 from
host86-145-117-53.range86-145.btcentralplus.com
[root@CentOS63 ~]$
```

# Checkpoint

- At this point you should have
  - One virtual machine (VM) or server that you'll use for the lab exercises
  - The IP address or public hostname
  - An application for establishing an ssh connection
  - 'sudo' or 'root' permissions on the VM

# Update the production environment

 **OPEN IN EDITOR:** environments/production.rb

- Upgrade the apache cookbook to version 0.2.0

```
name "production"  
description "For Prods!"  
cookbook "apache", "= 0.2.0"
```

**SAVE FILE!**

# Upload the production environment

Updated Environment production

# Upload the production environment

```
$ knife environment from file production.rb
```

```
Updated Environment production
```



# Update the webserver role



**OPEN IN EDITOR:** roles/webserver.rb

- add the vhosts recipe

```
{  
  "name" : "webserver",  
  "default_attributes" : {  
    "apache" : {  
      "greeting" : "Webinar"  
    }  
  },  
  "run_list" : [  
    "recipe[apache]",  
    "recipe[apache::vhosts]"  
  ]  
}
```

**SAVE FILE!**

# Upload the role

Updated Role webserver!

# Upload the role

```
$ knife role from file webserver.rb
```

```
Updated Role webserver!
```

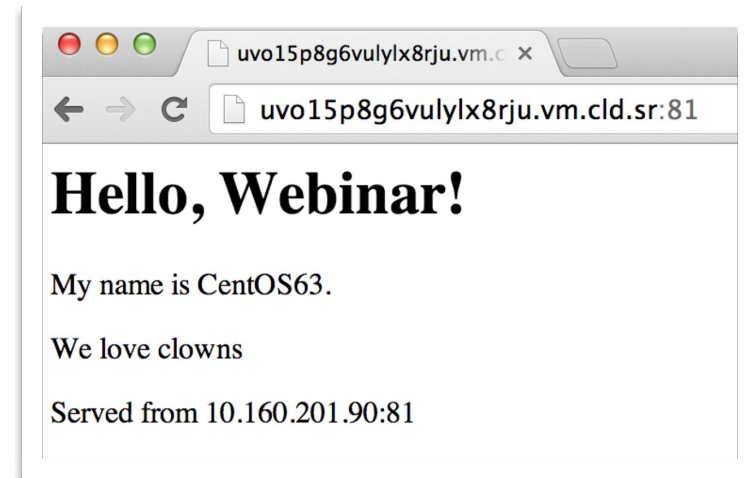
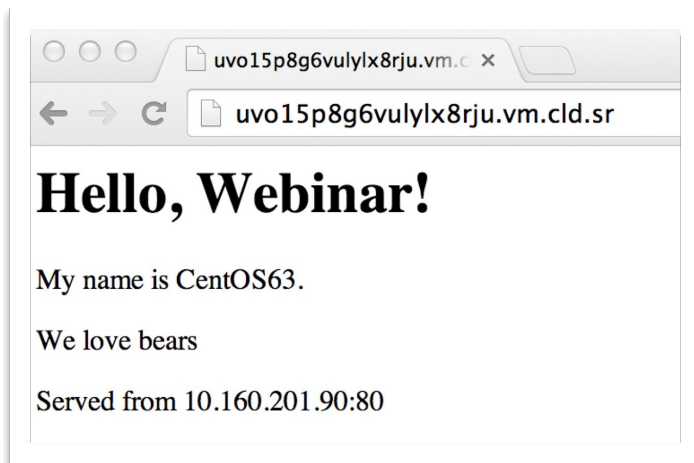
# "Bootstrap" the Target Instance

```
$ knife bootstrap <EXTERNAL_ADDRESS> -x root -P chef -N 'module6' -r 'role[webserver]' -E production
```

```
Bootstrapping Chef on uv01qrwls0jdgs3blvt.vm.cld.sr
...
...
uv01qrwls0jdgs3blvt.vm.cld.sr Creating a new client identity for
module3 using the validator key.
uv01qrwls0jdgs3blvt.vm.cld.sr resolving cookbooks for run list: []
uv01qrwls0jdgs3blvt.vm.cld.sr Synchronizing Cookbooks:
uv01qrwls0jdgs3blvt.vm.cld.sr Compiling Cookbooks...
uv01qrwls0jdgs3blvt.vm.cld.sr [2014-01-28T11:03:14-05:00] WARN: Node
module3 has an empty run list.
uv01qrwls0jdgs3blvt.vm.cld.sr Converging 0 resources
uv01qrwls0jdgs3blvt.vm.cld.sr Chef Client finished, 0 resources updated
```

# Exercise: Verify that the home page works

- Open a web browser
- Type in the the URL for your test node



# Using Community Cookbooks

Open Source: Saving you time!

v2.1.0

# Lesson Objectives

- After completing the lesson, you will be able to
  - Find, preview, and download cookbooks from the Chef Community site
  - Use knife to work with the Community Site API
  - Download, extract, examine and implement cookbooks from the Community site

# The easy way...

- We've been writing some cookbooks so far...
- Hundreds already exist for a large number of use cases and purposes. Many (but only a fraction) are maintained by CHEF Software, Inc.
- Think of it like RubyGems.org, CPAN.org, or other focused plugin-style distribution sites.



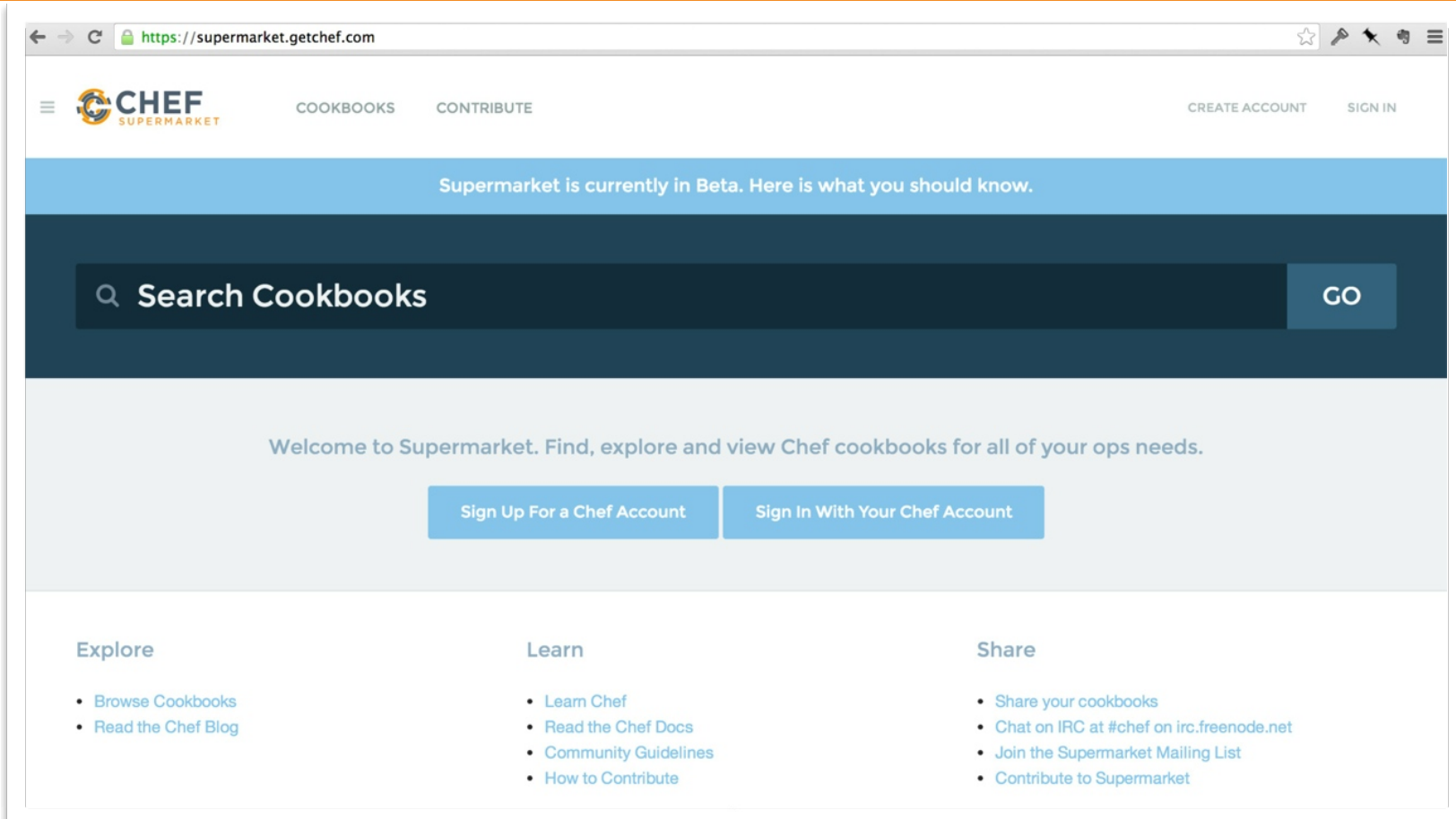
# The Problem and the Success Criteria

- **The Problem:** The chef-client application should run on a regular basis on our nodes.
- **Success Criteria:** chef-client is running as a service on our node.

# Exercise: Find and preview cookbooks on the community site

The screenshot shows the homepage of the Chef Supermarket website. The browser address bar displays <https://supermarket.getchef.com>. The navigation bar includes the Chef Supermarket logo, links for COOKBOOKS and CONTRIBUTE, and buttons for CREATE ACCOUNT and SIGN IN. A blue banner below the navigation bar states: "Supermarket is currently in Beta. Here is what you should know." Below this is a dark blue search bar with the text "Search Cookbooks" and a "GO" button. A light gray section below the search bar contains the text: "Welcome to Supermarket. Find, explore and view Chef cookbooks for all of your ops needs." and two buttons: "Sign Up For a Chef Account" and "Sign In With Your Chef Account". At the bottom, there are three columns of links: "Explore" (Browse Cookbooks, Read the Chef Blog), "Learn" (Learn Chef, Read the Chef Docs, Community Guidelines, How to Contribute), and "Share" (Share your cookbooks, Chat on IRC at #chef on irc.freenode.net, Join the Supermarket Mailing List, Contribute to Supermarket).

# Exercise: Find and preview cookbooks on the community site

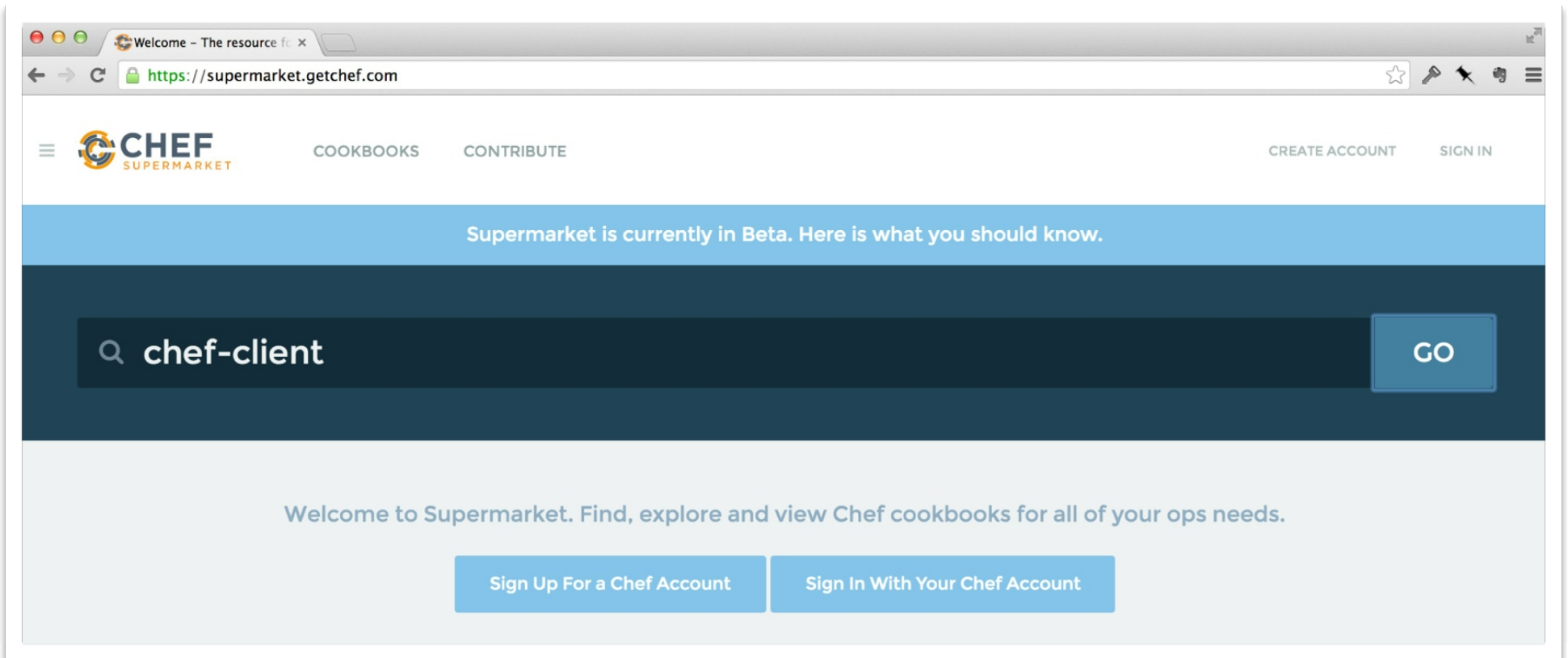


The screenshot shows the Chef Supermarket website interface. At the top, the URL is <https://supermarket.getchef.com>. The navigation bar includes the Chef Supermarket logo, links for COOKBOOKS and CONTRIBUTE, and buttons for CREATE ACCOUNT and SIGN IN. A blue banner below the navigation bar states: "Supermarket is currently in Beta. Here is what you should know." Below this is a dark blue search bar with the text "Search Cookbooks" and a "GO" button. A light gray section below the search bar contains the text: "Welcome to Supermarket. Find, explore and view Chef cookbooks for all of your ops needs." Below this text are two buttons: "Sign Up For a Chef Account" and "Sign In With Your Chef Account". At the bottom, there are three columns of links: "Explore" (Browse Cookbooks, Read the Chef Blog), "Learn" (Learn Chef, Read the Chef Docs, Community Guidelines, How to Contribute), and "Share" (Share your cookbooks, Chat on IRC at #chef on irc.freenode.net, Join the Supermarket Mailing List, Contribute to Supermarket).

# Exercise: Search for a chef-client cookbook

The screenshot shows a web browser window with the URL <https://supermarket.getchef.com>. The page features the Chef Supermarket logo on the left and navigation links for 'COOKBOOKS' and 'CONTRIBUTE' in the center. On the right, there are links for 'CREATE ACCOUNT' and 'SIGN IN'. A blue banner below the navigation states, 'Supermarket is currently in Beta. Here is what you should know.' Below this banner is a dark search bar containing the text 'chef-client' and a magnifying glass icon on the left, and a blue 'GO' button on the right. At the bottom of the page, a light blue box contains the text 'Welcome to Supermarket. Find, explore and view Chef cookbooks for all of your ops needs.' and two buttons: 'Sign Up For a Chef Account' and 'Sign In With Your Chef Account'.

# Exercise: Search for a chef-client cookbook



The screenshot shows a web browser window with the URL <https://supermarket.getchef.com>. The page features the Chef Supermarket logo on the left, with navigation links for 'COOKBOOKS' and 'CONTRIBUTE'. On the right, there are links for 'CREATE ACCOUNT' and 'SIGN IN'. A blue banner across the top of the main content area reads 'Supermarket is currently in Beta. Here is what you should know.' Below this is a dark search bar containing the text 'chef-client' and a magnifying glass icon on the left, and a blue 'GO' button on the right. At the bottom of the page, a light blue box contains the text 'Welcome to Supermarket. Find, explore and view Chef cookbooks for all of your ops needs.' and two buttons: 'Sign Up For a Chef Account' and 'Sign In With Your Chef Account'.

# Search Results...

The screenshot shows the Chef Supermarket website interface. At the top, there is a navigation bar with the Chef Supermarket logo, links for 'COOKBOOKS' and 'CONTRIBUTE', and a 'CREATE ACCOUNT' button. A blue banner below the navigation bar states 'Supermarket is currently in Beta. Here is what you should know.' Below this is a search bar containing the text 'chef-client'. The search results section shows '161 Cookbooks' with an RSS icon and a 'Sort by' dropdown menu set to 'Most Downloaded'. The first result is for the 'chef-client' cookbook, version 3.6.0, updated on June 8, 2014, by opsco. The description reads 'Manages client.rb configuration and chef-client service'. A code block shows the command `cookbook 'chef-client', '~> 3.6.0'`. At the bottom of the result card, it lists 'SUPPORTED PLATFORMS' with icons for various operating systems and shows '7101 Downloads' and '114 Followers' with a 'Follow' button. An orange arrow points from the search bar to the 'chef-client' result.

# Viewing a cookbook

## chef-client

3.6.0 42 Versions RSS Follow 114

```
knife cookbook site install chef-client
```

Manages client.rb configuration and chef-client service

README Dependencies

### chef-client Cookbook

This cookbook is used to configure a system as a Chef Client.


### Requirements

- Chef 0.10.14+
- Ohai 0.6.12+


Chef 10.14.0 or greater is recommended to make use of the `client_fork` configuration option.

### Platforms

The following platforms are tested directly under test-kitchen; see `.kitchen.yml` and `TESTING.md` for details.



**opscode**  
Opscode Inc.




#### DETAILS

[View Source](#)

UPDATED JUNE 8, 2014  
Created on December 16, 2010

#### PLATFORMS



#### LICENSE

Apache 2.0

#### 13 LATEST VERSION DOWNLOADS

7101 Total Downloads

[Download Cookbook](#)

## You can download cookbooks directly from the site...

- You can download cookbooks directly from the community site, but:
  - It doesn't put them in your Chef Repository
  - It isn't fast if you know what you're looking for (click, click...)
  - It isn't necessarily fast if you **don't** know what you're looking for.
  - You're already using knife for managing cookbooks and other things in your Chef Repository.



# Introducing Knife Cookbook Site plugin

- Knife includes a "cookbook site" plugin with some sub-commands:
  - search
  - show
  - download
  - ... and more!

# Download and use chef-client cookbook

v2.1.0

## Exercise: Download the chef-client cookbook

```
Downloading chef-client from the cookbooks  
site at version 3.2.0 to /Users/  
johnfitzpatrick/cheftraining/fundamentals2.0/  
chef-repo/chef-client-3.2.0.tar.gz
```

```
Cookbook saved: /Users/YOU/chef-repo/chef-  
client-3.2.0.tar.gz
```

## Exercise: Download the chef-client cookbook

```
$ knife cookbook site download chef-client
```

```
Downloading chef-client from the cookbooks  
site at version 3.2.0 to /Users/  
johnfitzpatrick/cheftraining/fundamentals2.0/  
chef-repo/chef-client-3.2.0.tar.gz
```

```
Cookbook saved: /Users/YOU/chef-repo/chef-  
client-3.2.0.tar.gz
```

# Exercise: Extract chef-client cookbook tarball

```
x chef-client/  
x chef-client/attributes/  
x chef-client/CHANGELOG.md  
x chef-client/CONTRIBUTING  
x chef-client/LICENSE  
x chef-client/metadata.json  
x chef-client/metadata.rb  
x chef-client/README.md  
x chef-client/recipes/  
x chef-client/templates/  
x chef-client/templates/arch/  
x chef-client/templates/default/  
x chef-client/templates/windows/  
x chef-client/templates/default/debian/  
x chef-client/templates/default/redhat/  
x chef-client/templates/default/solaris/  
x chef-client/templates/arch/conf.d/  
x chef-client/templates/arch/rc.d/  
x chef-client/recipes/config.rb  
x chef-client/recipes/cron.rb  
x chef-client/recipes/default.rb  
x chef-client/recipes/delete_validation.rb
```

# Exercise: Extract chef-client cookbook tarball

```
$ tar -zxvf chef-client*.tar.gz -C cookbooks/
```

```
x chef-client/  
x chef-client/attributes/  
x chef-client/CHANGELOG.md  
x chef-client/CONTRIBUTING  
x chef-client/LICENSE  
x chef-client/metadata.json  
x chef-client/metadata.rb  
x chef-client/README.md  
x chef-client/recipes/  
x chef-client/templates/  
x chef-client/templates/arch/  
x chef-client/templates/default/  
x chef-client/templates/windows/  
x chef-client/templates/default/debian/  
x chef-client/templates/default/redhat/  
x chef-client/templates/default/solaris/  
x chef-client/templates/arch/conf.d/  
x chef-client/templates/arch/rc.d/  
x chef-client/recipes/config.rb  
x chef-client/recipes/cron.rb  
x chef-client/recipes/default.rb  
x chef-client/recipes/delete_validation.rb
```

# Review Dependencies

chef-client

3.6.0

42 Versions

RSS

Follow 114

```
knife cookbook site install chef-client
```

Manages client.rb configuration and chef-client service

README

Dependencies

cron >= 1.2.0

logrotate >= 1.2.0

# Cookbook Dependencies

- Cookbooks are built in a way that allows for easy composition
- Dependencies are described in each cookbook's `metadata.rb` file

```
depends 'cron', '>= 1.2.0'  
depends 'logrotate', '>= 1.2.0'
```



# Exercise: Download the cron cookbook

```
Downloading cron from the cookbooks site at version  
1.2.8 to /Users/YOU/chef-repo/cron-1.2.8.tar.gz  
Cookbook saved: /Users/YOU/chef-repo/  
cron-1.2.8.tar.gz
```

# Exercise: Download the cron cookbook

```
$ knife cookbook site download cron
```

```
Downloading cron from the cookbooks site at version  
1.2.8 to /Users/YOU/chef-repo/cron-1.2.8.tar.gz  
Cookbook saved: /Users/YOU/chef-repo/  
cron-1.2.8.tar.gz
```

# Exercise: Extract cron cookbook tarball

```
x cron/  
x cron/CHANGELOG.md  
x cron/README.md  
x cron/metadata.json  
x cron/metadata.rb  
x cron/providers  
x cron/providers/d.rb  
x cron/recipes  
x cron/recipes/default.rb  
x cron/recipes/test.rb  
x cron/resources  
x cron/resources/d.rb  
x cron/templates  
x cron/templates/default  
x cron/templates/default/cron.d.erb
```

# Exercise: Extract cron cookbook tarball

```
$ tar -zxvf cron*.tar.gz -C cookbooks/
```

```
x cron/  
x cron/CHANGELOG.md  
x cron/README.md  
x cron/metadata.json  
x cron/metadata.rb  
x cron/providers  
x cron/providers/d.rb  
x cron/recipes  
x cron/recipes/default.rb  
x cron/recipes/test.rb  
x cron/resources  
x cron/resources/d.rb  
x cron/templates  
x cron/templates/default  
x cron/templates/default/cron.d.erb
```

# Exercise: Download the logrotate cookbook

```
Downloading logrotate from the cookbooks site at  
version 1.4.0 to /Users/johnfitzpatrick/  
cheftraining/chef-repo/logrotate-1.4.0.tar.gz  
Cookbook saved: /Users/YOU/chef-repo/  
logrotate-1.4.0.tar.gz
```

## Exercise: Download the logrotate cookbook

```
$ knife cookbook site download logrotate
```

```
Downloading logrotate from the cookbooks site at  
version 1.4.0 to /Users/johnfitzpatrick/  
cheftraining/chef-repo/logrotate-1.4.0.tar.gz  
Cookbook saved: /Users/YOU/chef-repo/  
logrotate-1.4.0.tar.gz
```

# Exercise: Extract logrotate cookbook tarball

```
x logrotate/  
x logrotate/CHANGELOG.md  
x logrotate/README.md  
x logrotate/attributes  
x logrotate/attributes/default.rb  
x logrotate/definitions  
x logrotate/definitions/logrotate_app.rb  
x logrotate/libraries  
x logrotate/libraries/logrotate_config.rb  
x logrotate/metadata.json  
x logrotate/metadata.rb  
x logrotate/recipes  
x logrotate/recipes/default.rb  
x logrotate/recipes/global.rb  
x logrotate/templates  
x logrotate/templates/default  
x logrotate/templates/default/logrotate-global.erb  
x logrotate/templates/default/logrotate.erb
```

# Exercise: Extract logrotate cookbook tarball

```
$ tar -zxvf logrotate*.tar.gz -C cookbooks/
```

```
x logrotate/  
x logrotate/CHANGELOG.md  
x logrotate/README.md  
x logrotate/attributes  
x logrotate/attributes/default.rb  
x logrotate/definitions  
x logrotate/definitions/logrotate_app.rb  
x logrotate/libraries  
x logrotate/libraries/logrotate_config.rb  
x logrotate/metadata.json  
x logrotate/metadata.rb  
x logrotate/recipes  
x logrotate/recipes/default.rb  
x logrotate/recipes/global.rb  
x logrotate/templates  
x logrotate/templates/default  
x logrotate/templates/default/logrotate-global.erb  
x logrotate/templates/default/logrotate.erb
```



# What we just did...

- Cookbooks are distributed as a versioned .tar.gz archive.
- The latest version is downloaded by default (you can specify the version).
- Extract the cookbook into the "cookbooks" directory with tar.
- Next, let's examine the contents.

## Best practice: well written cookbooks have a README!

- Documentation for cookbooks doesn't need to be extensive, but a README should describe some important aspects of a cookbook:
  - Expectations (cookbooks, platform, data)
  - Recipes and their purpose
  - LWRPs, Libraries, etc.
  - Usage notes
- Read the README first!

# Best Practice: This runs as root!

- So, you just downloaded source code from the internet.
- As root.
- To load in the magic machine that:
  - **Makes your computers run code**
- Read the *entire* cookbook first!

# Exercise: Upload the cookbooks

```
Updated cookbooks/cron  
Updated cookbooks/logrotate  
Updated cookbooks/chef-client
```

# Exercise: Upload the cookbooks

```
$ knife upload cookbooks
```

```
Updated cookbooks/cron
```

```
Updated cookbooks/logrotate
```

```
Updated cookbooks/chef-client
```

# Examining the chef-client cookbook

- We're going to use two recipes on the node from the chef-client cookbook.
  - `delete_validation`
  - `service` (via default)

## Best Practice: Delete the validation certificate when it isn't required

- Once Chef enters the actual run, synchronizing cookbooks, it has registered its own API client with the validation certificate
- That certificate is no longer required. We do this first because in case the run fails for another reason, we know at least the validation certificate is gone

# Exercise: View the chef-client::delete\_validation recipe




**OPEN IN EDITOR:**

```
unless chef server?  
  file Chef::Config[:validation_key] do  
    action :delete  
    backup false  
    only_if { ::File.exists?(Chef::Config[:client_key]) }  
  end  
end
```

**SAVE FILE!**



## Exercise: View the chef-client::delete\_validation recipe

 **OPEN IN EDITOR:** cookbooks/chef-client/recipes/delete\_validation.rb

```
unless chef server?  
  file Chef::Config[:validation_key] do  
    action :delete  
    backup false  
    only_if { ::File.exists?(Chef::Config[:client_key]) }  
  end  
end
```

**SAVE FILE!**

# Exercise: View the chef-client::default recipe



## OPEN IN EDITOR:

```
#  
# Unless required by applicable law or agreed to in writing, software  
# distributed under the License is distributed on an "AS IS" BASIS,  
# WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.  
# See the License for the specific language governing permissions and  
# limitations under the License.  
#
```

```
include_recipe "chef-client::service"
```

**SAVE FILE!**

# Exercise: View the chef-client::default recipe

 **OPEN IN EDITOR:** cookbooks/chef-client/recipes/default.rb

```
#  
# Unless required by applicable law or agreed to in writing, software  
# distributed under the License is distributed on an "AS IS" BASIS,  
# WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.  
# See the License for the specific language governing permissions and  
# limitations under the License.  
#
```

```
include_recipe "chef-client::service"
```

**SAVE FILE!**

## Best Practice: Sane defaults do "pretty much" what you expect

- The main point of the "chef-client" cookbook is managing the "chef-client" program. It is designed that it can run as a daemonized service.
- The least surprising thing for most users is that the default recipe starts the service.
- You can manage the service in a number of ways, see the cookbook's README.md.

# Exercise: View the chef-client::service recipe

 **OPEN IN EDITOR:** cookbooks/chef-client/recipes/service.rb

- The recipe supports a number of **service** providers and styles.
- It works on a lot of **platforms**.
- Everything is controllable through **attributes**.

```
supported_init_styles = [
  'arch',
  'bluepill',
  'bsd',
  'daemontools',
  'init',
  'launchd',
  'runit',
  'smf',
  'upstart',
  'winsw'
]
init_style = node["chef_client"]["init_style"]

# Services moved to recipes
if supported_init_styles.include? init_style
  include_recipe "chef-client::#{init_style}_service"
else
  log "Could not determine service init style, manual intervention required
to start up the chef-client service."
end
```

## Best Practice: Well-written cookbooks change behavior based on attributes

- Ideally, you don't have to modify the contents of a cookbook to use it for your specific use case.
- Look at the attributes directory for things you can override through roles to affect behavior of the cookbook.
- Of course, well written cookbooks have sane defaults, and a README to describe all this.

# Exercise: Add a chef-client role

 **OPEN IN EDITOR:** roles/chef-client.json

```
{  
  "name" : "chef-client",  
  "description" : "Manages the chef-client",  
  "run_list" : [  
    "recipe[chef-client]",  
    "recipe[chef-client::delete_validation]"  
  ]  
}
```

**SAVE FILE!**

# Exercise: Upload the chef-client role

```
Updated Role chef-client!
```



# Exercise: Upload the chef-client role

```
$ knife role from file chef-client.json
```

```
Updated Role chef-client!
```

# Exercise: Re-run the Chef Client

```
...
Recipe: chef-client::delete_validation
 * file[/etc/chef/validation.pem] action delete[2014-01-07T09:05:43-05:00] INFO: Processing file[/etc/chef/validation.pem] action
delete (chef-client::delete_validation line 25)
[2014-01-07T09:05:43-05:00] INFO: file[/etc/chef/validation.pem] deleted file at /etc/chef/validation.pem

  - delete file /etc/chef/validation.pem
...
```

```
 * service[chef-client] action enable[2014-01-07T09:05:46-05:00] INFO: Processing service[chef-client] action enable (chef-
client::init_service line 32)
[2014-01-07T09:05:47-05:00] INFO: service[chef-client] enabled

  - enable service service[chef-client]

 * service[chef-client] action start[2014-01-07T09:05:47-05:00] INFO: Processing service[chef-client] action start (chef-
client::init_service line 32)
[2014-01-07T09:05:48-05:00] INFO: service[chef-client] started

  - start service service[chef-client]
...
```

```
[2014-01-07T09:05:55-05:00] INFO: template[/etc/init.d/chef-client] sending restart action to service[chef-client] (delayed)
Recipe: chef-client::init_service
 * service[chef-client] action restart[2014-01-07T09:05:55-05:00] INFO: Processing service[chef-client] action restart (chef-
client::init_service line 32)
[2014-01-07T09:06:01-05:00] INFO: service[chef-client] restarted

  - restart service service[chef-client]

[2014-01-07T09:06:01-05:00] INFO: Chef Run complete in 29.341053545 seconds
```

# Exercise: Verify chef-client is running

```
root      8933  0.3  2.2 130400 37816 ?          Sl    03:19
0:01 /opt/chef/embedded/bin/ruby /usr/bin/chef-client -d -c /
etc/chef/client.rb -L /var/log/chef/client.log -P /var/run/
chef/client.pid -i 1800 -s 300
```

# Exercise: Verify chef-client is running

```
root@module6$ ps aux | grep chef-client
```

```
root      8933  0.3  2.2 130400 37816 ?        S1   03:19  
0:01 /opt/chef/embedded/bin/ruby /usr/bin/chef-client -d -c /  
etc/chef/client.rb -L /var/log/chef/client.log -P /var/run/  
chef/client.pid -i 1800 -s 300
```

# Convergent infrastructure

- Our node is now running chef-client as a daemon, and it will converge itself over time on a (by default) 30 minute interval.
- The amount of resources converged may vary with longer intervals, depending on configuration drift on the system.
- Because Chef resources work using the “test and repair” cycle, Chef will only configure what it needs to each run.

# The Problem and the Success Criteria

- **The Problem:** The chef-client application should check-in every five minutes in the production environment.
- **Success Criteria:** chef-client runs every five minutes in production.

## Best Practice: Specify cookbook versions in production

- We've just added three new cookbooks to our run list.
- A cookbook version should be set for all cookbooks in your production environment

# Update the production.rb



**OPEN IN EDITOR:** environments/production.rb

```
name "production"
description "For Production!"

cookbook_versions({
  "apache" => "= 0.2.0",
  "chef-client" => "= 3.6.0",
  "logrotate" => "= 1.6.0",
  "cron" => "= 1.4.0"
})

default_attributes(
  "chef_client" => {
    "interval" => 300
  }
)
```

**SAVE FILE!**



# Upload the production environment

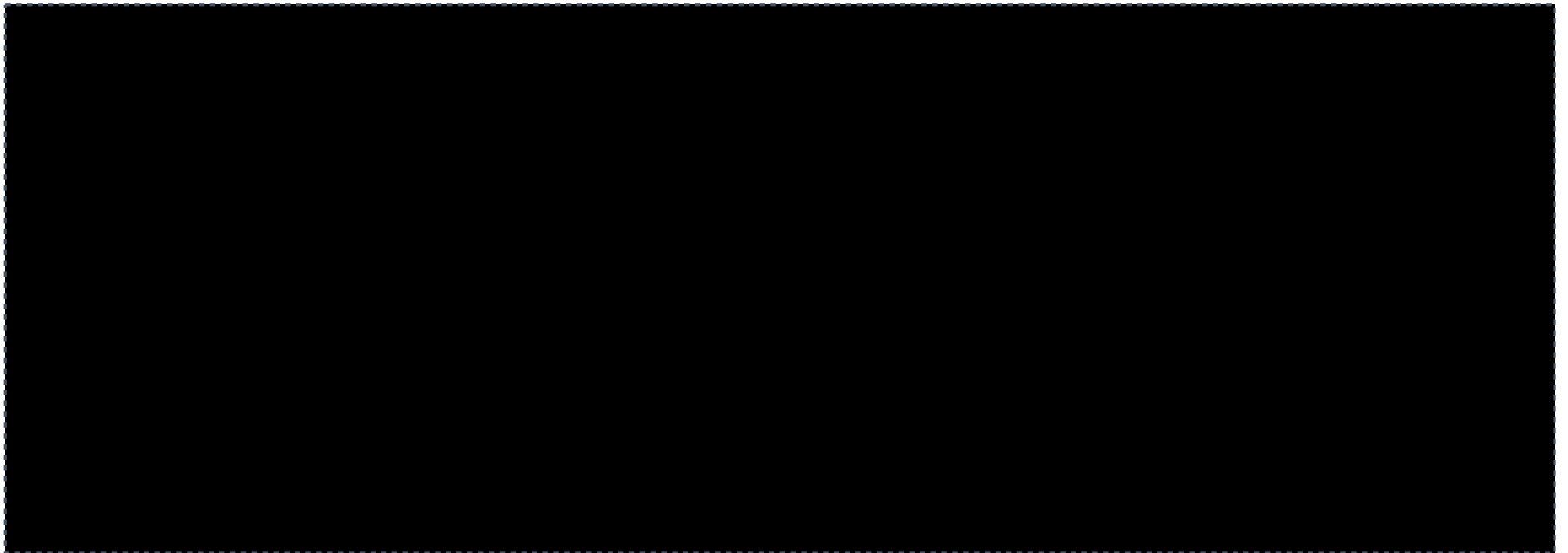
Updated Environment production

# Upload the production environment

```
$ knife environment from file production.rb
```

```
Updated Environment production
```

# Exercise: Verify chef-client is running



# Exercise: Verify chef-client is running

```
root@module6$ sudo chef-client
```

# Exercise: Verify chef-client is running

```
root      8933  0.3  2.2 130400 37816 ?          Sl    03:19
0:01 /opt/chef/embedded/bin/ruby /usr/bin/chef-client -d -c /
etc/chef/client.rb -L /var/log/chef/client.log -P /var/run/
chef/client.pid -i 300 -s 300
```

# Exercise: Verify chef-client is running

```
root@module6$ ps awux | grep chef-client
```

```
root      8933  0.3  2.2 130400 37816 ?        S1   03:19  
0:01 /opt/chef/embedded/bin/ruby /usr/bin/chef-client -d -c /  
etc/chef/client.rb -L /var/log/chef/client.log -P /var/run/  
chef/client.pid -i 300 -s 300
```

# Chef for Windows

# Additional Tools for Windows

- chef-client - works on Windows!
- Windows-specific resource types
  - batch
  - powershell\_script
  - registry\_key
- Knife plugins
  - knife windows
  - knife azure



# Usual suspects

- Most resources work the same way they would in a Unix- or Linux-like environment
- Including:
  - package
  - service
  - template
  - user
  - group

# Special attributes

- File-based resources have attributes that are unique to Microsoft Windows
  - `inherits` - for file inheritance
  - `mode` - for octal modes
  - `rights` - for access control lists (ACLs)

# Bootstrap a Windows node

- Install the `knife-windows` gem
- Configure Windows Remote Management (WinRM) on the target node
- `knife windows bootstrap winrm ...`

# **Chef Fundamentals Webinar Series**

# Six Episode Series

- Module 1 - Overview of Chef
- Module 2 - Node Setup, Chef Resources & Recipes
- Module 3 - Working with the Node object & Roles
- Module 4 - Common configuration data with Databags
- Module 5 - Environments and knife-ec2
- Today - Community Cookbooks and Further Resources

# Additional Resources

- Chef Fundamentals Webinar Series
- <https://www.youtube.com/watch?v=S5IHUpzoCYo&list=PL11cZfNdwNyPnZA9D1MbVqldGuOWqbumZ>
- Discussion group for webinar participants
- <https://groups.google.com/d/forum/learnchef-fundamentals-webinar>

# Additional Resources

- Learn Chef
- <http://learnchef.com>
  
- Documentation
- <http://docs.opscode.com>