

Chef Fundamentals

training@getchef.com

Copyright (C) 2014 Chef Software, Inc.

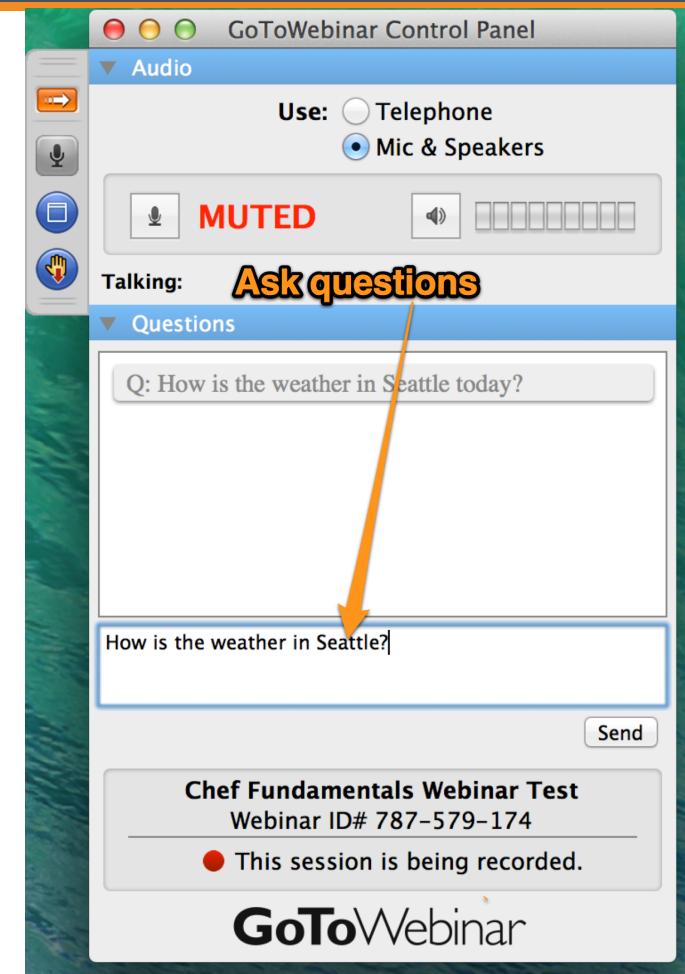
Nathen Harvey

- 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 te

[Edit welcome message](#) [Clear welcome message](#)

<input type="checkbox"/>	 Error when trying to launch the Chef Training Lab. By Bob Albert - 1 post - 0 views
<input type="checkbox"/>	 How to correct the contents in recipes after creating the run_li By Guru Raghavendran Gopal Rao - 3 posts - 3 views
<input type="checkbox"/>	 how to configure chef to manage EC2? By Guru Raghavendran Gopal Rao - 2 posts - 2 views
<input type="checkbox"/>	 Problems with tutorial By marlene....@gmail.com - 2 posts - 10 views
<input type="checkbox"/>	 Application not bootstrapped to Chef By marlene....@gmail.com - 2 posts - 8 views
<input type="checkbox"/>	 Q: Why isn't my index.html.erb template being uploaded? Ans By Brett Fitzgerald - 7 posts - 11 views
<input type="checkbox"/>	 httpd is a virtual package provided by 23 packages, you must By gcd - 2 posts - 13 views

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.

Topics

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

Quick Recap

Where are we?

In the last module

- Refactored our apache cookbook to include multiple sites

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 a user interface for launching a Chef Training Lab environment. At the top, there's a navigation bar with icons for Home, Overview, CentOS 6.3 Server, and Virtual Machines. Below the navigation bar, a status bar indicates 'Environment is ready' with icons for power, network, and status. The main content area has a title 'learnchef tutorial - CentOS'. Below the title, a message says 'Your dedicated hands-on environment is just a click away.' followed by a descriptive paragraph about the benefits of using the environment. To the right, a large button labeled 'Start Using This Environment' is highlighted with an orange oval and an arrow pointing to it.

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.  
chef@uvolqrwls0jdgs3blvt.vm.cld.sr's password:  
Last login: Mon Jan  6 16:26:24 2014 from  
host86-145-117-53.range86-145.btcentralplus.com  
[chef@CentOS63 ~]$
```

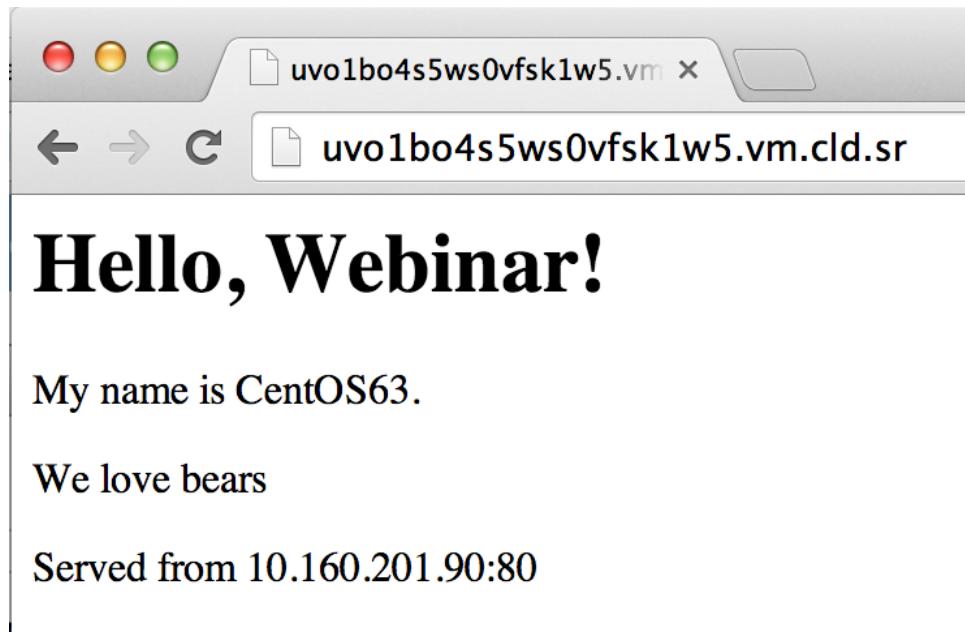
"Bootstrap" the Target Instance

```
$ knife bootstrap <EXTERNAL_ADDRESS> -x root -P chef -N 'module5' -r 'role[webserver]'
```

```
Bootstrapping Chef on uvo1qrwls0jdgs3blvt.vm.cld.sr
...
...
uvo1qrwls0jdgs3blvt.vm.cld.sr Creating a new client identity for
module3 using the validator key.
uvo1qrwls0jdgs3blvt.vm.cld.sr resolving cookbooks for run list: []
uvo1qrwls0jdgs3blvt.vm.cld.sr Synchronizing Cookbooks:
uvo1qrwls0jdgs3blvt.vm.cld.sr Compiling Cookbooks...
uvo1qrwls0jdgs3blvt.vm.cld.sr [2014-01-28T11:03:14-05:00] WARN: Node
module3 has an empty run list.
uvo1qrwls0jdgs3blvt.vm.cld.sr Converging 0 resources
uvo1qrwls0jdgs3blvt.vm.cld.sr Chef Client finished, 0 resources updated
```

Exercise: Verify that the home page works

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



Environments

Cookbook Version Constraints and Override Attributes

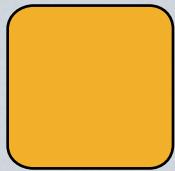
v2.1.0

Lesson Objectives

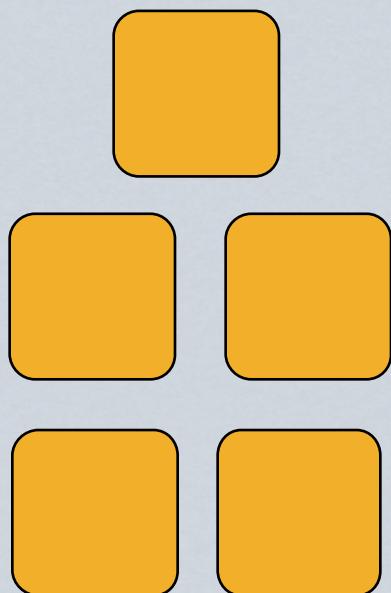
- After completing the lesson, you will be able to
 - Describe what an Environment is, and how it is different from an Organization
 - Set cookbook version constraints
 - Explain when to set attributes in an environment

Environments

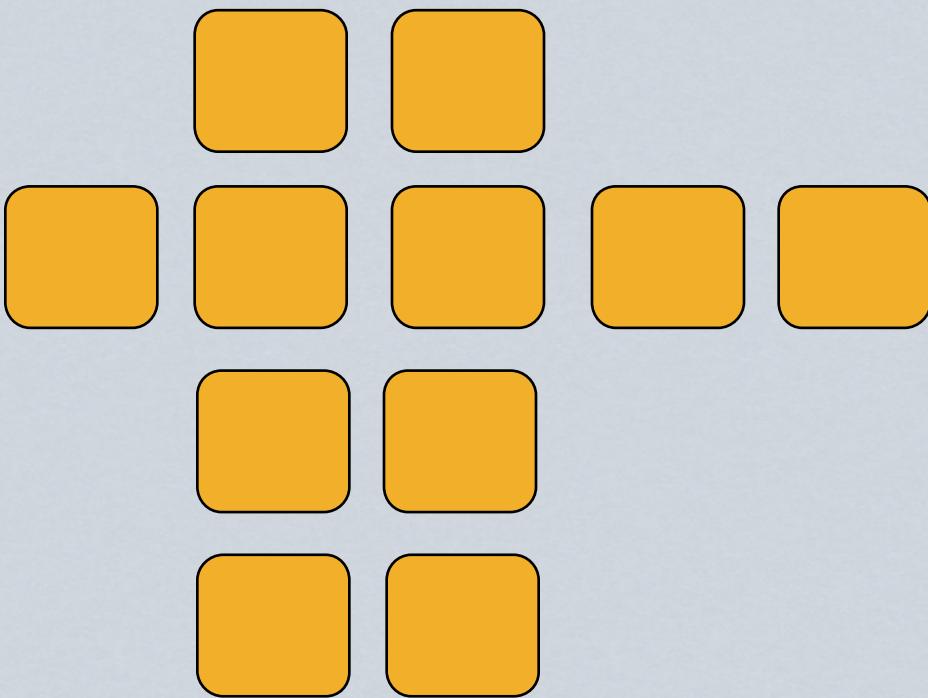
Development



Staging



Production



Organization

Environments

- Every Organization starts with a single environment
- Environments reflect your patterns and workflow
 - Development
 - Test
 - Staging
 - Production
 - etc.

Environments Define Policy

- Each environment may include attributes necessary for configuring the infrastructure in that environment
 - Production needs certain Yum repos
 - QA needs different Yum repos
 - The version of the Chef cookbooks to be used

Environment Best Practice

- We cannot share cookbooks between organizations
- Best Practice: If you need to share cookbooks or roles, you likely want an Environment rather than an organization
- Environments allow for isolating resources within a single organization

Exercise: Use knife to show the available cookbook versions

```
$ knife cookbook show apache
```

```
apache      0.2.0      0.1.0
```

Exercise: List current environments

```
_default
```

- The `_default` environment is read-only, and sets no policy at all

Exercise: List current environments

```
$ knife environment list
```

```
_default
```

- The `_default` environment is read-only, and sets no policy at all

Make an environments directory

```
$ mkdir environments
```

(No output)

Exercise: Create a dev environment



OPEN IN EDITOR: environments/dev.rb

```
name "dev"  
description "For developers!"  
cookbook "apache", "= 0.2.0"
```

SAVE FILE!

- Environments have **names**
- Environments have a **description**
- Environments can have one or more **cookbook** constraints

Cookbook Version Constraints

- = Equal to
- There are other options but equality is the recommended practice.
- Learn more at http://docs.opscode.com/chef/essentials_cookbook_versions.html

Exercise: Create the dev environment

Updated Environment dev

Exercise: Create the dev environment

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

Updated Environment dev

Exercise: Show your dev environment

```
chef_type:          environment
cookbook_versions:
  apache:  = 0.2.0
default_attributes:
description:       For developers!
json_class:        Chef::Environment
name:              dev
override_attributes:
```

Exercise: Show your dev environment

```
$ knife environment show dev
```

```
chef_type:          environment
cookbook_versions:
  apache:  = 0.2.0
default_attributes:
description:       For developers!
json_class:        Chef::Environment
name:              dev
override_attributes:
```

Exercise: Change your node's environment to "dev"

- Click the 'Nodes' tab then select node 'module5'
- Select dev from the 'Environments' drop-down list
- Click 'Save'

The screenshot shows the Chef Manage web interface. The top navigation bar includes 'Feedback', 'Organization johnf241213', 'Signed in as John Fitzpatrick', and a notification icon. The main menu has tabs for 'Nodes', 'Reports', 'Policy', and 'Administration'. On the left, a sidebar for 'Nodes' offers options like 'Delete', 'Manage Tags', 'Reset Key', 'Edit Run List', and 'Edit Attributes'. The main content area displays 'Showing All Nodes' with a table. One row for 'node1' is highlighted in orange, showing details: Node Name (node1), Platform (centos), FQDN (centos63.example.com), IP Address (10.160.201.90), Uptime (9 hours), Last Check-In (10 minutes ago), Environment (_default), and Actions (gear icon). Below the table, a modal window for 'Node: node1' is open, showing tabs for 'Details', 'Attributes', and 'Permissions'. Under 'Details', there are boxes for 'Last Check In: 10 Minutes Ago (2014-01-07 13:20:20 UTC)' and 'Uptime: 9 Hours Since 2014-01-07 04:44:01 UTC'. The 'Environment:' dropdown is set to 'dev', with a note below stating 'Node environment changed from _default to dev.' Buttons for 'Cancel' and 'Save' are at the bottom right. The modal also lists 'Platforms: centos', 'FQDN: centos63.example.com', and 'IP Address: 10.160.201.90'.

Exercise: Re-run the Chef Client

```
INFO: Chef Run complete in 1.587776095 seconds
INFO: Running report handlers
INFO: Report handlers complete
```

Exercise: Re-run the Chef Client

```
chef@module5$ sudo chef-client
```

```
INFO: Chef Run complete in 1.587776095 seconds
INFO: Running report handlers
INFO: Report handlers complete
```

Exercise: Create a production environment



OPEN IN EDITOR: environments/production.rb

- Make sure the apache cookbook is set to version 0.1.0

```
name "production"
description "For Production!"
cookbook "apache", "= 0.1.0"
```

SAVE FILE!

Exercise: Create the production environment

Updated Environment production

Exercise: Create the production environment

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

Updated Environment production

Exercise: Change your node's environment to "production"

- Click the 'Nodes' tab then select node 'module5'
- Select production from the 'Environments' drop-down list
- Click 'Save'

The screenshot shows the Chef Manage web interface. The top navigation bar includes 'Nodes', 'Reports', 'Policy', and 'Administration' tabs, with 'Nodes' being the active tab. The top right corner shows 'Feedback | Organization johnf241213 | Signed in as John Fitzpatrick | 0'. Below the navigation is a search bar labeled 'Search Nodes...' with a magnifying glass icon. The main content area displays a table titled 'Showing All Nodes' with columns: Node Name, Platform, FQDN, IP Address, Uptime, Last Check-In, Environment, and Actions. One row is visible for 'node1' (Platform: centos, FQDN: centos63.example.com, IP Address: 10.160.201.90, Uptime: 9 hours, Last Check-In: 4 minutes ago, Environment: dev). On the left sidebar, under the 'Nodes' heading, are links for 'Delete', 'Manage Tags', 'Reset Key', 'Edit Run List', and 'Edit Attributes'. The 'Attributes' tab is currently selected in the modal window for node 'node1'. The 'Environment' dropdown is set to 'production'. A yellow callout bubble highlights this dropdown. A message box displays the text 'Node environment changed from dev to production.' with 'Cancel' and 'Save' buttons.

Exercise: Re-run the Chef Client

```
INFO: Loading cookbooks [apache, motd, pci, users]
Synchronizing Cookbooks:
...
Recipe: motd::default
 * template[/etc/motd] action create[2014-01-07T08:40:00-05:00] INFO: Processing template[/etc/motd] action create
(motd::default line 9)
[2014-01-07T08:40:00-05:00] INFO: template[/etc/motd] backed up to /var/chef/backup/etc/motd.chef-20140107084000.070961
[2014-01-07T08:40:00-05:00] INFO: template[/etc/motd] updated file contents /etc/motd

 - update content in file /etc/motd from d36e1f to 62ebb9
   (current file is binary, diff output suppressed)
...
 * cookbook_file[/var/www/index.html] action create[2014-01-07T08:40:05-05:00] INFO: Processing cookbook_file[/var/
www/index.html] action create (apache::default line 18)
  (up to date)
[2014-01-07T08:40:06-05:00] INFO: Chef Run complete in 8.048307322 seconds
[2014-01-07T08:40:06-05:00] INFO: Removing cookbooks/apache/templates/default/index.html.erb from the cache; it is no
longer needed by chef-client.
[2014-01-07T08:40:06-05:00] INFO: Removing cookbooks/apache/templates/default/custom.erb from the cache; it is no
longer needed by chef-client
```

Exercise: Re-run the Chef Client

```
chef@module5$ sudo chef-client
```

```
INFO: Loading cookbooks [apache, motd, pci, users]
Synchronizing Cookbooks:
...
Recipe: motd::default
 * template[/etc/motd] action create[2014-01-07T08:40:00-05:00] INFO: Processing template[/etc/motd] action create
(motd::default line 9)
[2014-01-07T08:40:00-05:00] INFO: template[/etc/motd] backed up to /var/chef/backup/etc/motd.chef-20140107084000.070961
[2014-01-07T08:40:00-05:00] INFO: template[/etc/motd] updated file contents /etc/motd

 - update content in file /etc/motd from d36e1f to 62ebb9
   (current file is binary, diff output suppressed)
...
 * cookbook_file[/var/www/index.html] action create[2014-01-07T08:40:05-05:00] INFO: Processing cookbook_file[/var/
www/index.html] action create (apache::default line 18)
  (up to date)
[2014-01-07T08:40:06-05:00] INFO: Chef Run complete in 8.048307322 seconds
[2014-01-07T08:40:06-05:00] INFO: Removing cookbooks/apache/templates/default/index.html.erb from the cache; it is no
longer needed by chef-client.
[2014-01-07T08:40:06-05:00] INFO: Removing cookbooks/apache/templates/default/custom.erb from the cache; it is no
longer needed by chef-client
```

Rollbacks and Desired State Best Practice

- Chef is not magic - it manages state for **declared** resources
- We just rolled back to an earlier version of the apache cookbook
- While the recipe applied fine, investigating the system will reveal Apache is still configured as it was in the 0.2.0 cookbook

Chef Fundamentals Webinar Series

Six Week Series

- Module 1 - Overview of Chef
 - Module 2 - Node Setup, Chef Resources & Recipes
 - Module 3 - Working with the Node object & Roles
 - June 10 - Common configuration data with Databags
 - Today - Environments
 - June 24 - Community Cookbooks and Further Resources
-
- * Topics subject to change, schedule unlikely to change

Sign-up for Webinar

- <http://pages.getchef.com/cheffundamentalsseries.html>

Chef Fundamentals Series

Join Chef's Community Director, Nathon Harvey as he teaches you the fundamentals of using Chef. This series will start with an overview of Chef and by the end you will be converging all the nodes you want!

This series will include hands-on labs, homework exercises, question/answer time and lectures all designed to help you learn Chef.

The first session starts May 20 at 10am PCT and will run for 6 weeks for about an hour each session.

Sessions will cover:

- Workstation and Test Node Setup
- Writing Cookbooks
- Using Roles and Environments
- Further resources for working with Chef

First Name: *

Last Name: *

Email Address: *

Company Name:

Job Title:

Additional Resources

- Chef Fundamentals Webinar Series
- <https://www.youtube.com/watch?v=S5IHUpzoCYo&list=PL11cZfNdwNyPnZA9D1MbVqIdGuOWqbumZ>
- 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>