

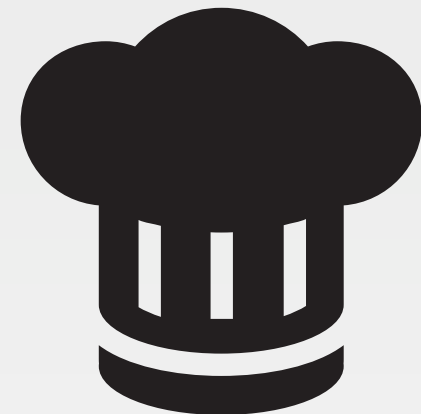
The Chef Server

A Hub for Configuration Data

Objectives

After completing this module, you should be able to

- Connect your local workstation (laptop) to a Chef Server
- Upload cookbooks to a Chef Server
- Bootstrap a node
- Manage a node via a Chef Server



More Web Servers?

More easily manage multiple nodes

Objective:

- ☐ Create a Hosted Chef Account
- ☐ Upload your cookbooks to the Hosted Chef Server
- ☐ Add a new node as a managed node

Managing an Additional System

To manage another system, you would need to:

1. Provision a new node within your company or appropriate cloud provider with the appropriate access to login to administrate the system.
2. Install the Chef tools.
3. Transfer the apache cookbook.
4. Run chef-client on the new node to apply the apache cookbook's default recipe.

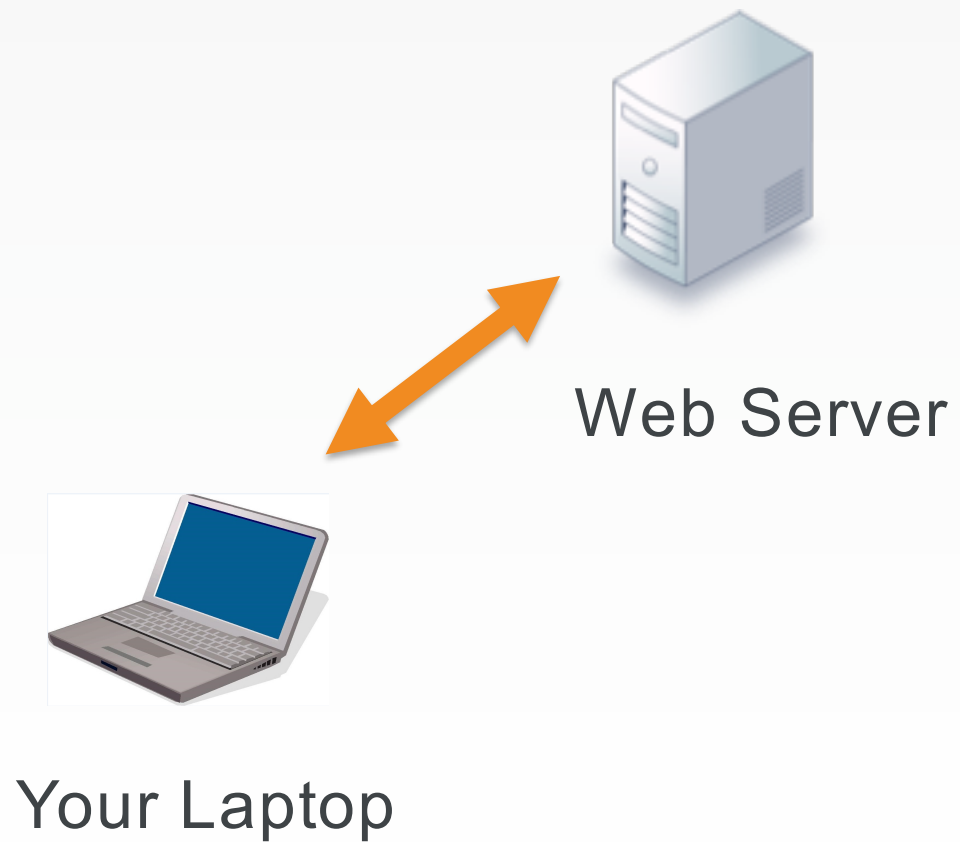
Managing Additional Systems

Installing the Chef tools, transferring the apache cookbook, and applying the run list is not terribly expensive.

- Chef provides a one-line curl install.
- You could use **git** to clone the repository from a common **git** repository.
- Applying the run list.

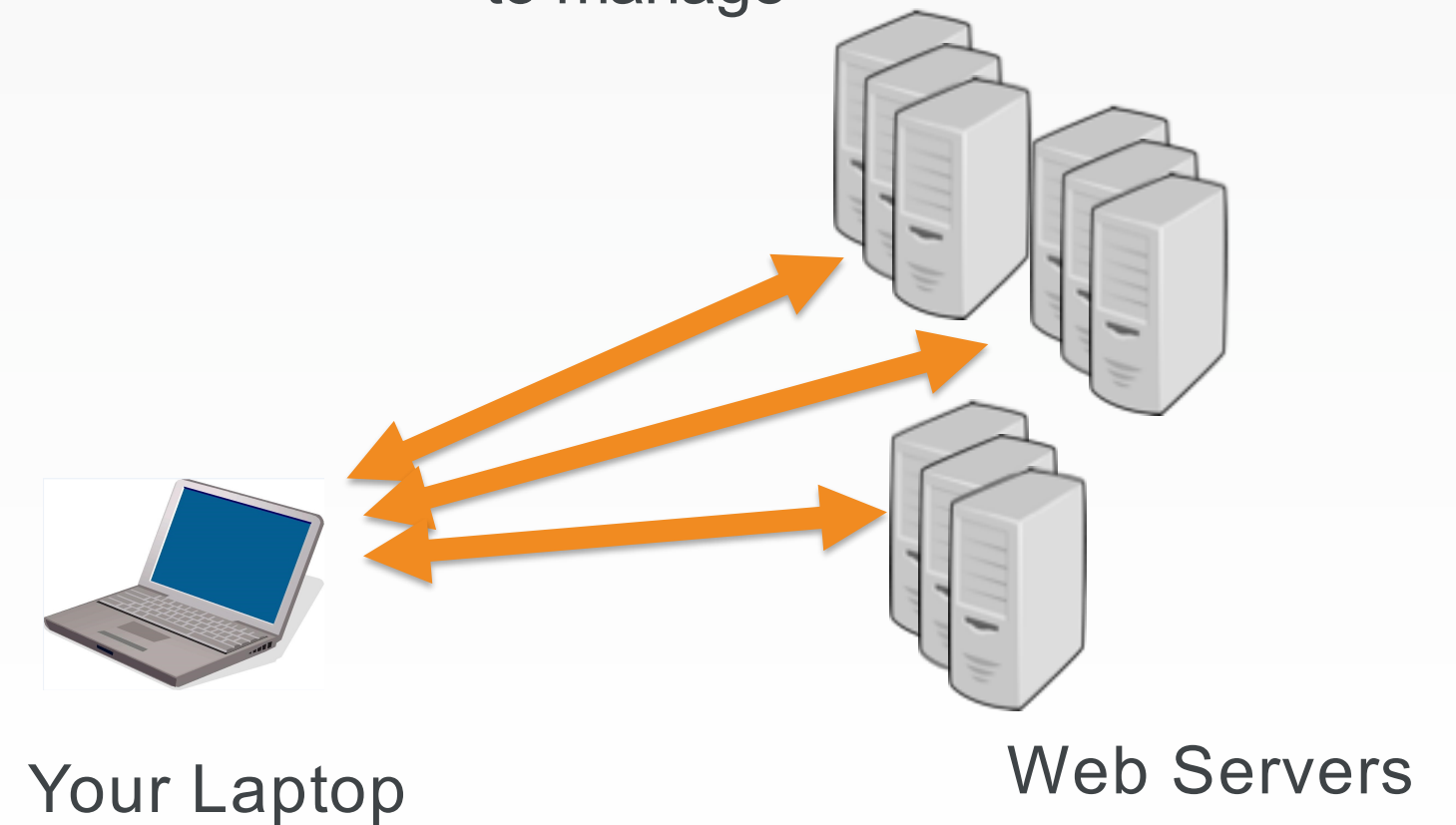
Managing Additional Systems

Now



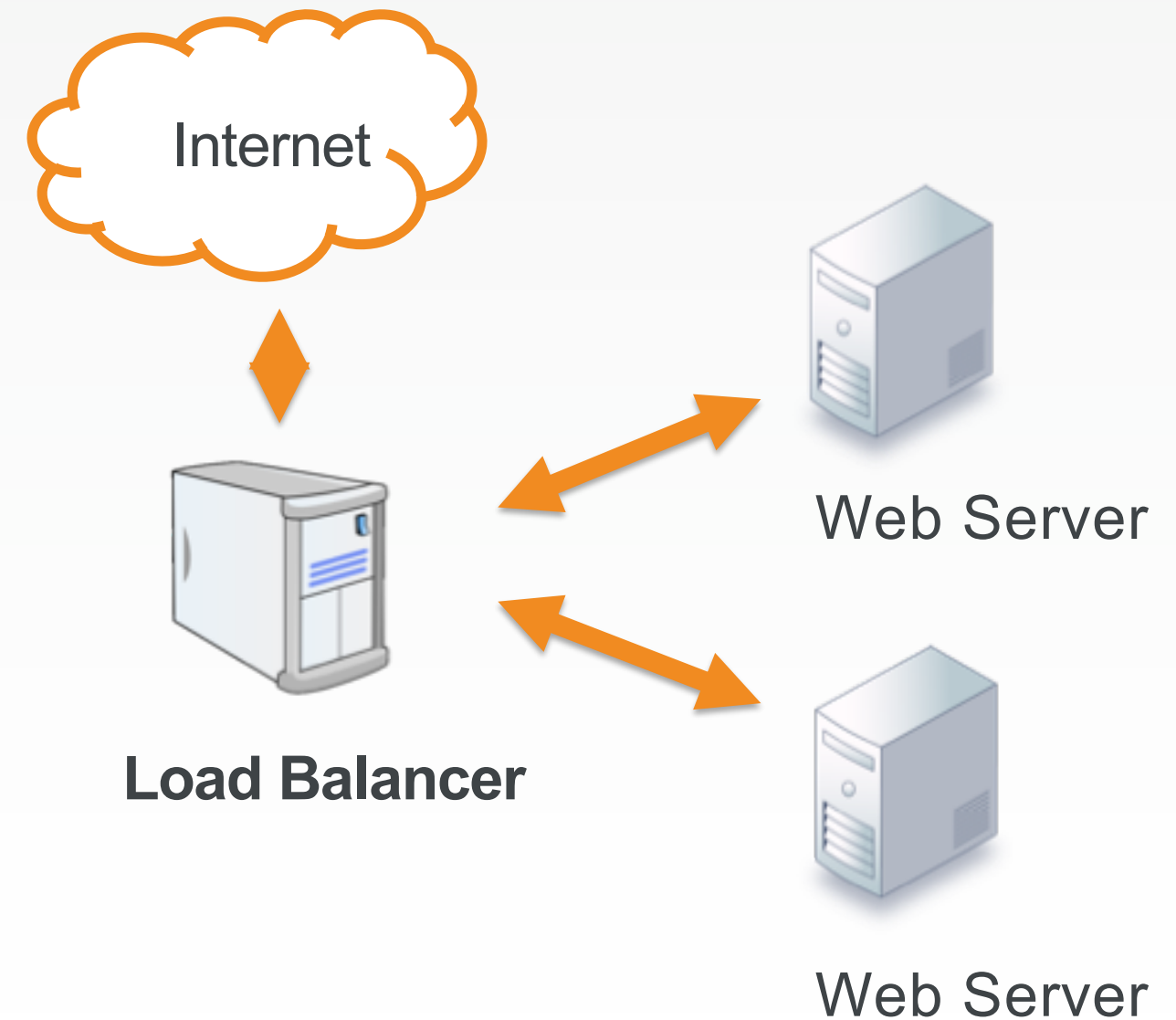
Future

More complex
to manage



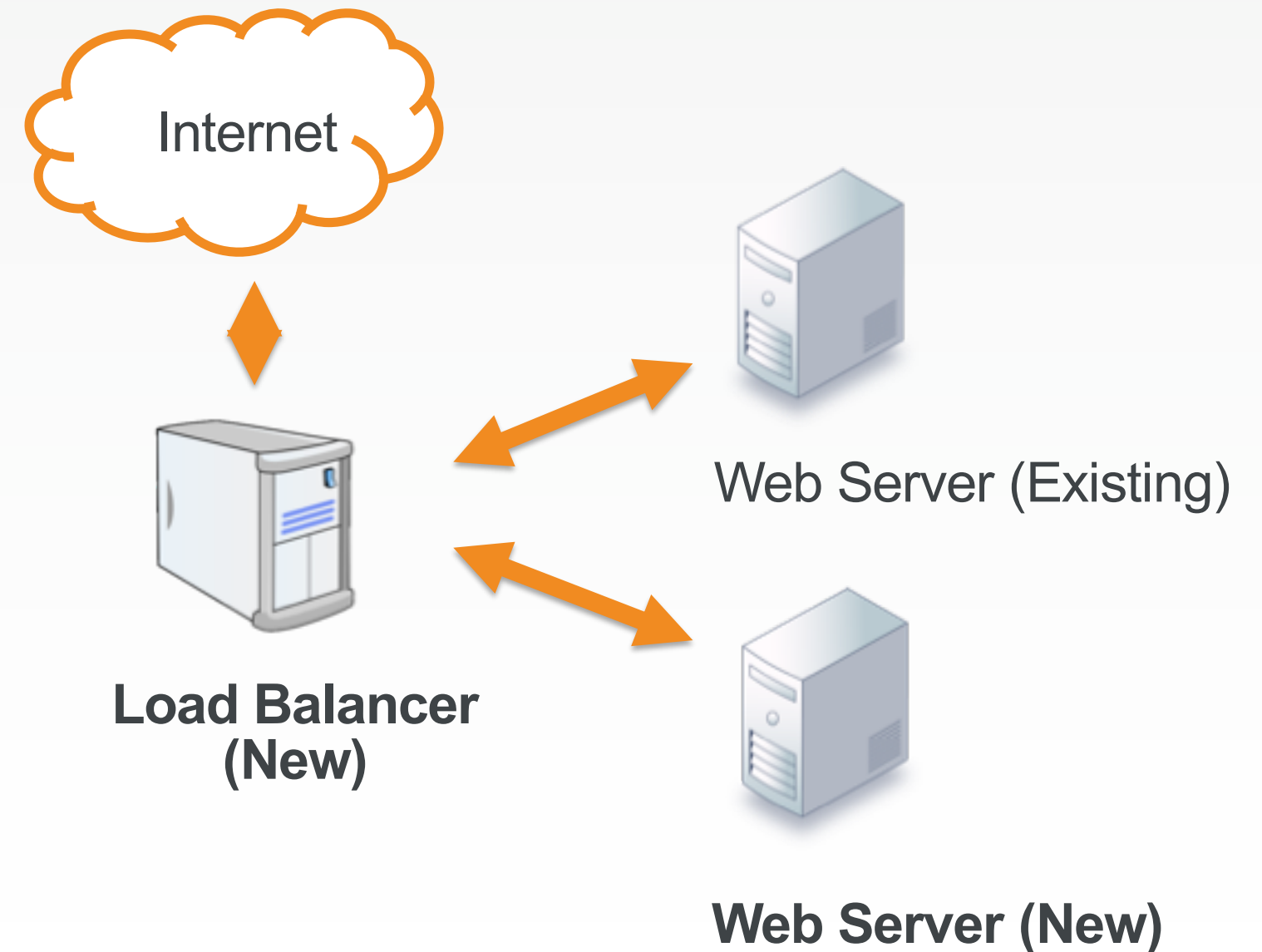
Managing User Traffic

A load balancer can forward incoming user web requests to other nodes.



Managing User Traffic

Today you will set up a new load balancer that will direct web requests to similarly-configured nodes.



Steps to Set up Load Balancer and Web Servers

Web Server

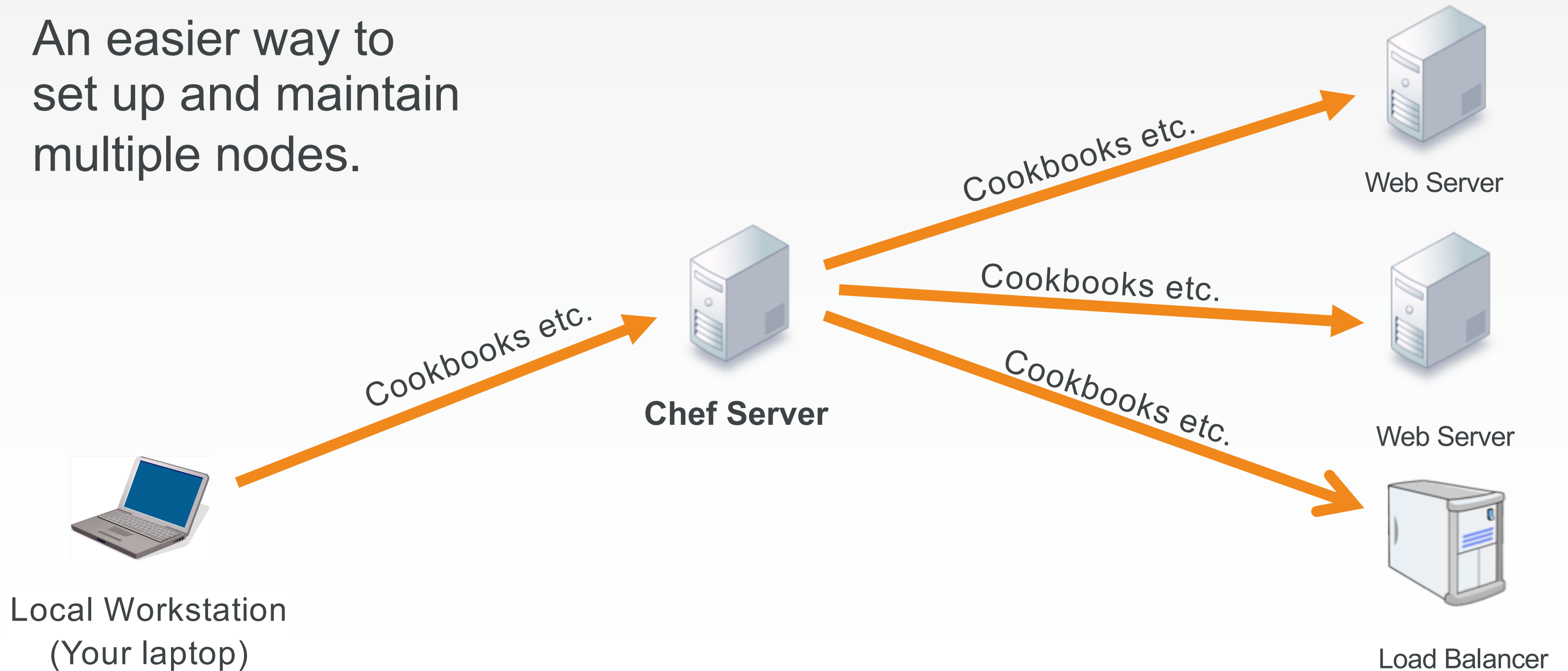
1. Provision the instance
2. Install Chef
3. Copy the Web Server cookbook
4. Apply the cookbook

Load Balancer

1. Create the haproxy (load balancer) cookbook
2. Provision the instance
3. Install Chef
4. Copy the haproxy cookbook
5. Apply the cookbook

The Chef Server

An easier way to set up and maintain multiple nodes.

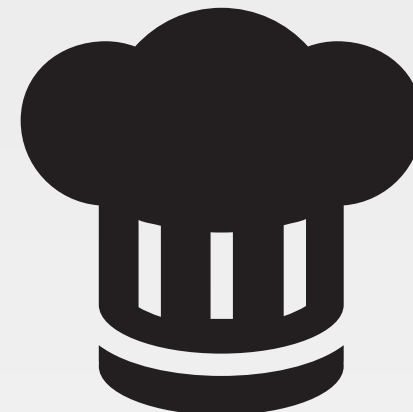


Flavors of Chef Server

Open Source
Chef Server

Chef Server
(Support +
Premium
Features)

Multi-tenant
Hosted Chef Server



GL: Hosted Chef

More easily manage multiple nodes

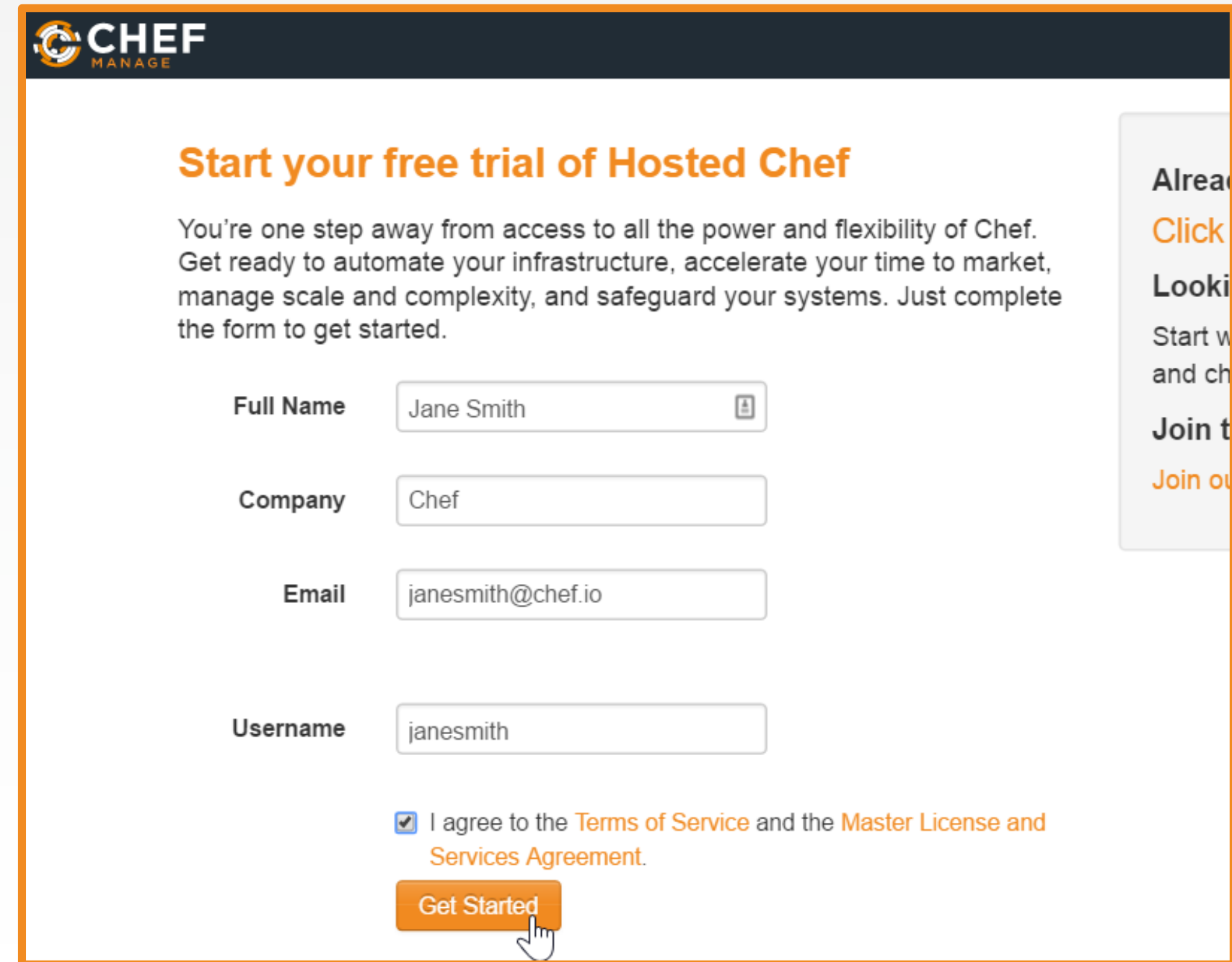
Objective:

- ☐ Create a Hosted Chef Account
- ☐ Upload your cookbooks to the Hosted Chef Server
- ☐ Add a new node as a managed node

GL: Signing Up for a Hosted Chef Account

Steps

1. Navigate to <https://manage.chef.io/signup>
2. Fill out the form as indicated in this image using your name and a valid email address and then click **Get Started**.



The screenshot shows the 'Start your free trial of Hosted Chef' page. The header features the 'CHEF MANAGE' logo. The main heading is 'Start your free trial of Hosted Chef'. Below this, a paragraph states: 'You're one step away from access to all the power and flexibility of Chef. Get ready to automate your infrastructure, accelerate your time to market, manage scale and complexity, and safeguard your systems. Just complete the form to get started.' The form contains four input fields: 'Full Name' (filled with 'Jane Smith'), 'Company' (filled with 'Chef'), 'Email' (filled with 'janesmith@chef.io'), and 'Username' (filled with 'janesmith'). Below the fields is a checkbox labeled 'I agree to the Terms of Service and the Master License and Services Agreement.' which is checked. At the bottom is an orange 'Get Started' button with a hand cursor icon pointing to it. On the right side, there is a vertical sidebar with text: 'Already have an account? Click here to log in.', 'Looking for a demo? Start with a demo and chat with our experts.', and 'Join the Chef community. Join our newsletter.'.

CHEF MANAGE

Start your free trial of Hosted Chef

You're one step away from access to all the power and flexibility of Chef. Get ready to automate your infrastructure, accelerate your time to market, manage scale and complexity, and safeguard your systems. Just complete the form to get started.

Full Name

Company

Email

Username

☒ I agree to the [Terms of Service](#) and the [Master License and Services Agreement](#).

Get Started

Already have an account? [Click here to log in.](#)

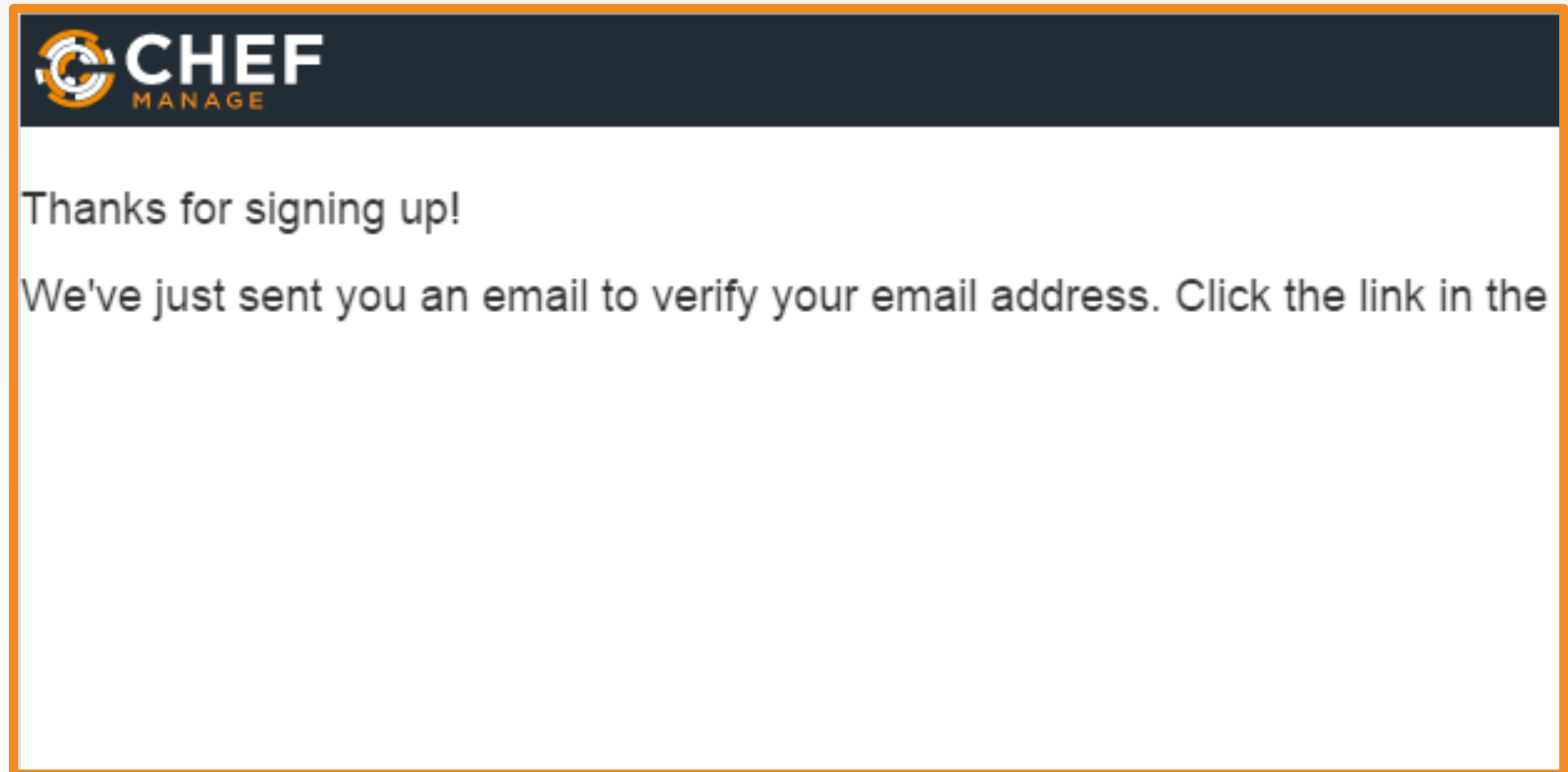
Looking for a demo? [Start with a demo](#) and chat with our experts.

Join the Chef community. [Join our newsletter.](#)

GL: Signing Up for a Hosted Chef Account

Steps

3. When prompted, open the email just sent to you and click the link in the email to finish the creation of your account.

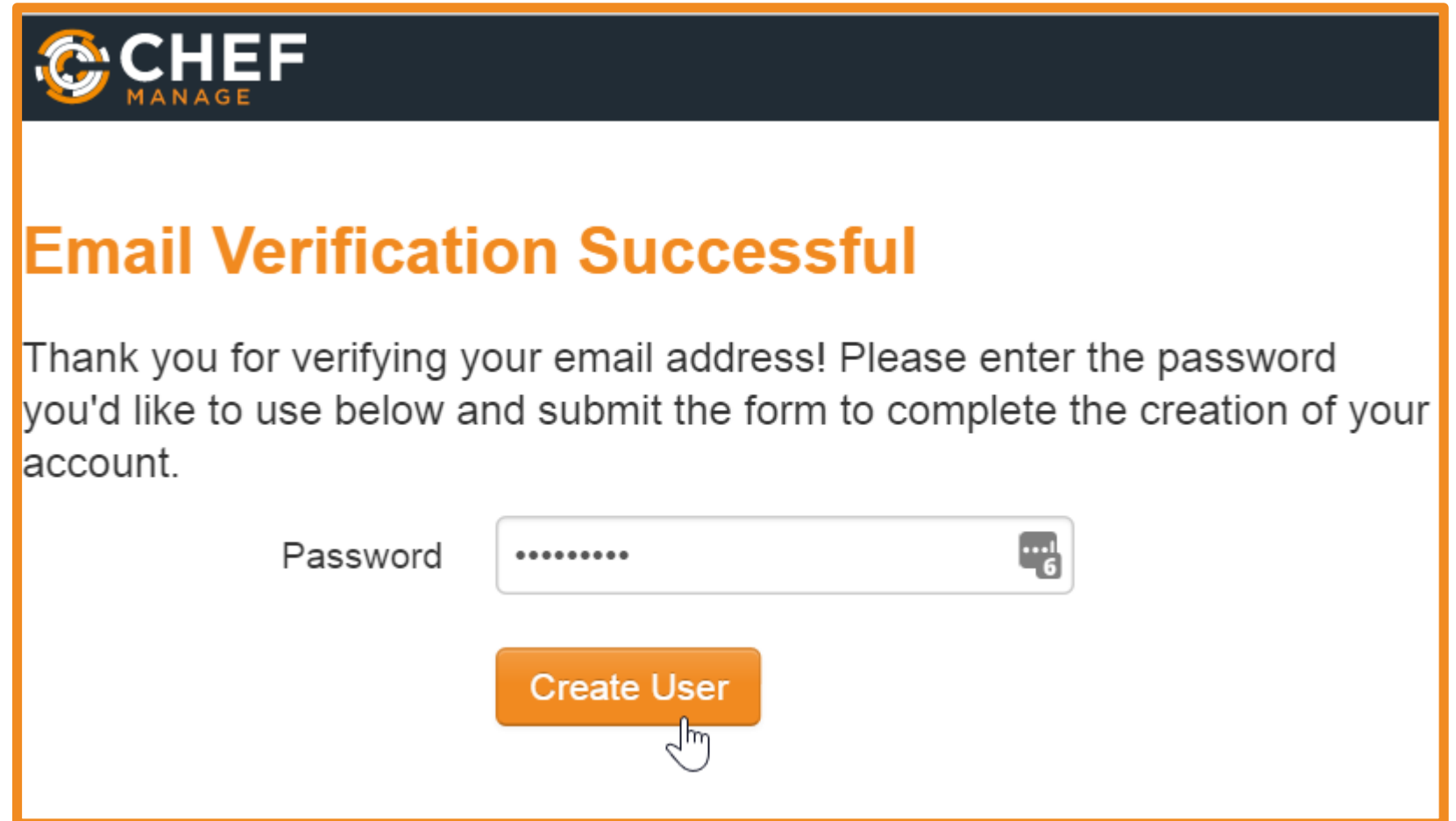


GL: Signing Up for a Hosted Chef Account

Steps

4. Enter a password when prompted and then click **Create User**.

You should write down your password in case you forget it.



The screenshot shows the Chef Manage interface. At the top is the 'CHEF MANAGE' logo. Below it, the heading 'Email Verification Successful' is displayed in orange. A message reads: 'Thank you for verifying your email address! Please enter the password you'd like to use below and submit the form to complete the creation of your account.' There is a 'Password' label next to a text input field containing seven dots. To the right of the input field is a small icon of a speech bubble with the number '6'. Below the input field is an orange button labeled 'Create User'. A hand cursor icon is pointing at the 'Create User' button.

GL: Signing Up for a Hosted Chef Account

Steps

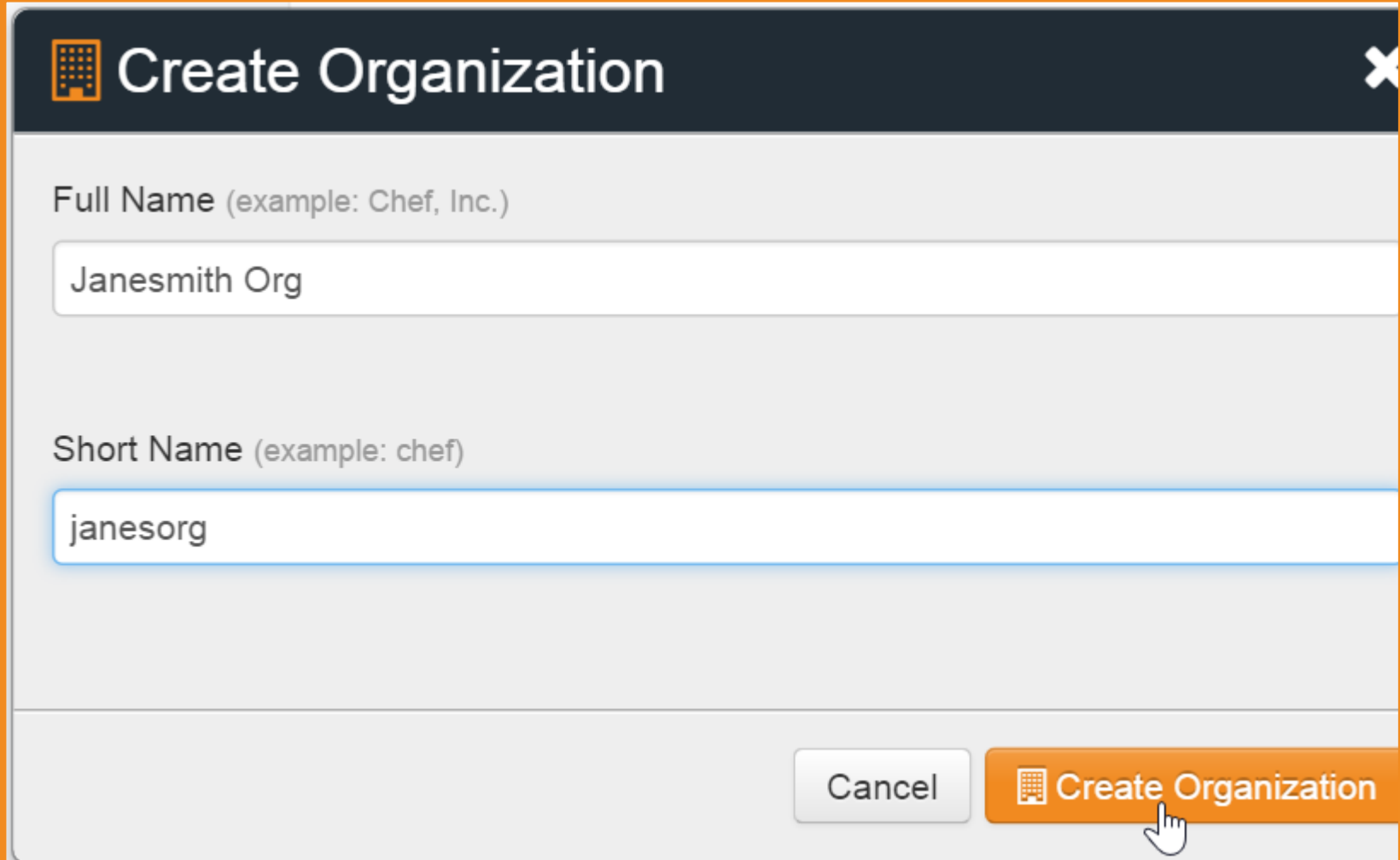
5. From the resulting page, click the **Create New Organization** button.



GL: Signing Up for a Hosted Chef Account

Steps

6. Fill out the resulting Create Organization form and then click **Create Organization**.



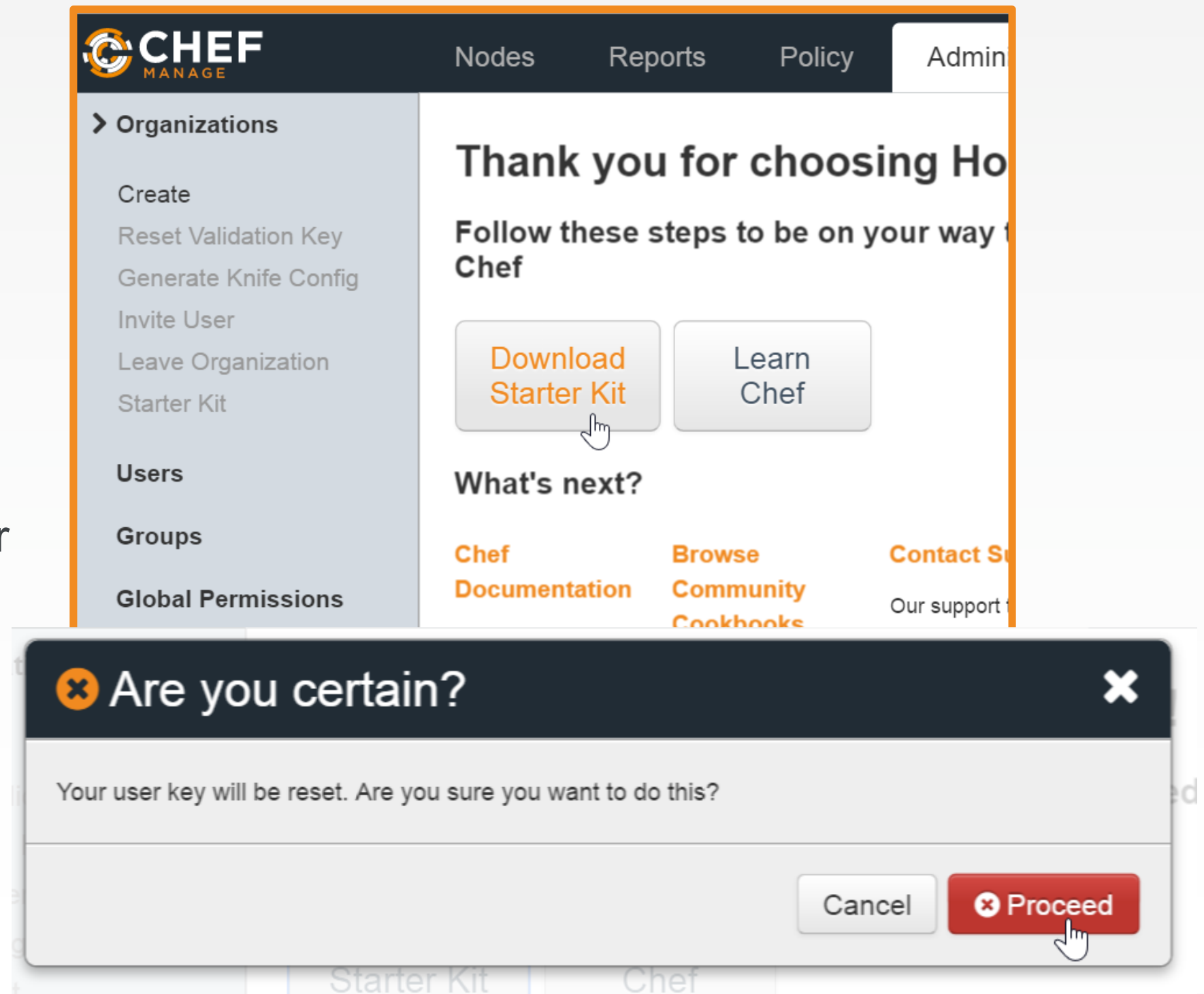
The screenshot shows a 'Create Organization' dialog box. It has a dark header bar with a building icon and the title 'Create Organization'. Below the header, there are two text input fields. The first field is labeled 'Full Name (example: Chef, Inc.)' and contains the text 'Janesmith Org'. The second field is labeled 'Short Name (example: chef)' and contains the text 'janesorg'. At the bottom right of the dialog, there are two buttons: a 'Cancel' button and a 'Create Organization' button. The 'Create Organization' button is orange and has a building icon next to the text. A mouse cursor is pointing at the 'Create Organization' button.

GL: Signing Up for a Hosted Chef Account

Steps

7. From the resulting page, click **Download Starter Kit** and then click **Proceed** when prompted.

A chef-starter zip file should download to your laptop.



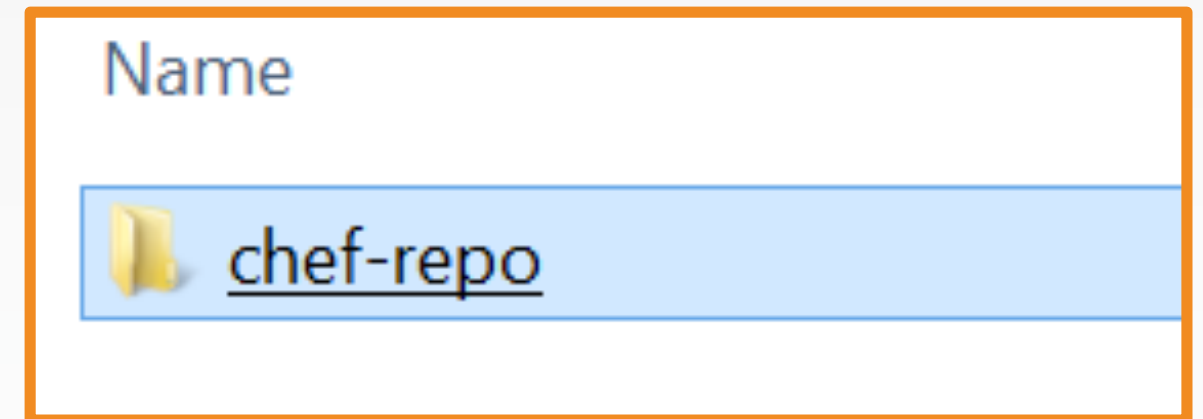
GL: Signing Up for a Hosted Chef Account

Steps

8. Open the downloaded zip file and copy chef-repo folder that's contained in the zip file.
9. Paste the chef-repo folder to a location on your laptop, such as your home directory.

Note: Ensure that the path to the chef-repo does not have a space in it. Examples:

Windows: `C:\Users\chef\cookbooks\chef-repo`





GL: Download a Repository

A repository containing a similar copy of the work you did previously in this course can be downloaded from here:

<https://github.com/chef-training/chef-essentials-repo>

GL: Download the Repository

The cookbooks created after the first day of completing the Chef DK Fundamentals — Edit

45 commits 47 branches 0 releases 1 contributor

Branch: master ▼ New pull request Create new file Upload files Find file **Clone or download ▼**

Latest commit f7cce17 on Mar 1 by burtlo Merge branch '07-03-workstation_cookbook_template_resource'

cookbooks	Update workstation cookbook version to 0.2.1
README.md	Adding README to describe how to use this REPO
hello.rb	Update hello to include attributes and action

README.md

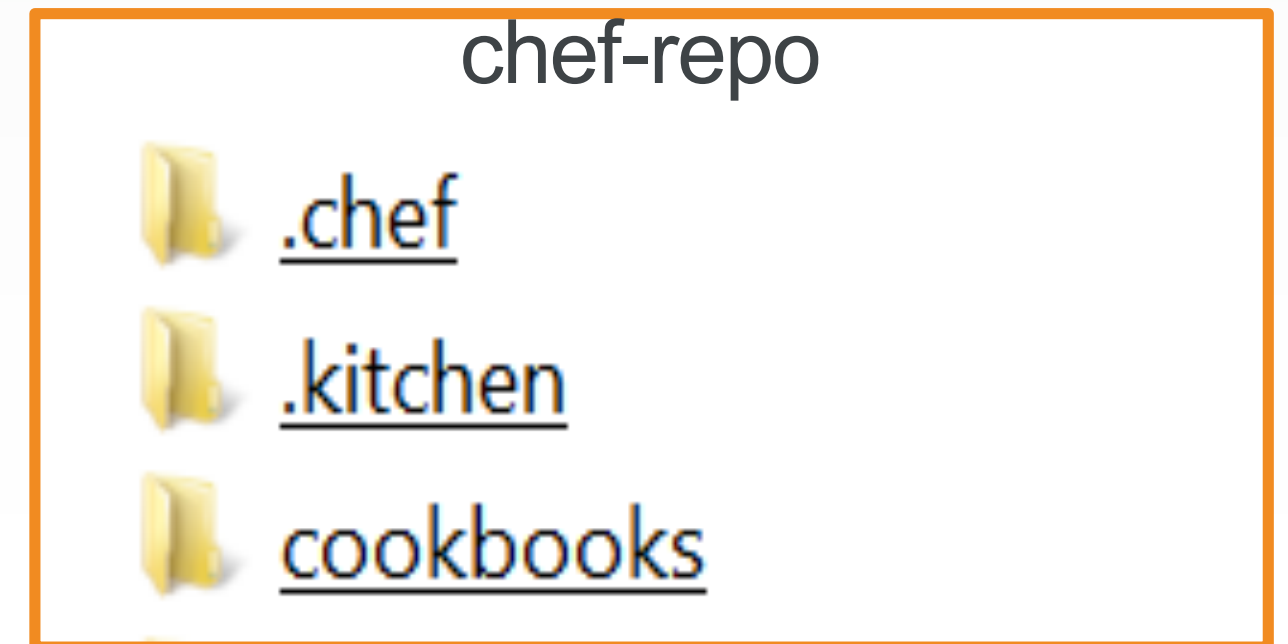
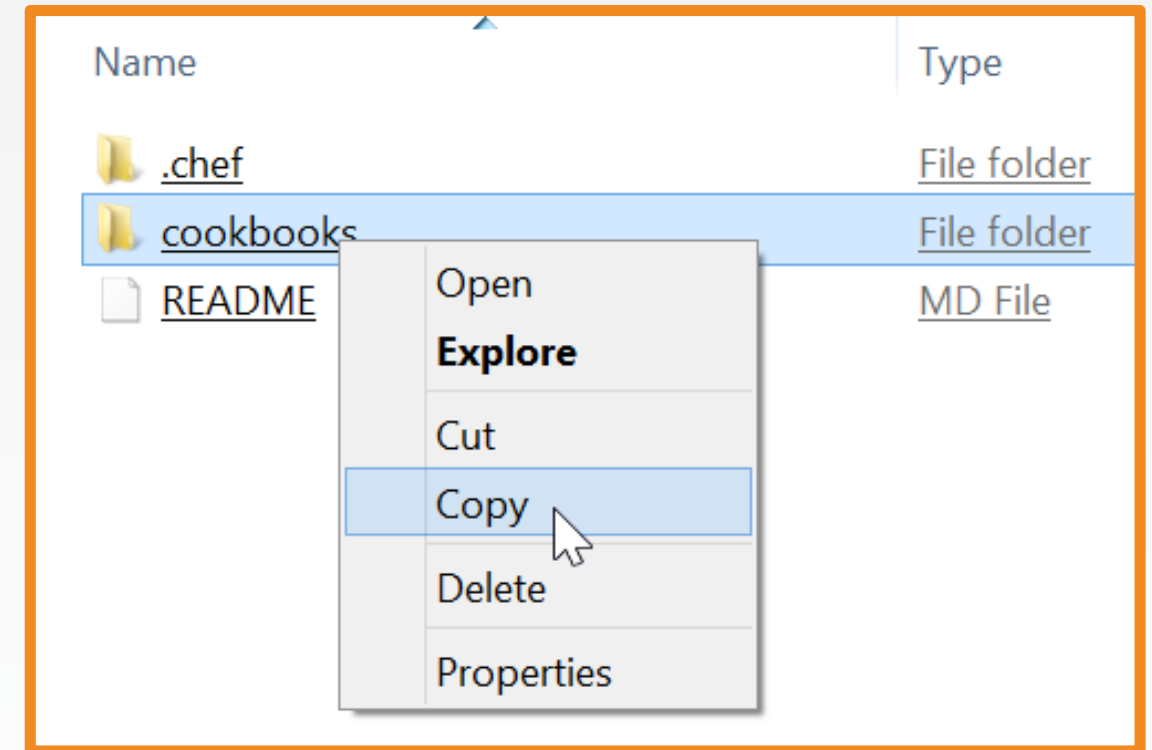
Clone with HTTPS ⓘ
Use Git or checkout with SVN using the web URL.
`https://github.com/chef-training/chef-essentials-linux`
[Open in Desktop](#) [Download ZIP](#)

Chef Essentials Linux - Repository

GL: Paste the cookbooks Folder

Steps

- Open the downloaded chefdk-fundamentals-repo-master zip file and then copy **only** the **cookbooks** folder that's contained in the zip file.
- Replace the **cookbooks** folder that's in your chef-repo folder with the copied cookbooks folder.



GL: Navigate to the chef-repo



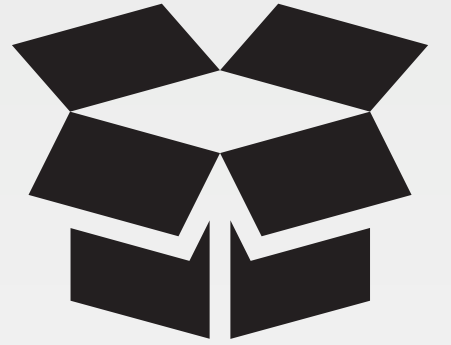
```
$ cd ~/chef-repo
```



LOCAL

CONCEPT

knife



knife is a command-line tool that provides an interface between a local chef-repo and the Chef Server.

GL: knife --help



```
$ knife --help
```

```
Available subcommands: (for details, knife SUB-COMMAND --help)
```

```
** BOOTSTRAP COMMANDS **
```

```
knife bootstrap FQDN (options)
```

```
knife bootstrap windows ssh FQDN (options)
```

```
knife bootstrap windows winrm FQDN (options)
```

```
** CLIENT COMMANDS **
```

```
knife client bulk delete REGEX (options)
```

```
knife client create CLIENT (options)
```

```
knife client delete CLIENT (options)
```

```
knife client edit CLIENT (options)
```

GL: knife client --help



```
$ knife client --help
```

```
Available client subcommands: (for details, knife SUB-COMMAND --help)
```

```
** CLIENT COMMANDS **
```

```
knife client bulk delete REGEX (options)
```

```
knife client create CLIENT (options)
```

```
knife client delete CLIENT (options)
```

```
knife client edit CLIENT (options)
```

```
knife client list (options)
```

```
knife client reregister CLIENT (options)
```

```
knife client show CLIENT (options)
```

LOCAL

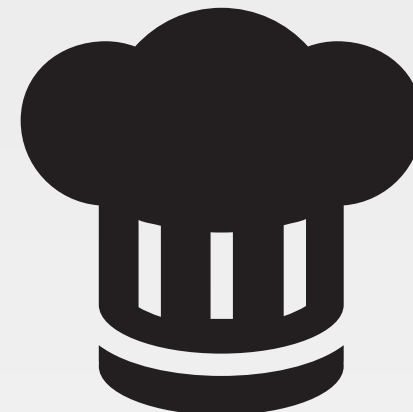
GL: knife client list



```
$ knife client list
```

```
ORGNAME-validator
```

LOCAL



Hosted Chef

More easily manage multiple nodes

Objective:

- ✓ Create a Hosted Chef Account
- ☐ Upload your cookbooks to the Hosted Chef Server
- ☐ Add a new node as a managed node

GL: knife cookbook --help



```
$ knife cookbook --help
```

```
** COOKBOOK COMMANDS **
```

```
knife cookbook bulk delete REGEX (options)
```

```
knife cookbook create COOKBOOK (options)
```

```
knife cookbook delete COOKBOOK VERSION (options)
```

```
knife cookbook download COOKBOOK [VERSION] (options)
```

```
knife cookbook list (options)
```

```
knife cookbook metadata COOKBOOK (options)
```

```
knife cookbook metadata from FILE (options)
```

```
knife cookbook show COOKBOOK [VERSION] [PART] [FILENAME] (options)
```

```
knife cookbook test [COOKBOOKS...] (options)
```

```
knife cookbook upload [COOKBOOKS...] (options)
```

LOCAL

GL: knife cookbook list



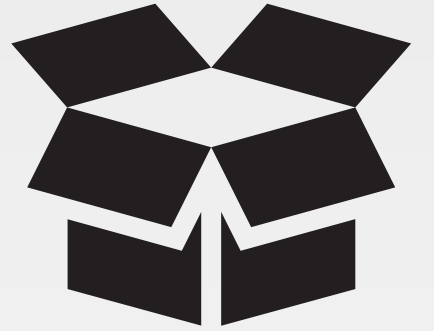
```
$ knife cookbook list
```



LOCAL

CONCEPT

Berkshelf



Berkshelf is a cookbook management tool that allows us to upload your cookbooks and all of its dependencies to the Chef Server.

<http://berkshelf.com>

LOCAL

GL: Run berks --help



```
$ berks --help
```

Commands:

```
berks apply ENVIRONMENT      # Apply version locks from Berksfile.lock to a ...
berks contingent COOKBOOK    # List all cookbooks that depend on the given c...
berks cookbook NAME [PATH]   # Create a skeleton for a new cookbook
berks help [COMMAND]         # Describe available commands or one specific c...
berks info [COOKBOOK]        # Display name, author, copyright, and dependen...
berks init [PATH]            # Initialize Berkshelf in the given directory
berks install                 # Install the cookbooks specified in the Berksfile
berks list                    # List cookbooks and their dependencies specifi...
berks outdated [COOKBOOKS]   # List dependencies that have new versions avai...
berks package [PATH]         # Vendor and archive the dependencies of a Berk...
berks search NAME             # Search the remote source for cookbooks matchi...
berks shelf SUBCOMMAND       # Interact with the cookbook store
berks show [COOKBOOK]        # Display the path to a cookbook on disk
```


GL: Change to the cookbooks/apache Directory



```
$ cd cookbooks/apache
```

To upload a cookbook to the Chef Server you need to be within the directory of the cookbook.

LOCAL

GL: Run berks install



```
$ berks install
```

```
Resolving cookbook dependencies...
```

```
Fetching 'apache' from source at .
```

```
Fetching cookbook index from https://supermarket.chef.io...
```

```
Using apache (0.2.1) from source at .
```

LOCAL

GL: See the Berksfile.lock



```
$ ls -al (or ls -Force if using Powershell)
```

```
drwxr-xr-x 7 chef chef 4096 Aug 27 18:44 .
drwxr-xr-x 4 chef chef 4096 Aug 27 16:17 ..
drwxr-xr-x 8 chef chef 4096 Aug 27 16:07 .git
-rw-r--r-- 1 chef chef 126 Aug 27 15:46 .gitignore
drwxr-xr-x 3 chef chef 4096 Aug 27 18:45 .kitchen
-rw-r--r-- 1 chef chef 183 Aug 27 18:44 .kitchen.yml
-rw-r--r-- 1 chef chef 47 Aug 27 15:46 Berksfile
-rw----- 1 chef chef 77 Aug 27 18:45 Berksfile.lock
-rw-r--r-- 1 chef chef 54 Aug 27 15:46 README.md
-rw-r--r-- 1 chef chef 974 Aug 27 15:46 chefignore
-rw-r--r-- 1 chef chef 198 Aug 27 15:46 metadata.rb
drwxr-xr-x 2 chef chef 4096 Aug 27 16:34 recipes
```

GL: See the Contents of the Berksfile.lock



```
$ cat Berksfile.lock
```

DEPENDENCIES

apache

path: .

metadata: true

GRAPH

apache (0.2.1)

LOCAL

GL: Upload the Cookbook to the Chef Server



```
$ berks upload
```

```
Uploaded apache (0.2.1) to: 'https://api.opscode.com:443/organizations/ORG'
```

LOCAL

GL: Display Cookbooks within Your Org



```
$ knife cookbook list
```

```
apache          0.2.1
```

LOCAL

Lab



Lab: Upload Cookbooks

- ☐ Upload your remaining cookbooks
- ☐ Verify that all cookbooks are uploaded

Lab: cd and Run knife cookbook list



```
$ cd ~/chef-repo/cookbooks/workstation  
$ knife cookbook list
```

```
apache          0.2.1
```

LOCAL

Lab: Install the Cookbook Dependencies



```
$ berks install
```

```
Resolving cookbook dependencies...
```

```
Fetching 'workstation' from source at .
```

```
Fetching cookbook index from https://supermarket.chef.io...
```

```
Using workstation (0.2.1) from source at .
```

Lab: Upload the Cookbook to the Chef Server



```
$ berks upload
```

```
Uploaded workstation (0.2.1) to:  
'https://api.opscode.com:443/organizations/ORG'
```

LOCAL

Lab: Is the workstation Cookbook Uploaded?



```
$ knife cookbook list
```

```
apache      0.2.1  
workstation 0.2.1
```

LOCAL

Lab



Lab: Upload Cookbooks

- ✓ Upload your remaining cookbooks
- ✓ Verify that all cookbooks are uploaded

Lab



Lab: Create your Nodes

- ☐ Clone the Training Node Setup
- ☐ Use Kitchen to create your 3 Nodes



GL: Download a Repository

A repository containing a cookbook that will create
3 Centos Nodes for each student:

https://github.com/anthonygrees/training_node_setup

Lab: Clone Training Nodes



```
$ cd ~/chef-repo/cookbooks  
$ git clone  
https://github.com/anthonygrees/training_node_setup
```

```
C:\Users\chef\cookbooks\chef-repo\cookbooks> git clone  
https://github.com/anthonygrees/training_node_setup  
Cloning into 'training_node_setup' ...  
remote: Counting objects: 66, done.  
remote: Compressing objects: 100% (33/33), done.  
remote: Total 66 (delta 18), reused 66 (delta 18), pack-reused 0  
Unpacking objects: 100% (66/66), done.
```

LOCAL

Lab: Create your Nodes



```
$ cd training_node_setup  
$ kitchen create
```

```
-----> Creating <node-1-centos-6>...  
    Detected platform: centos version 6 on x86_64. Instance Type: t2.micro.  
    Default username: centos (default).  
  
    If you are not using an account that qualifies under the AWS  
    free-tier, you may be charged to run these suites. The charge  
    should be minimal, but neither Test Kitchen nor its maintainers  
    are responsible for your incurred costs.  
  
    Instance <i-05ab4e9a2221a013f> requested.  
    Polling AWS for existence, attempt 0...
```

LOCAL

Lab: Check your IP Address



```
$ code .
```

A screenshot of the Visual Studio Code editor interface. The title bar reads "node-1-centos-6.yml - training_node_setup - Visual Studio Code [Administrator]". The menu bar includes "File", "Edit", "Selection", "View", "Go", "Debug", "Tasks", and "Help". The left sidebar shows the "EXPLORER" view with a tree structure: "OPEN EDITORS" (containing "! node-1-centos-6.yml .kitchen"), "TRAINING_NODE_SETUP" (expanded), and subfolders ".delivery", ".kitchen" (expanded, containing "logs"), "node-1-centos-6.yml", "node-2-centos-6.yml", "node-3-centos-6.yml", "recipes", and "snippets". The main editor area shows the content of "node-1-centos-6.yml" with line numbers 1 through 6. The file has a warning icon (exclamation mark) and a close button (X).

```
1 ---
2 server_id: i-05ab4e9a2221a013f
3 hostname: ec2-50-112-15-172.us-west-2.compute.amazonaws.com
4 last_action: create
5 last_error:
6
```

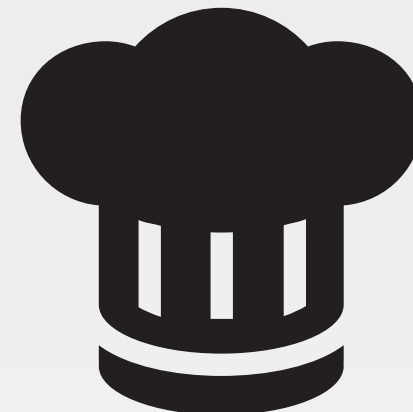
LOCAL

Lab



Lab: Create your Nodes

- ✓ Clone the Training Node Setup
- ✓ Use Kitchen to create your 3 Nodes



Hosted Chef

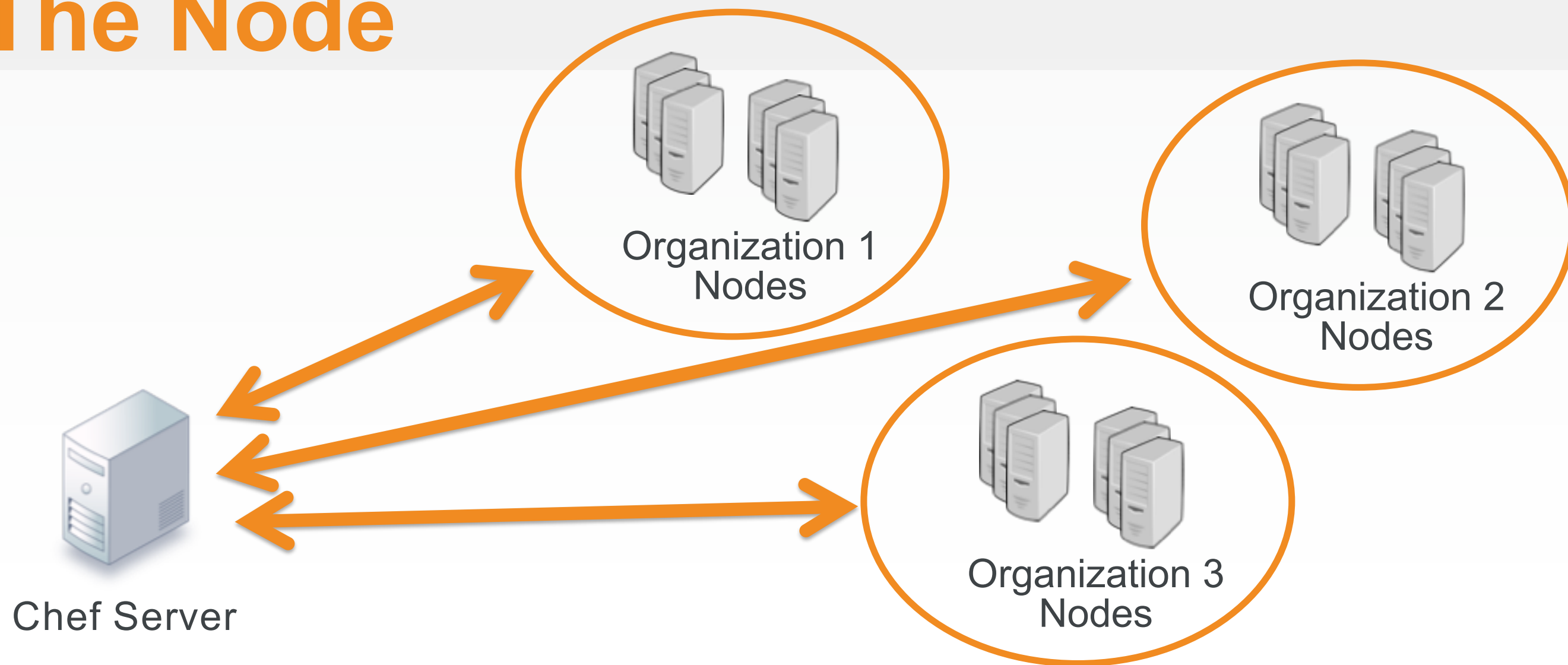
More easily manage multiple nodes

Objective:

- ✓ Create a Hosted Chef Account
- ✓ Upload your cookbooks to the Hosted Chef Server
- ❑ Add a new node as a managed node

CONCEPT

The Node



Lab



GL: Bootstrap Your Node

In this lab you will use a new instance and bootstrap it as a managed node.

You'll need the FQDN of that instance to perform this lab.

GL: Change to the chef-repo



```
$ cd ~/chef-repo
```



LOCAL

GL: Run 'knife node --help'



```
$ knife node --help
```

```
** NODE COMMANDS **
```

```
knife node bulk delete REGEX (options)
```

```
knife node create NODE (options)
```

```
knife node delete NODE (options)
```

```
knife node edit NODE (options)
```

```
knife node environment set NODE ENVIRONMENT
```

```
knife node from file FILE (options)
```

```
knife node list (options)
```

```
knife node run_list add [NODE] [ENTRY[,ENTRY]] (options)
```

```
knife node run_list remove [NODE] [ENTRY[,ENTRY]] (options)
```

```
knife node run_list set NODE ENTRIES (options)
```

```
knife node show NODE (options)
```

GL: Run 'knife node list'



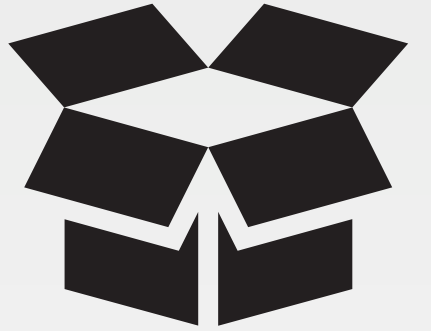
```
$ knife node list
```



LOCAL

CONCEPT

Bootstrapping a Node



Often, the node you are bootstrapping may not have Chef installed. It may also not have details of where the Chef Server is located or the credentials to securely talk to that Server.

To add those credentials we can **bootstrap** that node to install all those components.

<https://learn.chef.io/skills/beyond-essentials-1>

LOCAL

GL: Run 'knife bootstrap --help'



```
$ knife bootstrap --help
```

```
knife bootstrap FQDN (options)
  --bootstrap-curl-options OPTIONS
                                Add options to curl when install chef-client
  --bootstrap-install-command COMMANDS
                                Custom command to install chef-client
  --bootstrap-no-proxy [NO_PROXY_URL|NO_PROXY_IP]
                                Do not proxy locations for the node being
bootstrapped; this option is used internally by Opscode
  --bootstrap-proxy PROXY_URL  The proxy server for the node being
bootstrapped
  -t TEMPLATE,                  Bootstrap Chef using a built-in or custom
template. Set to the full path of an erb
template or use one of the built-in templates.
```

GL: Bootstrap Your Node



```
$ knife bootstrap FQDN -x USER -P PWD --sudo -N node1
```

Creating new client for node1

Creating new node for node1

Public IP Address or Fully
Qualified Domain Name

user name

password

sudo flag

node name

ec2-54-175-46-24.compute-1.amazonaws.com

ec2-54-175-46-24.compute-1.amazonaws.com resolving cookbooks for run list: []

ec2-54-175-46-24.compute-1.amazonaws.com Synchronizing Cookbooks:

ec2-54-175-46-24.compute-1.amazonaws.com Compiling Cookbooks...

ec2-54-175-46-24.compute-1.amazonaws.com [2017-09-16T16:51:21+00:00] WARN: Node

node1 has an empty run list.

ec2-54-175-46-24.compute-1.amazonaws.com Converging 0 resources

ec2-54-175-46-24.compute-1.amazonaws.com

ec2-54-175-46-24.compute-1.amazonaws.com Running handlers:

ec2-54-175-46-24.compute-1.amazonaws.com

GL: Bootstrap on EC2



```
$ knife bootstrap -i ~/.ssh/id_rsa centos@ec2-xxx-xxx-xxx.us-west-2.compute.amazonaws.com -N node1 --sudo
```

```
C:\Users\chef\cookbooks\chef-repo\cookbooks> knife bootstrap -i ~/.ssh/id_rsa centos@ec2-50-112-15-172.us-west-2.compute.amazonaws.com -N Node1 --sudo
Creating new client for Node1
Creating new node for Node1
Connecting to ec2-50-112-15-172.us-west-2.compute.amazonaws.com
ec2-50-112-15-172.us-west-2.compute.amazonaws.com -----> Installing Chef Omnibus (-v 13)
ec2-50-112-15-172.us-west-2.compute.amazonaws.com downloading
https://omnitruck
```

LOCAL

GL: Run 'knife node list' Again



```
$ knife node list
```

```
node1
```

LOCAL

GL: View More Information About Your Node



```
$ knife node show node1
```

```
Node Name:    node1
Environment:  _default
FQDN:         ip-172-31-21-7.ec2.internal
IP:          34.201.166.108
Run List:
Roles:
Recipes:
Platform:    centos 6.9
Tags:
```

LOCAL

GL: Add a Recipe to a Run List



```
$ knife node run_list add node1 "recipe[apache]"
```

```
node1:  
  run_list: recipe[apache]
```

LOCAL

GL: ssh to node1 and Converge Recipe

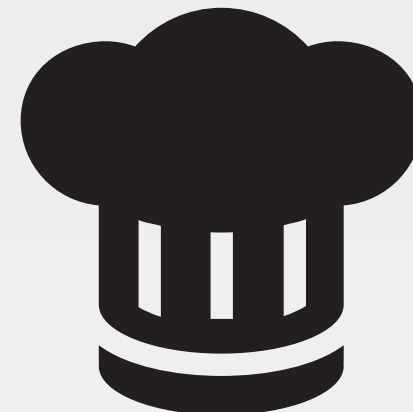


```
$ knife ssh 'name:node1' 'sudo chef-client' -x  
centos -i ~/.ssh/id_rsa
```

```
Starting Chef Client, version 13.2.20  
resolving cookbooks for run list: ["apache"]  
Synchronizing Cookbooks:  
  - apache (0.2.1)  
Installing Cookbook Gems:  
Compiling Cookbooks...  
Converging 3 resources  
Recipe: apache::server  
...  
- start service service[httpd]
```

LOCAL

Running handlers:



Hosted Chef

More easily manage multiple nodes

Objective:

- ✓ Create a Hosted Chef Account
- ✓ Upload your cookbooks to the Hosted Chef Server
- ✓ Add a new node as a managed node

DISCUSSION



Discussion

What is the benefit of storing cookbooks in a central repository?

What is the primary tool for communicating with the Chef Server?

How did you add a node to your organization?

DISCUSSION



Q&A

What questions can you help you answer?

- Chef Server
- Managed Chef
- Berkshelf
- Bootstrapping Nodes



CHEF™