



The Chef Server

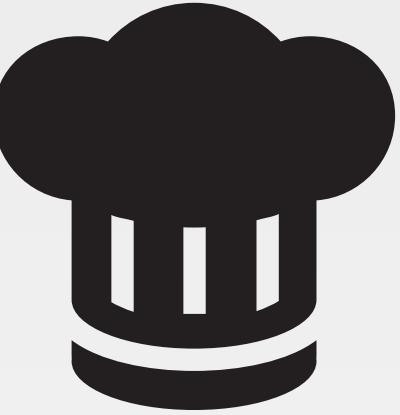
A Hub for Configuration Data

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 your old workstation as a managed node

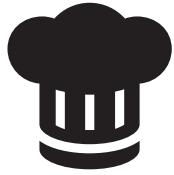
Managing an Additional System



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 myiis cookbook.
4. Run chef-client on the new node to apply the myiis cookbook's default recipe.

Managing Additional Systems



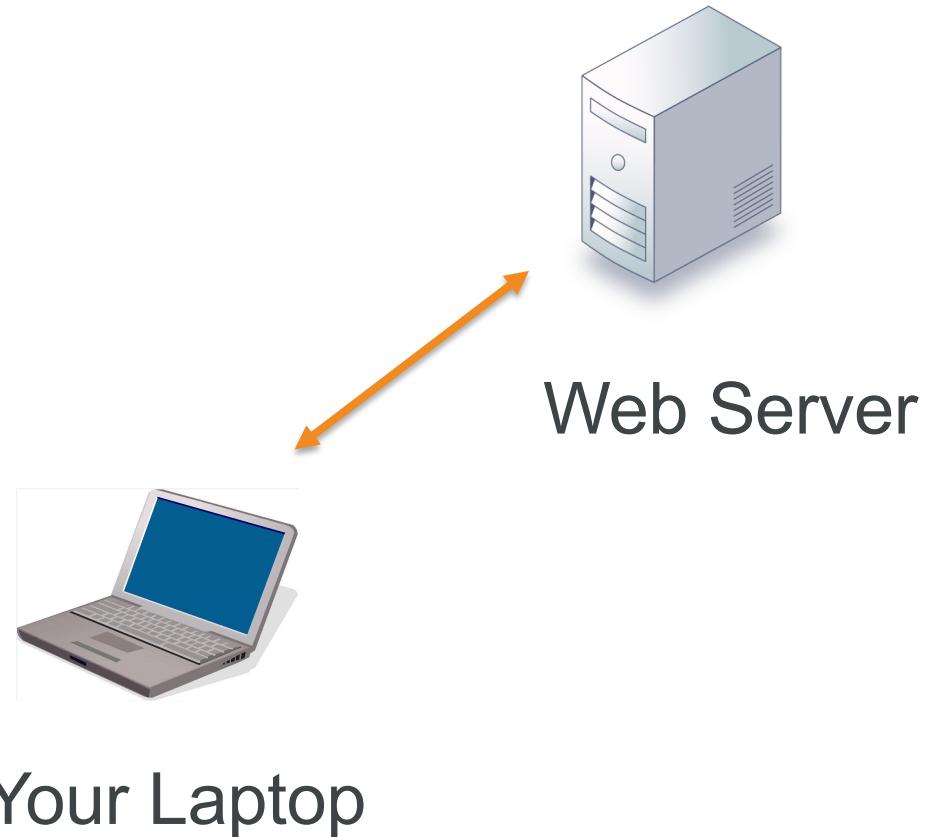
Installing the Chef tools, transferring the myiis cookbook, and applying the run list is not terribly expensive.

- 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

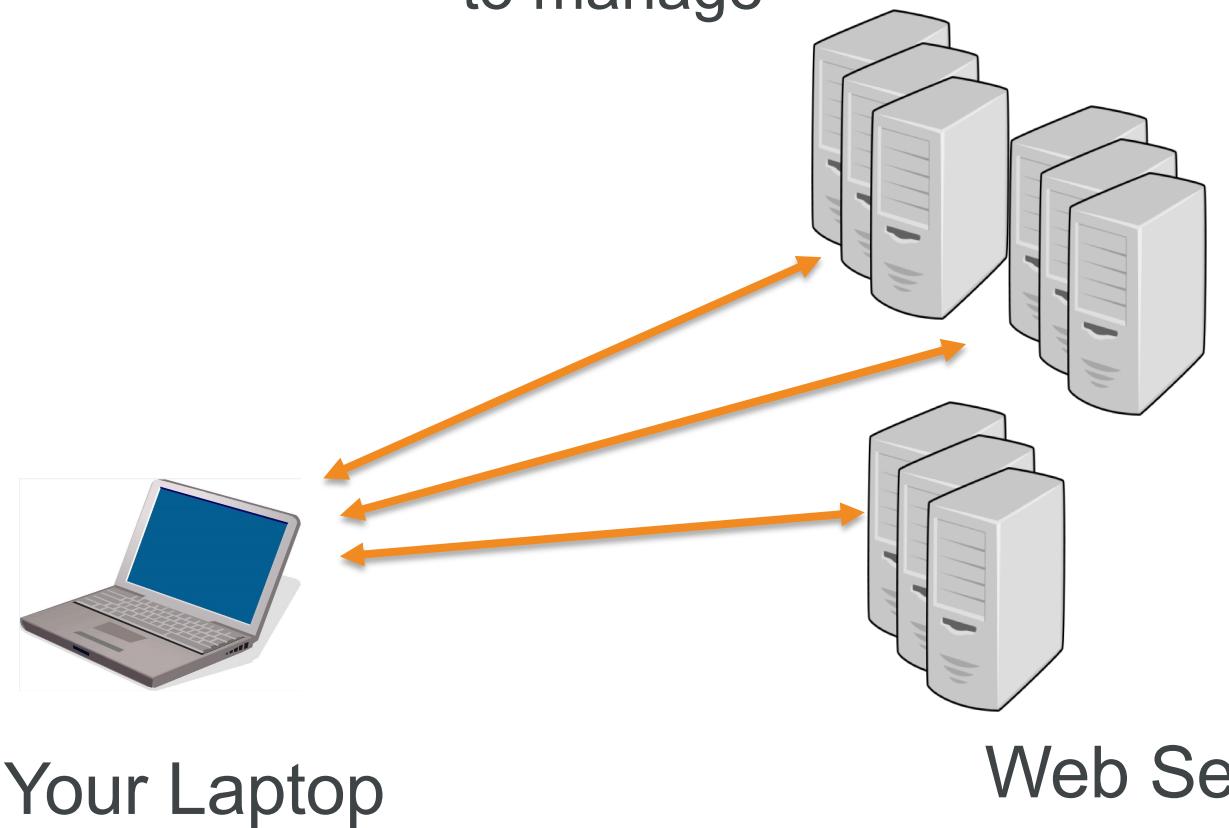


Now



Future

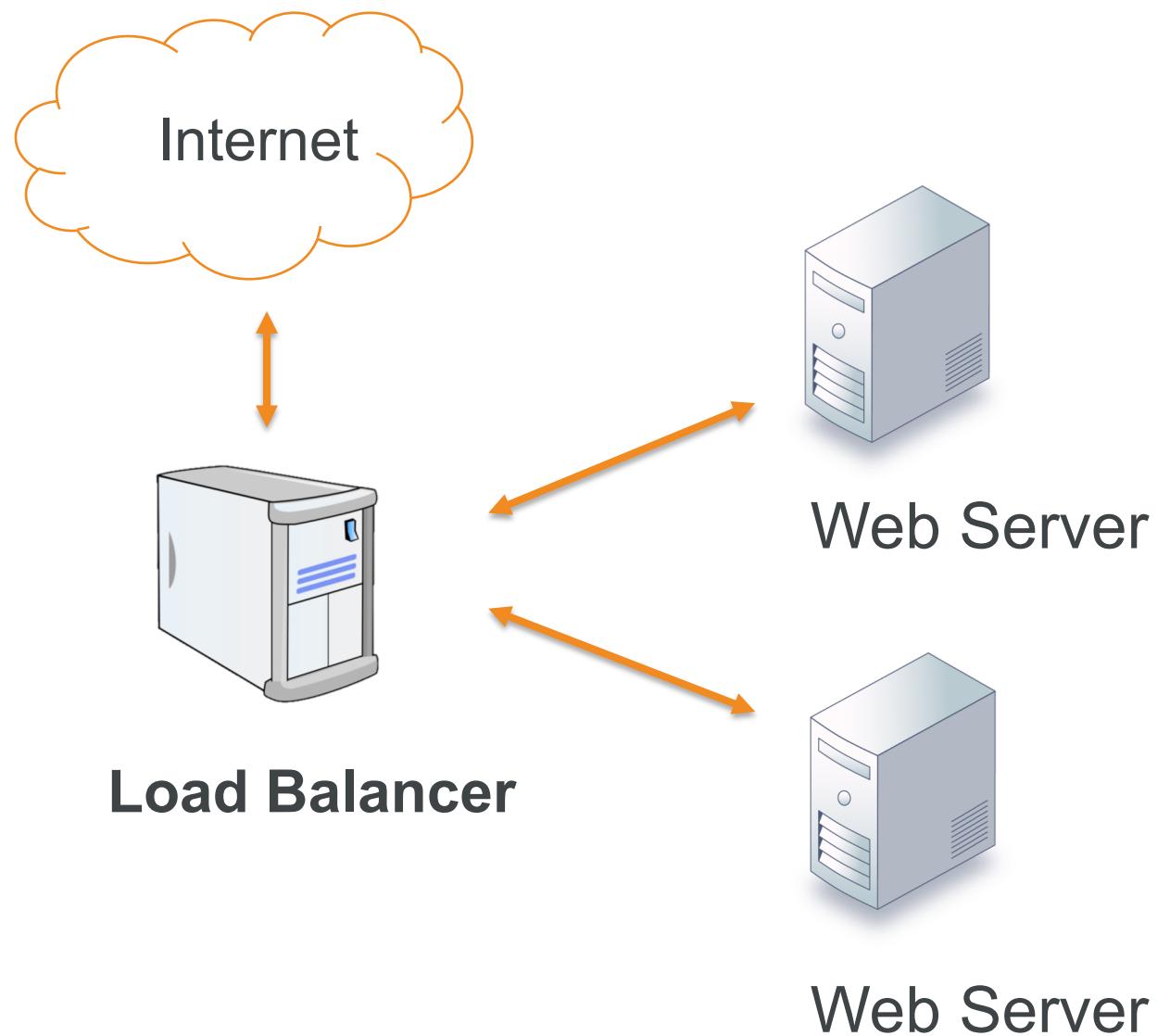
More complex
to manage



Managing User Traffic



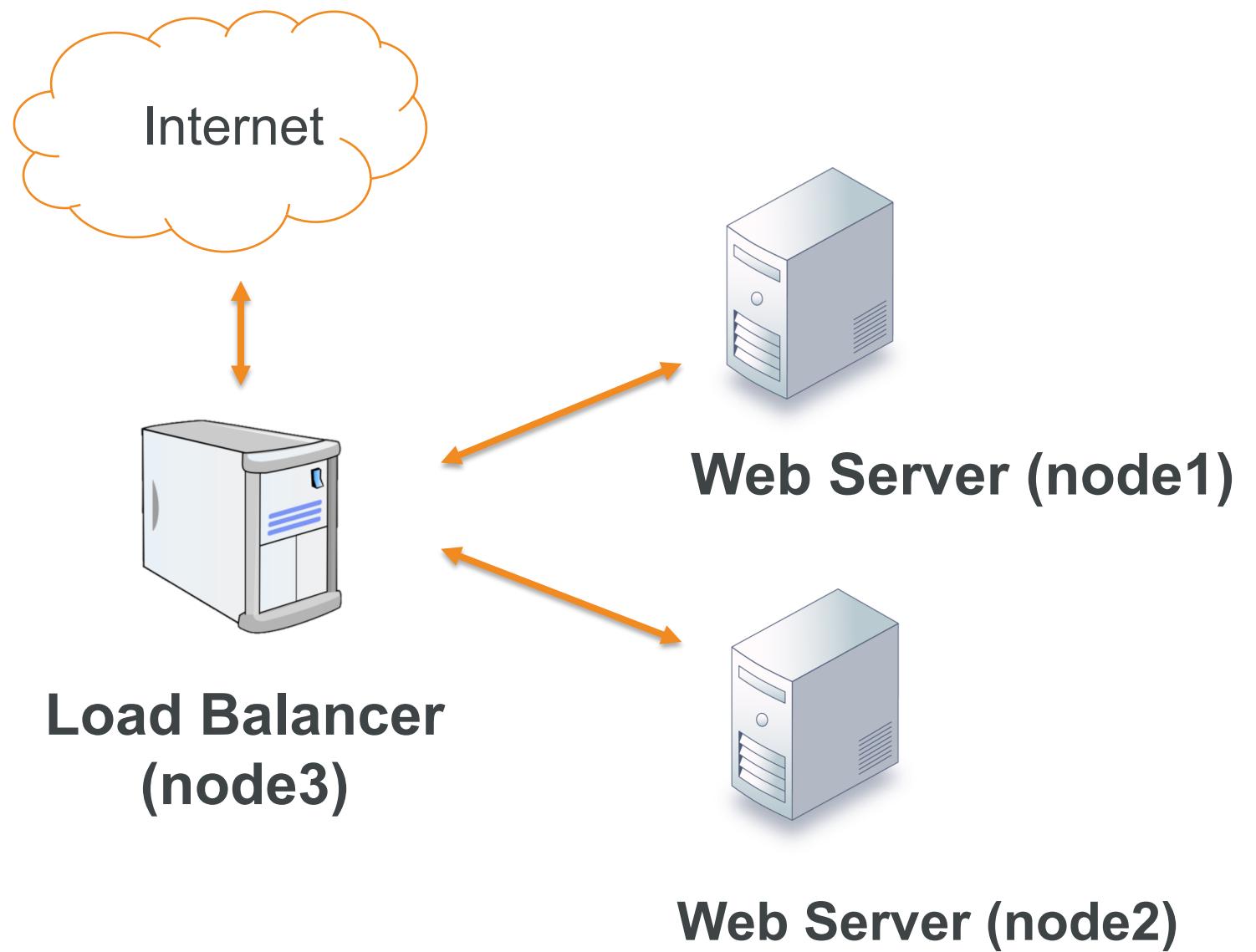
A load balancer can forward incoming user web requests to other nodes.



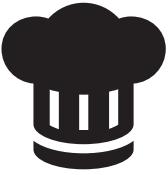
Managing User Traffic



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

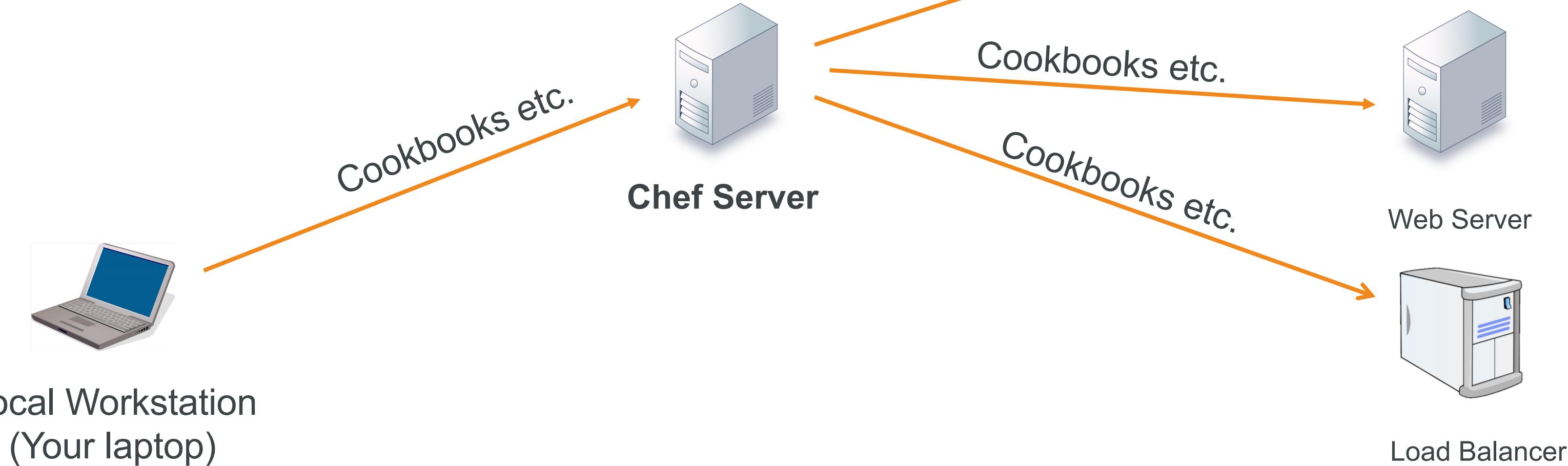
Load Balancer

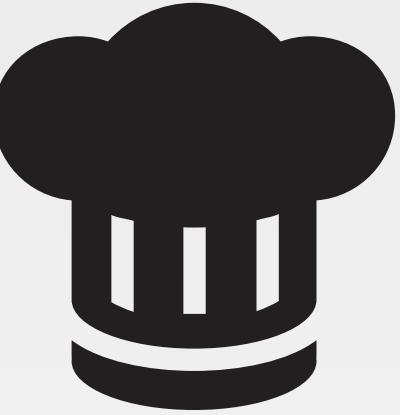
1. Create the load balancer cookbook
2. Provision the instance
3. Install Chef
4. Copy the load balancer cookbook
5. Apply the cookbook

The Chef Server



An easier way to set up and maintain multiple nodes.





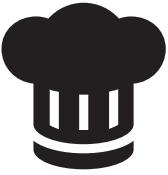
GL: Hosted Chef

More easily manage multiple nodes

Objective:

- Create a Hosted Chef Account
- Upload your cookbooks to the Hosted Chef Server
- Add your old workstation 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 page features a dark header with the 'CHEF MANAGE' logo. Below the header, a large orange button reads 'Start your free trial of Hosted Chef'. To the right of the button, there's descriptive text about the benefits of using Chef. The main area contains a form with four fields: 'Full Name' (Jane Smith), 'Company' (Chef), 'Email' (janesmith@chef.io), and 'Username' (janesmith). At the bottom of the form is a checkbox labeled 'I agree to the Terms of Service and the Master License and Services Agreement.' followed by an orange 'Get Started' button with a hand cursor icon.

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: Jane Smith

Company: Chef

Email: janesmith@chef.io

Username: janesmith

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

Get Started

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.

A screenshot of a web page from 'CHEF MANAGE'. The header is dark blue with the 'CHEF MANAGE' logo. The main content area is white with orange text. It says 'Thanks for signing up!' followed by a message: 'We've just sent you an email to verify your email address. Click the link in the email to finish creating your account.'

CHEF
MANAGE

Thanks for signing up!

We've just sent you an email to verify your email address. Click the link in the email to finish creating your account.

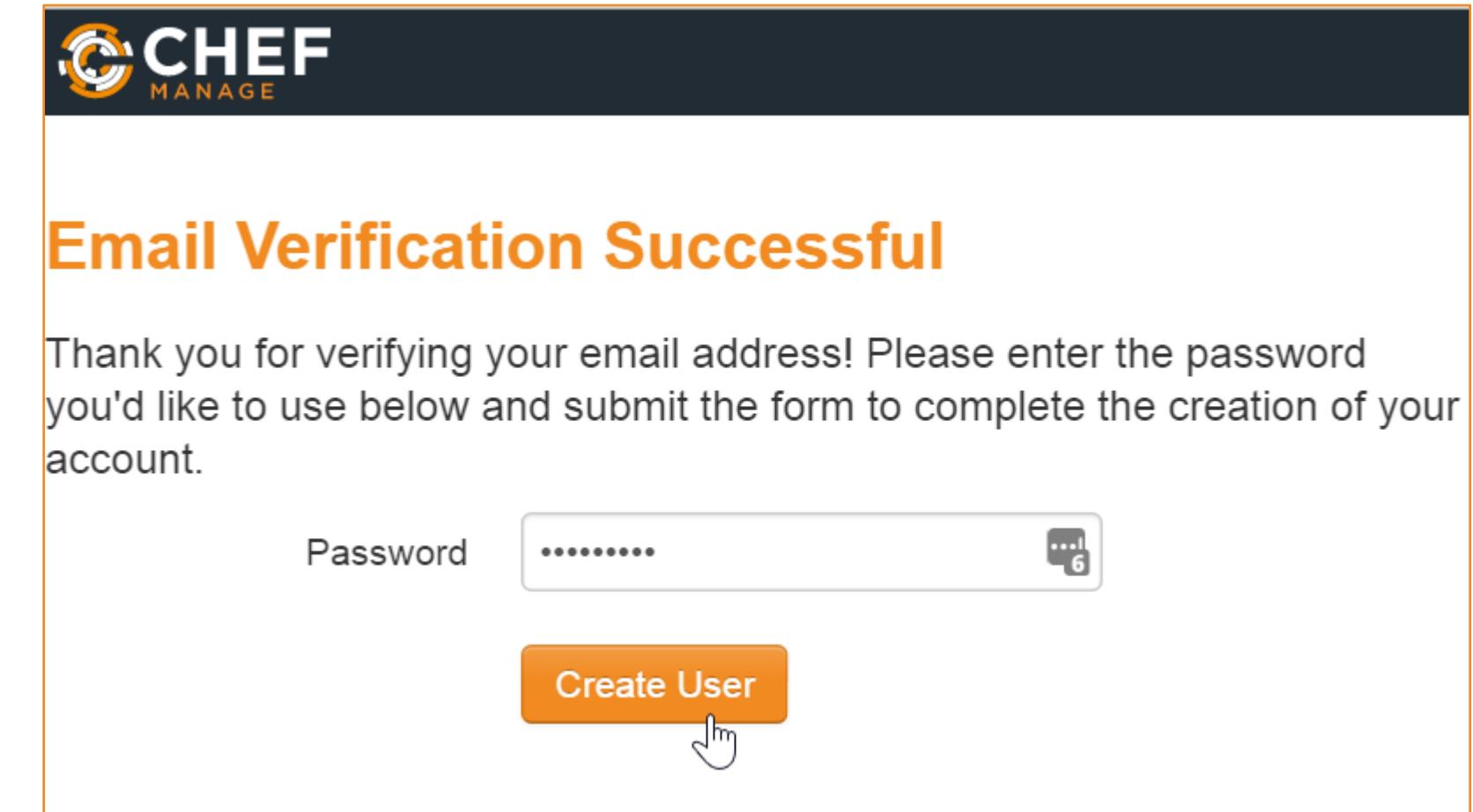
GL: Signing Up for a Hosted Chef Account



Steps

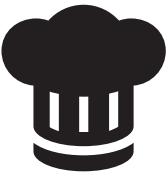
4. Enter a password when prompted and then click **Create User**.

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



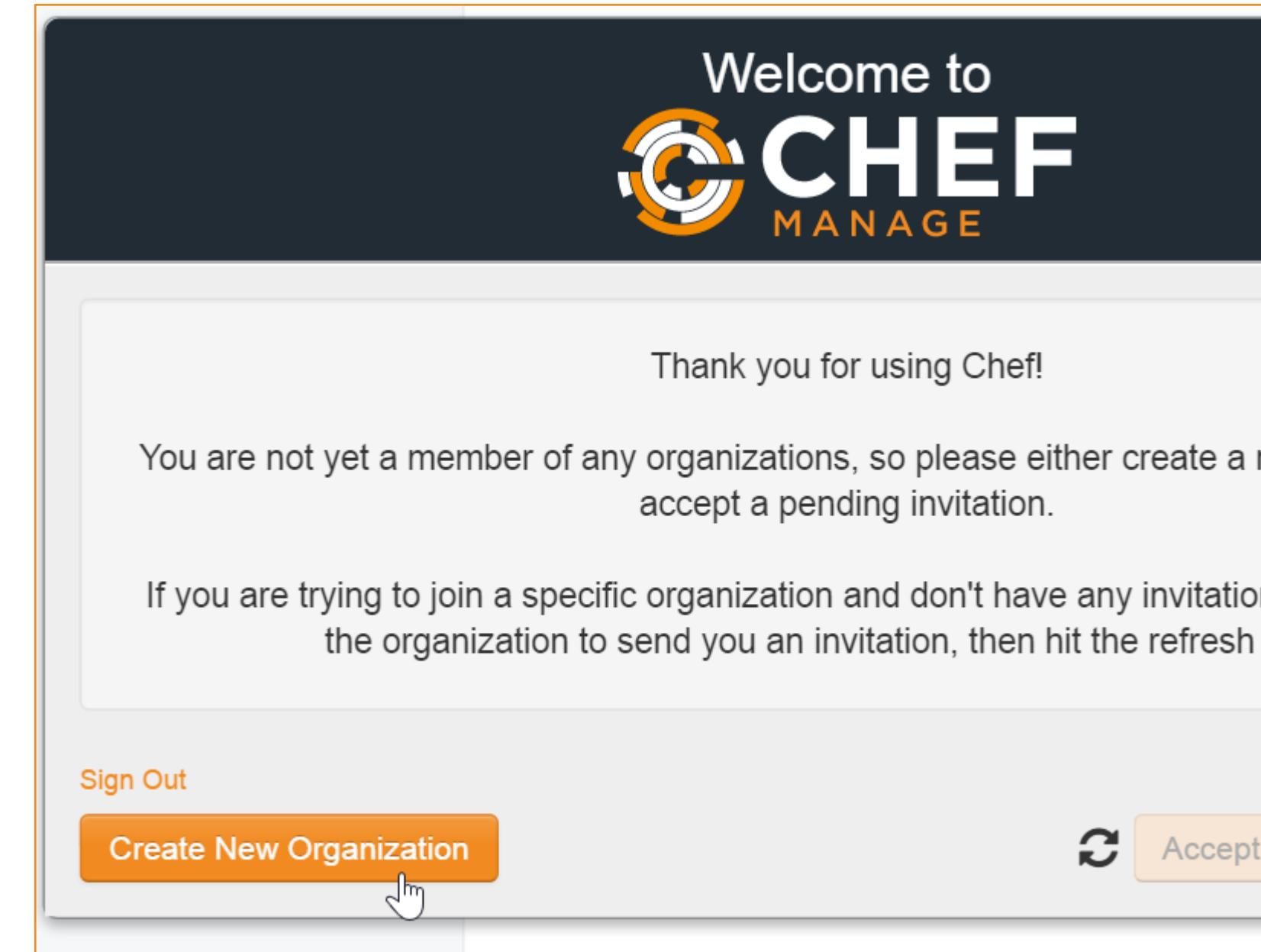
The screenshot shows a web page titled "CHEF MANAGE". The main heading is "Email Verification Successful". Below it, a message reads: "Thank you for verifying your email address! Please enter the password you'd like to use below and submit the form to complete the creation of your account." A "Password" input field contains several dots, and a "Create User" button is visible below it. A hand cursor icon is positioned over the "Create User" button.

GL: Signing Up for a Hosted Chef Account

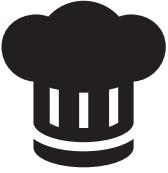


Steps

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**.

Create Organization

Full Name (example: Chef, Inc.)
Janesmith Org

Short Name (example: chef)
janesorg



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.

The screenshot shows the Chef Manage interface. At the top, there's a navigation bar with tabs: Nodes, Reports, Policy, and Admin (which is selected). On the left, there's a sidebar with options like Organizations, Create, Reset Validation Key, Generate Knife Config, Invite User, Leave Organization, and Starter Kit. Below the sidebar are sections for Users, Groups, and Global Permissions. The main content area has a heading 'Thank you for choosing Hosted Chef' and instructions 'Follow these steps to be on your way to using Hosted Chef'. It features two buttons: 'Download Starter Kit' (highlighted with a mouse cursor) and 'Learn Chef'. Below these are links for 'Chef Documentation', 'Browse Community Cookbooks', and 'Contact Support'. A 'What's next?' section lists 'Chef', 'Browse Community Cookbooks', and 'Contact Support'. At the bottom, a modal dialog box asks 'Are you certain?' with the message 'Your user key will be reset. Are you sure you want to do this?'. It has 'Cancel' and 'Proceed' buttons, with 'Proceed' being highlighted with a mouse cursor. The URL in the browser's address bar is 'https://app.chef.io/starterkit'.

GL: Signing Up for a Hosted Chef Account



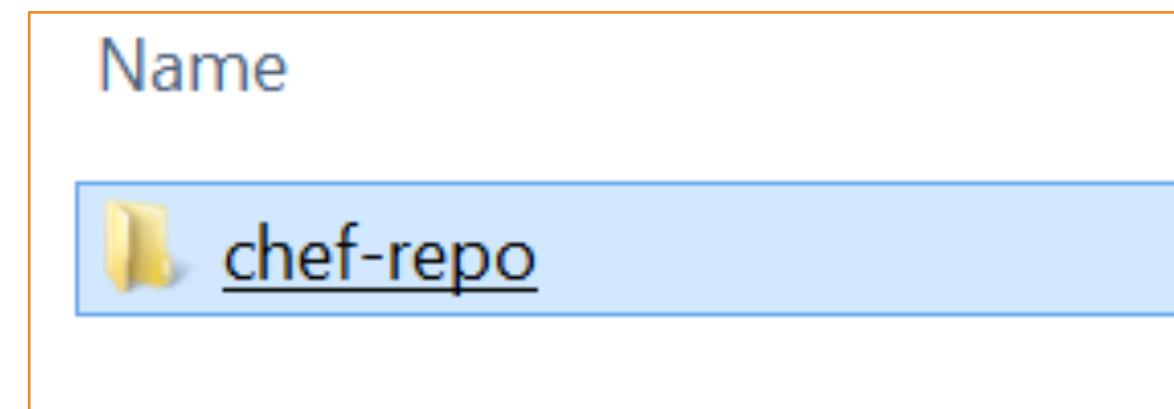
Steps

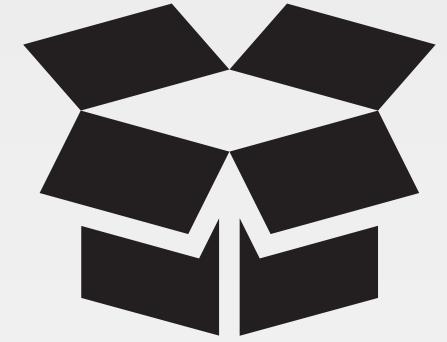
8. Open the downloaded zip file and copy chef-repo folder that's contained in the zip file.
9. Paste the chef-repo folder to a location on your laptop, such as your home directory.

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

Mac: /home/username/chef-repo

Windows: C:\Users\username\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:

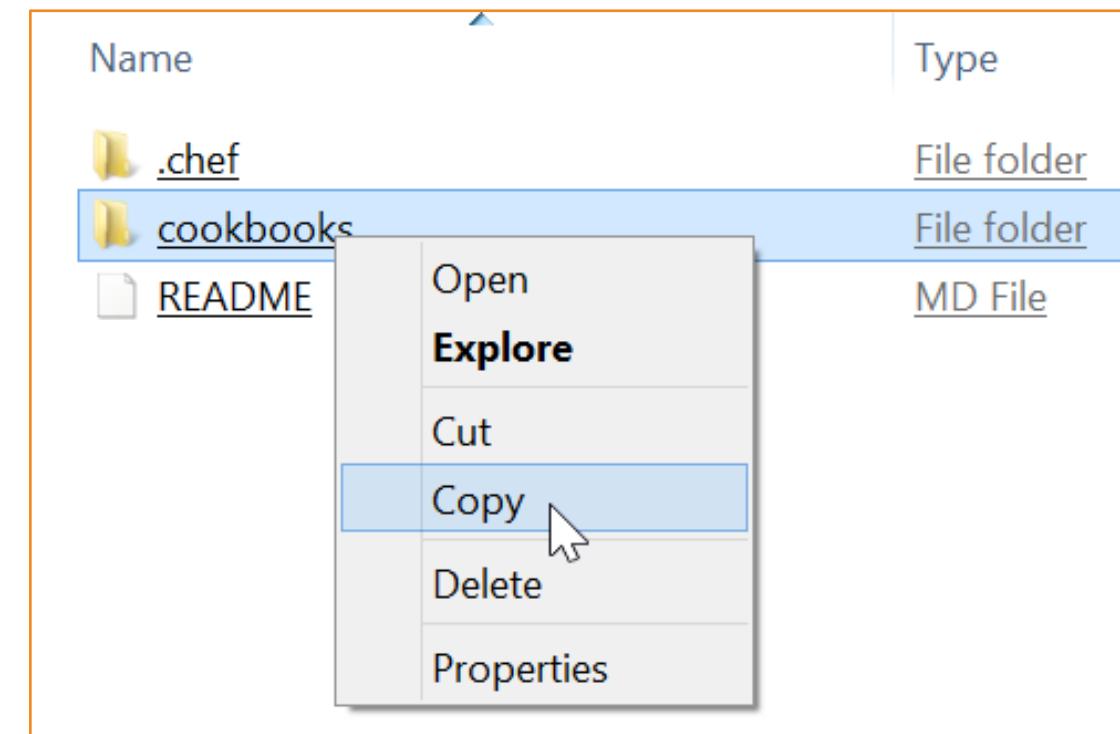
<https://github.com/anthonygrees/chef-essentials-windows-repo>

GL: Paste the cookbooks Folder



Steps

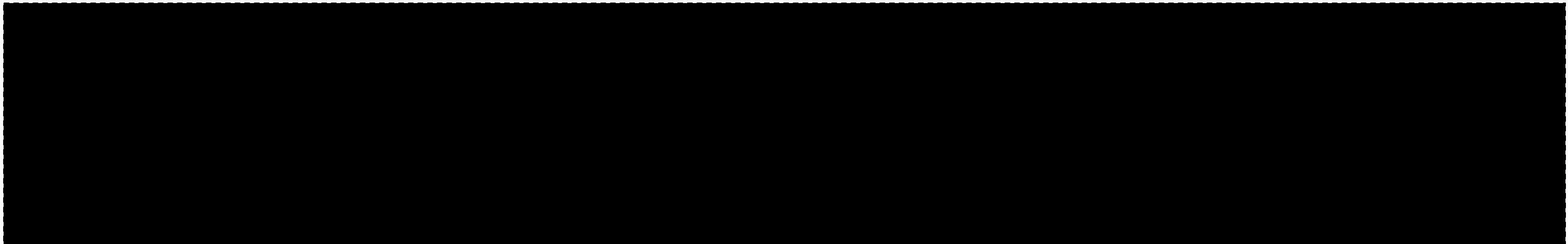
- Open the downloaded chefdk-fundamentals-repo-master zip file and then copy **only** the **cookbooks** folder that's contained in the zip file.
- Replace the **cookbooks** folder that's in your chef-repo folder with the copied cookbooks folder.



GL: Navigate to the chef-repo



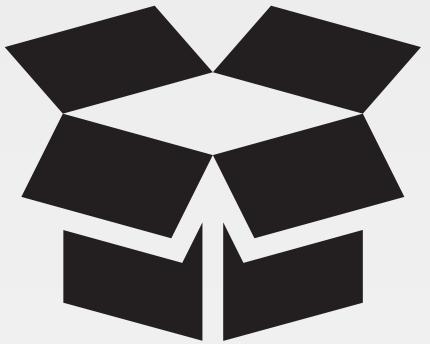
```
> cd ~\chef-repo
```



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)
```

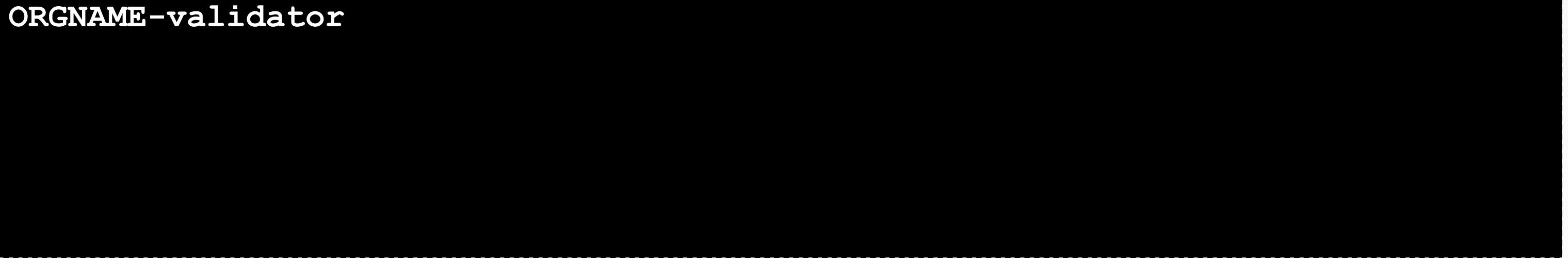
LOCAL

GL: knife client list

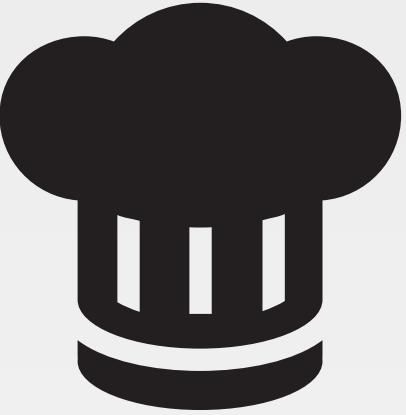


```
> knife client list
```

```
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 your old workstation as a managed node

GL: knife cookbook --help



```
> knife cookbook --help
```

** COOKBOOK COMMANDS **

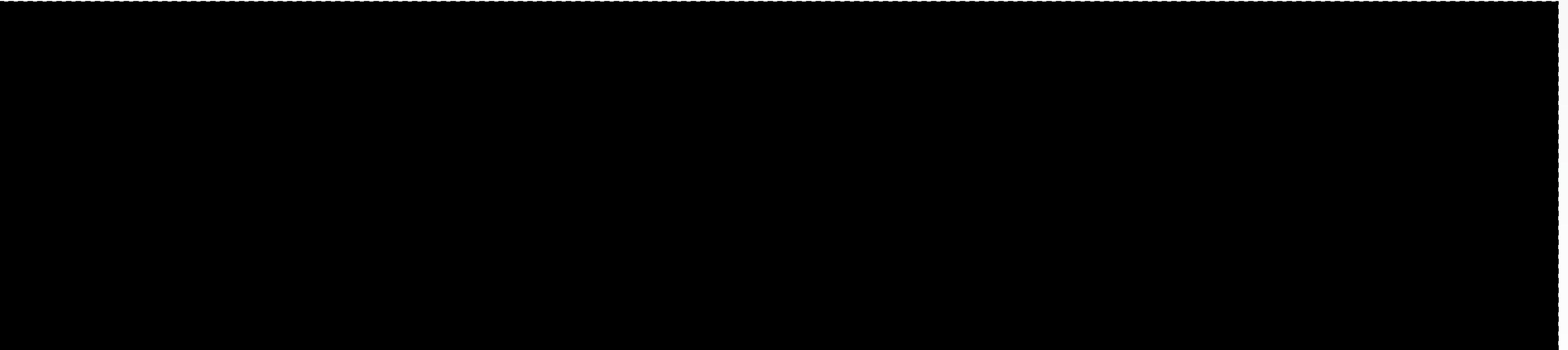
```
knife cookbook bulk delete REGEX (options)
knife cookbook create COOKBOOK (options)
knife cookbook delete COOKBOOK VERSION (options)
knife cookbook download COOKBOOK [VERSION] (options)
knife cookbook list (options)
knife cookbook metadata COOKBOOK (options)
knife cookbook metadata from FILE (options)
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
```

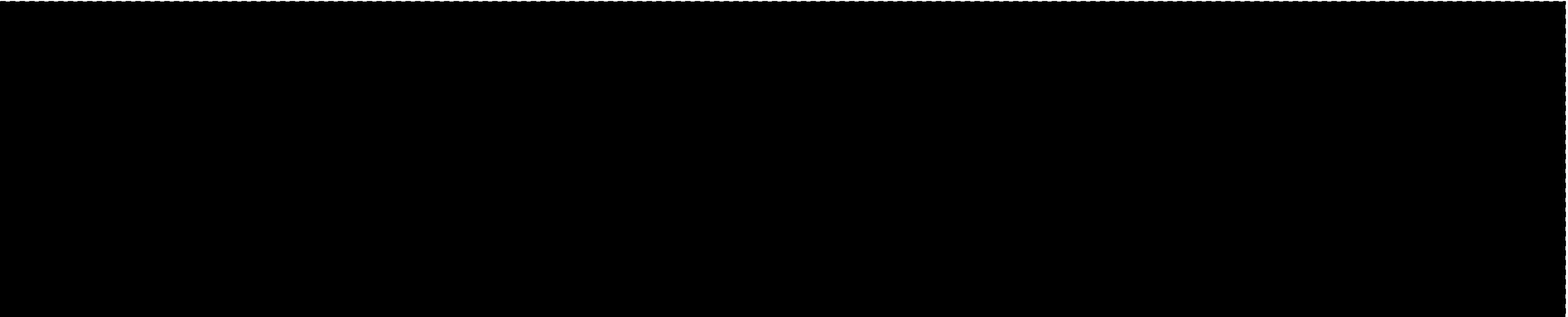


LOCAL

GL: Change to the myiis Directory

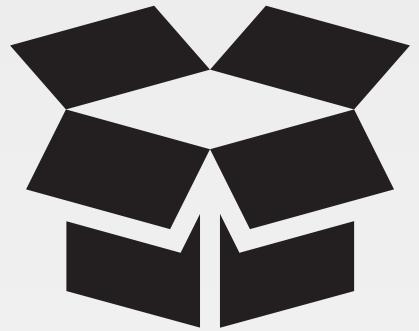


```
> cd cookbooks\myiis
```



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.

<https://docs.chef.io/berkshelf.html>

LOCAL

GL: Run berks --help



```
> berks --help
```

Commands:

```
berks apply ENVIRONMENT      # Apply version locks from Berksfile.lock to a Chef environment  
berks contingent COOKBOOK    # List all cookbooks that depend on the given cookbook in your  
berks cookbook NAME [PATH]    # Create a skeleton for a new cookbook  
berks help [COMMAND]         # Describe available commands or one specific command  
berks info [COOKBOOK]         # Display name, author, copyright, and dependency information  
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 specified by your  
berks outdated [COOKBOOKS]    # List dependencies that have new versions available that  
berks package [PATH]           # Vendor and archive the dependencies of a Berksfile  
berks search NAME              # Search the remote source for cookbooks matching the partial
```

GL: Run berks install



```
> berks install
```

```
Resolving cookbook dependencies...
Fetching 'myiis' from source at .
Fetching cookbook index from https://supermarket.chef.io...
Using myiis (0.2.1) from source at .
```

| LOCAL

GL: See the Berksfile.lock



```
> dir
```

```
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 cheffignore
-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
```

10 / 10 / 2018

GL: See the Contents of the Berksfile.lock



```
> cat Berksfile.lock
```

DEPENDENCIES

```
myiis
  path: .
  metadata: true
```

GRAPH

```
myiis (0.2.1)
```

LOCAL

GL: Upload the Cookbook to the Chef Server



```
> berks upload
```

```
Uploaded myiis (0.2.1) to:  
'https://api.chef.io:443/organizations/awesomestudent'
```

| LOCAL

GL: Display Cookbooks within Your Org



```
> knife cookbook list
```

```
myiis      0.2.1
```

LOCAL



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
```

```
myiis      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 (0.1.0) from source at .
```

Lab: Upload the Cookbook to the Chef Server



```
> berks upload
```

```
Uploaded workstation (0.1.0) to:  
'https://api.chef.io:443/organizations/awesomestudent'
```

LOCAL

Lab: Is the workstation Cookbook Uploaded?



```
> knife cookbook list
```

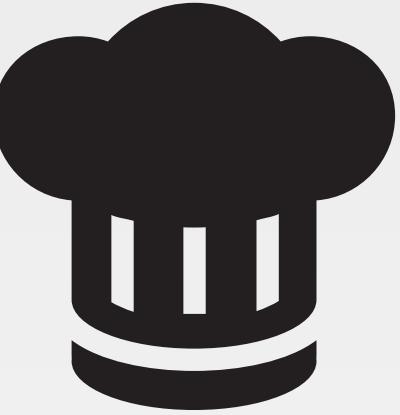
myiis	0.2.1
workstation	0.1.0

LOCAL



Lab: Upload Cookbooks

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



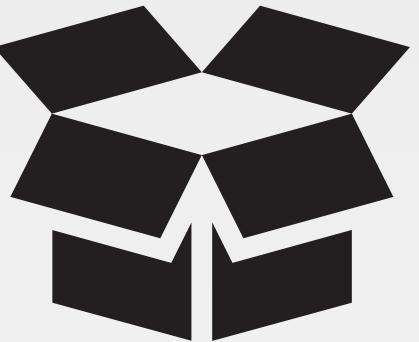
Hosted Chef

More easily manage multiple nodes

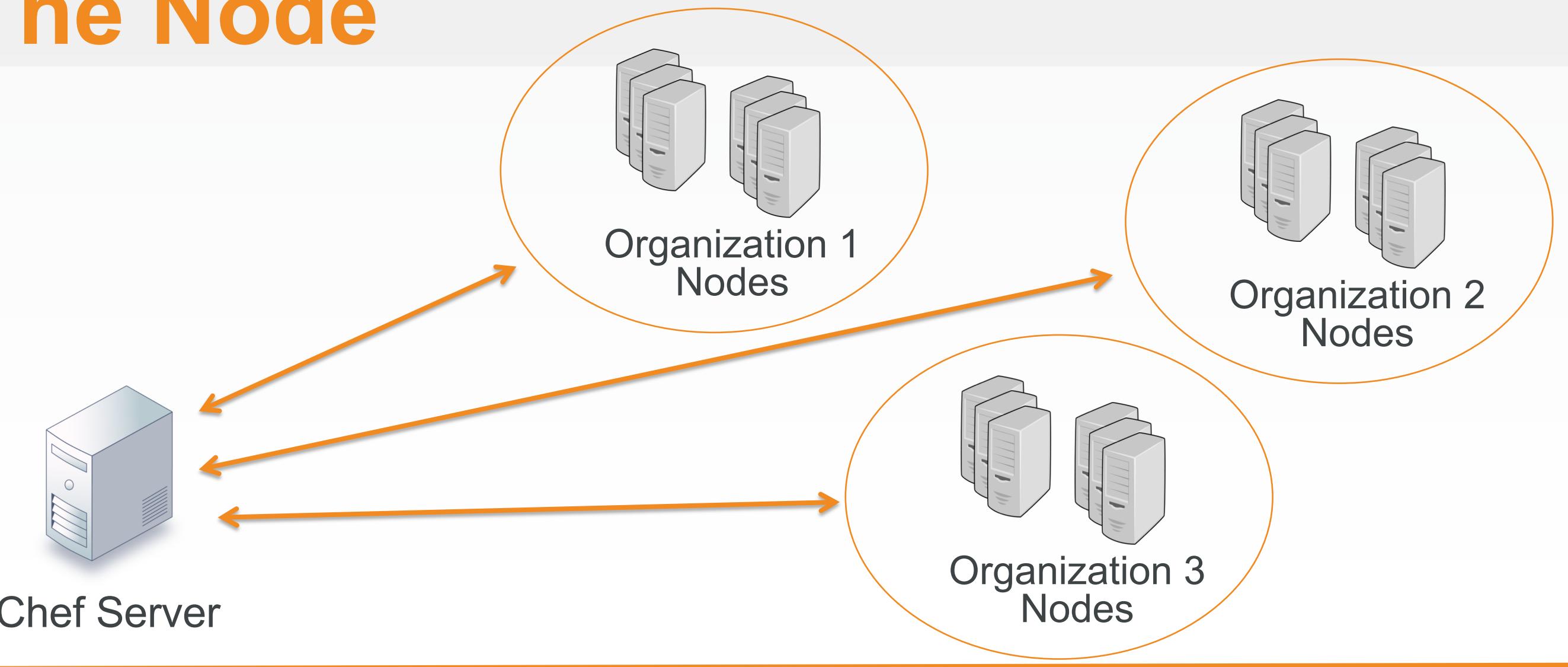
Objective:

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

CONCEPT



The Node



GL: Change to the chef-repo



```
> cd ~\chef-repo
```



LOCAL

GL: Run 'knife node --help'



```
> knife node --help
```

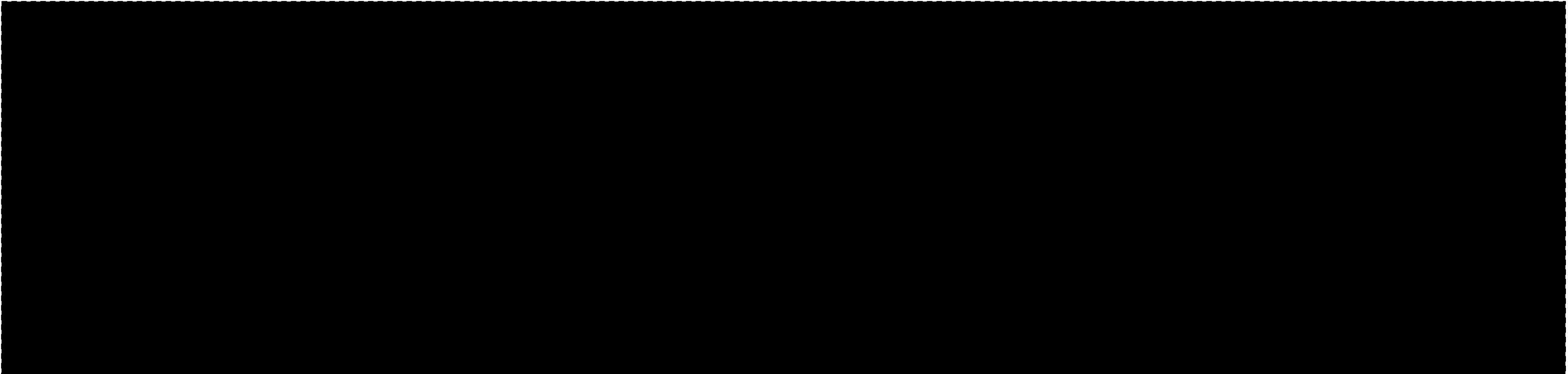
```
** NODE COMMANDS **

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

GL: Create your Nodes



```
> git clone https://github.com/anthonygrees/chef-  
essentials-windows-  
repo/tree/master/create_your_nodes  
> cd create_your_nodes  
> kitchen converge
```

```
-----> Starting Kitchen (v1.22.0)  
-----> Creating <node1-windows-2012r2>...  
      Detected platform: windows version 2012r2rtm on x86_64. Instance Type:  
m3.medium. Default username: administrator (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 nither Test Kitchen nor its maintainers
```

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 interna
lly 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 windows winrm IP -x USER -P PWD -N node1
```

Creating new client for node1

Creating new node for node1

Fully Qualified Domain
Name or IP

Waiting for 34.228.41.102 response received.

user name

41.102

password

node name

Remote node responded after 0.02 minutes.

Bootstrapping Chef on 34.228.41.102

34.228.41.102 Rendering "C:\Users\ADMINI~1\AppData\Local\Temp\bootstrap-4032-1505928424.bat" chunk 1

34.228.41.102 Rendering "C:\Users\ADMINI~1\AppData\Local\Temp\bootstrap-4032-1505928424.bat" chunk 2

34.228.41.102 Rendering "C:\Users\ADMINI~1\AppData\Local\Temp\bootstrap-4032-1505928424.bat" chunk 3

...

GL: Bootstrap Example



```
> knife bootstrap windows winrm 'ec2-xx-xxx-xx-  
xxx.us-west-2.compute.amazonaws.com' -x  
administrator -P 'xyzyswww' -N node1
```

```
Creating new client for node1
```

```
Creating new node for node1
```

```
Waiting for remote response before bootstrap.ec2-54-149-57-233.us-west-  
2.compute.amazonaws.com .
```

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:          WIN-DQFQCUFHDCP.ec2.internal
IP:            34.228.41.102
Run List:
Roles:
Recipes:
Platform:       windows 6.3.9600
Tags:
```

LOCAL

GL: Add a Recipe to a Run List



```
> knife node run_list add node1 'myiis'
```

```
node1:  
  run_list: recipe[myiis]
```

LOCAL

GL: Verify the New Node



```
> knife node show node1
```

```
Node Name:      node1
Environment:    _default
FQDN:          WIN-DQFQCUFHDCP.ec2.internal
IP:            34.228.41.102
Run List:       recipe[myiis]
Roles:
Recipes:
Platform:      windows 6.3.9600
Tags:
```

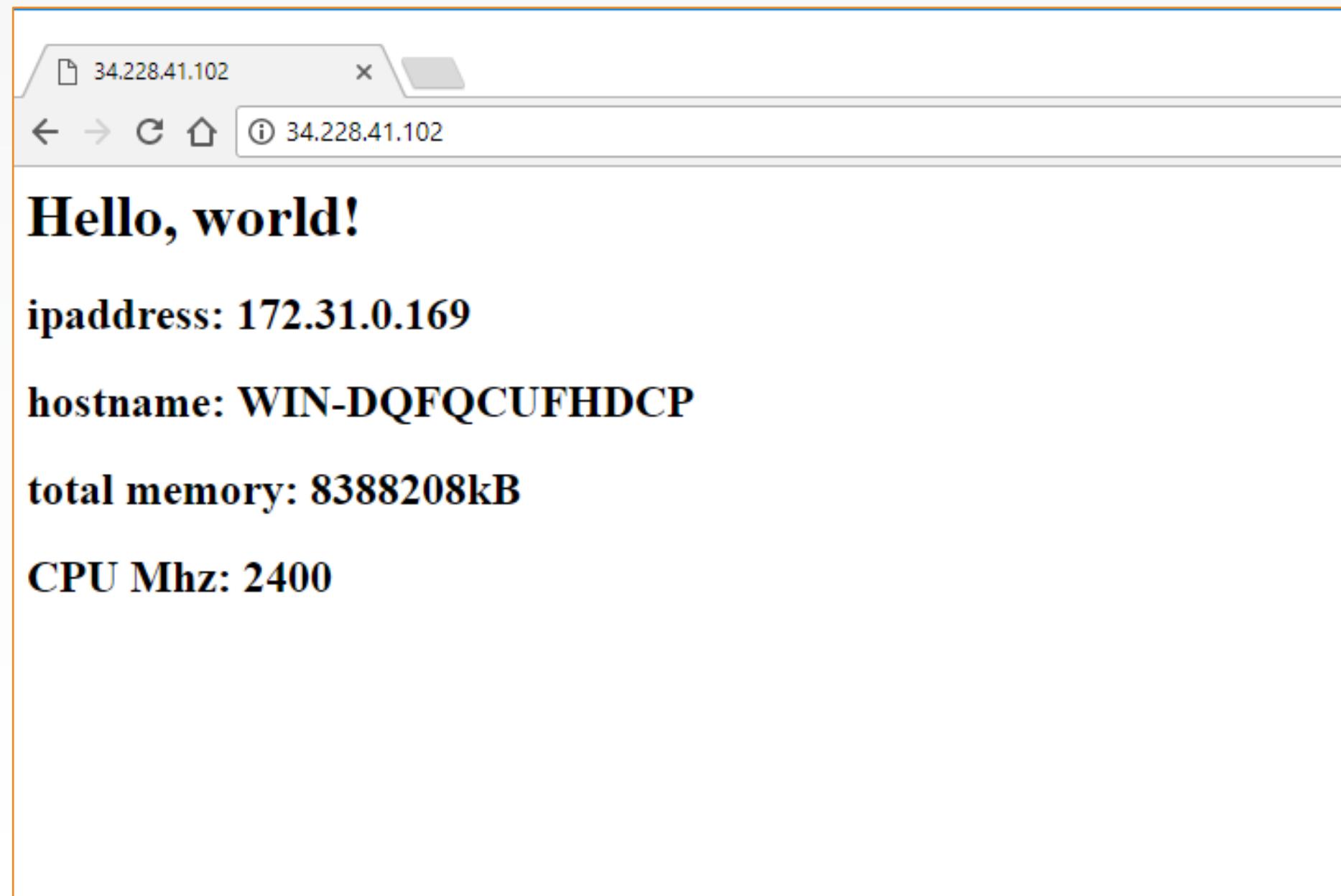
GL: Converge node1



```
> knife winrm IP -m -x USER -P PWD "chef-client"
```

```
34.228.41.102 Starting Chef Client, version 13.4.24
34.228.41.102
34.228.41.102 [2018-08-20T17:37:02+00:00] INFO: *** Chef 13.4.24 ***
34.228.41.102 [2018-09-20T17:37:02+00:00] INFO: Platform: x64-mingw32
34.228.41.102 [2018-09-20T17:37:02+00:00] INFO: Chef-client pid: 500
34.228.41.102 [2018-09-20T17:37:02+00:00] INFO: The plugin path C:\chef\ohai\plugins
does not exist. Skipping...
34.228.41.102 [2018-09-20T17:37:05+00:00] INFO: Run List is [recipe[myiis]]
34.228.41.102 [2018-09-20T17:37:05+00:00] INFO: Run List expands to [myiis]
34.228.41.102 [2018-09-20T17:37:05+00:00] INFO: Starting Chef Run for node1
...
34.228.41.102 Chef Client finished, 2/4 resources updated in 39 seconds
34.228.41.102 [2018-09-20T17:37:41+00:00] INFO: Sending resource update report (run-
id: a0a2aa9a-cf6d-4b94-8e18-954f28c99428)
```

Verify Node1 Serves the Page



DISCUSSION



Setting run_list at Bootstrap

Alternatively we could have set the run_list during the bootstrap process by adding -r "recipe[myiis]".

```
knife bootstrap windows winrm IP -x USER -P PWD -N node1 -r "recipe[myiis]"
```



Lab: Another Web Node

- ❑ Bootstrap a new node, setting the run list of the to include the web server cookbook using the `'-r` flag
- ❑ Verify that the node's web server is functional

Lab: Bootstrap the New Node



```
> knife bootstrap windows winrm IP_OF_NODE_2 -x USER -P PWD  
-N node2 -r 'myis'
```

```
Creating new client for node2  
Creating new node for node2  
Waiting for remote response before bootstrap.54.146.147.44 .  
54.146.147.44 Response received.  
Remote node responded after 0.02 minutes.  
Bootstrapping Chef on 54.146.147.44  
...  
54.146.147.44 Running handlers complete  
54.146.147.44 [2018-09-20T18:06:10+00:00] INFO: Report handlers complete  
54.146.147.44 Chef Client finished, 2/4 resources updated in 01 minutes 02 seconds
```

PREVIOUS

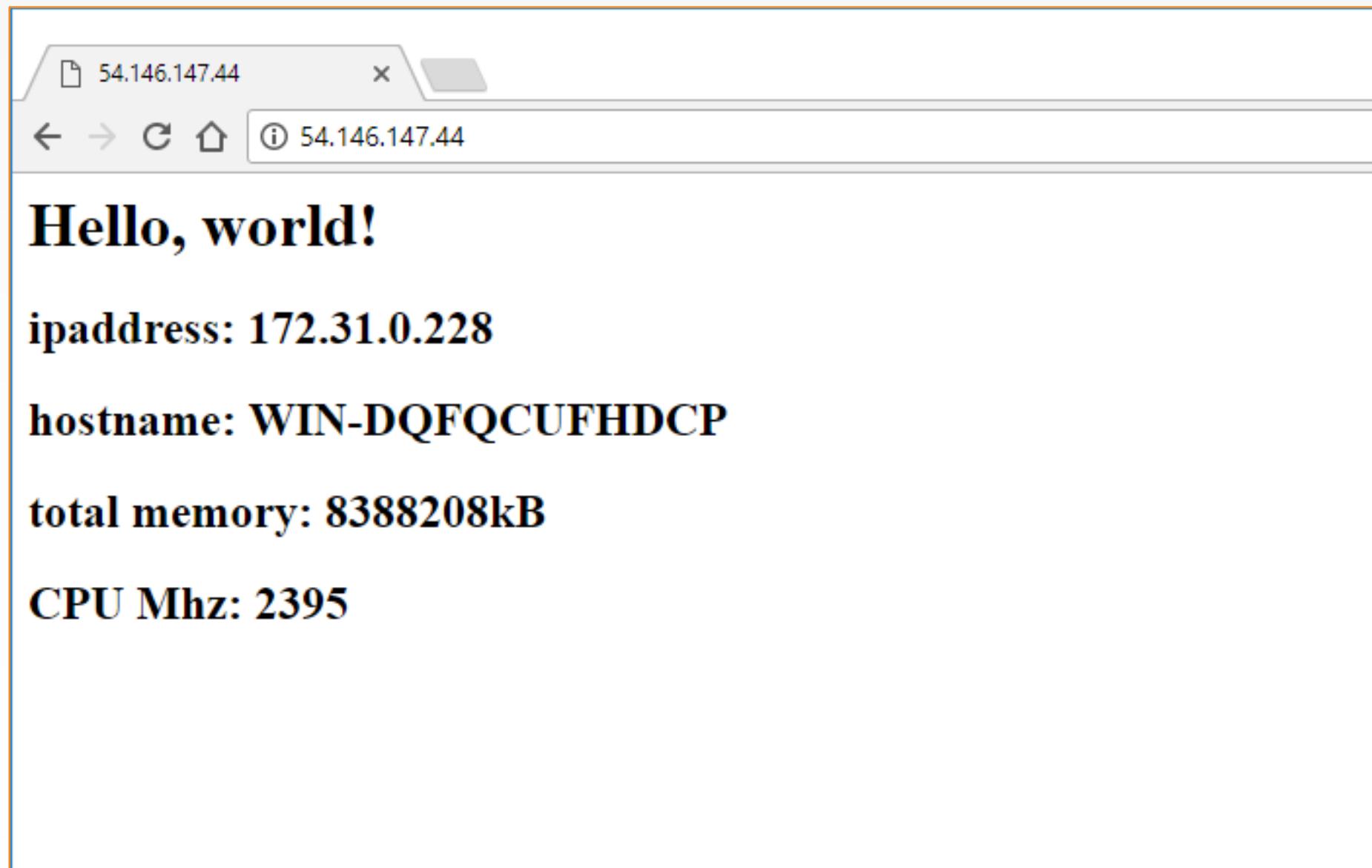
Lab: Verify the New Node



```
> knife node show node2
```

```
Node Name:      node2
Environment:    _default
FQDN:          WIN-DQFQCUFHDCP.ec2.internal
IP:            54.146.147.44
Run List:       recipe[myiis]
Roles:
Recipes:        myiis, myiis::default, myiis::server
Platform:       windows 6.3.9600
Tags:
```

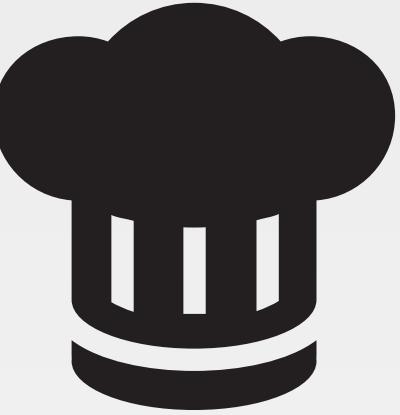
Verify that the New Node Serves the Page





Lab: Another Web Node

- ✓ Bootstrap a new node, setting the run list of the node to include the web server cookbook
- ✓ Verify that the node's web server is functional



Hosted Chef

More easily manage multiple nodes

Objective:

- ✓ Create a Hosted Chef Account
- ✓ Upload your cookbooks to the Hosted Chef Server
- ✓ Add your old workstation 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™