

# Community Cookbooks

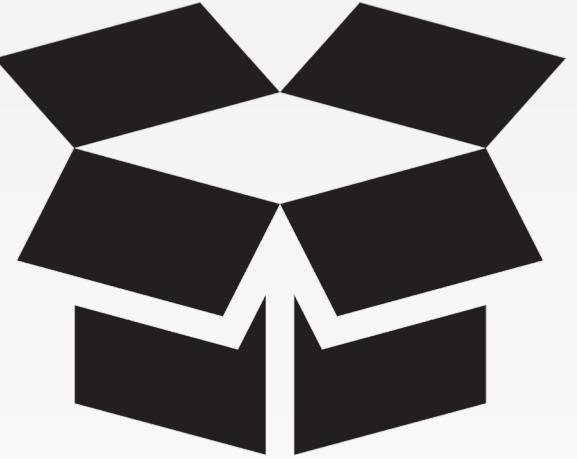
Introducing the chef-client cookbook & wrapper cookbooks

# Lesson Objectives

After completing this module, you should be able to:

- Find and preview cookbooks on the Chef Supermarket
- Override community cookbook defaults using wrapper cookbooks
- Upload community cookbooks to Chef Server
- Run chef-client as a service/task

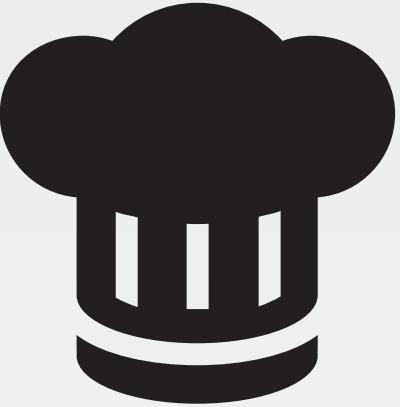
# CONCEPT



## Running chef-client

Manually executing chef-client is fine but how can we set up a node to converge automatically.

- How can I run chef-client as a service or Windows task?
- Where can I configure logging?

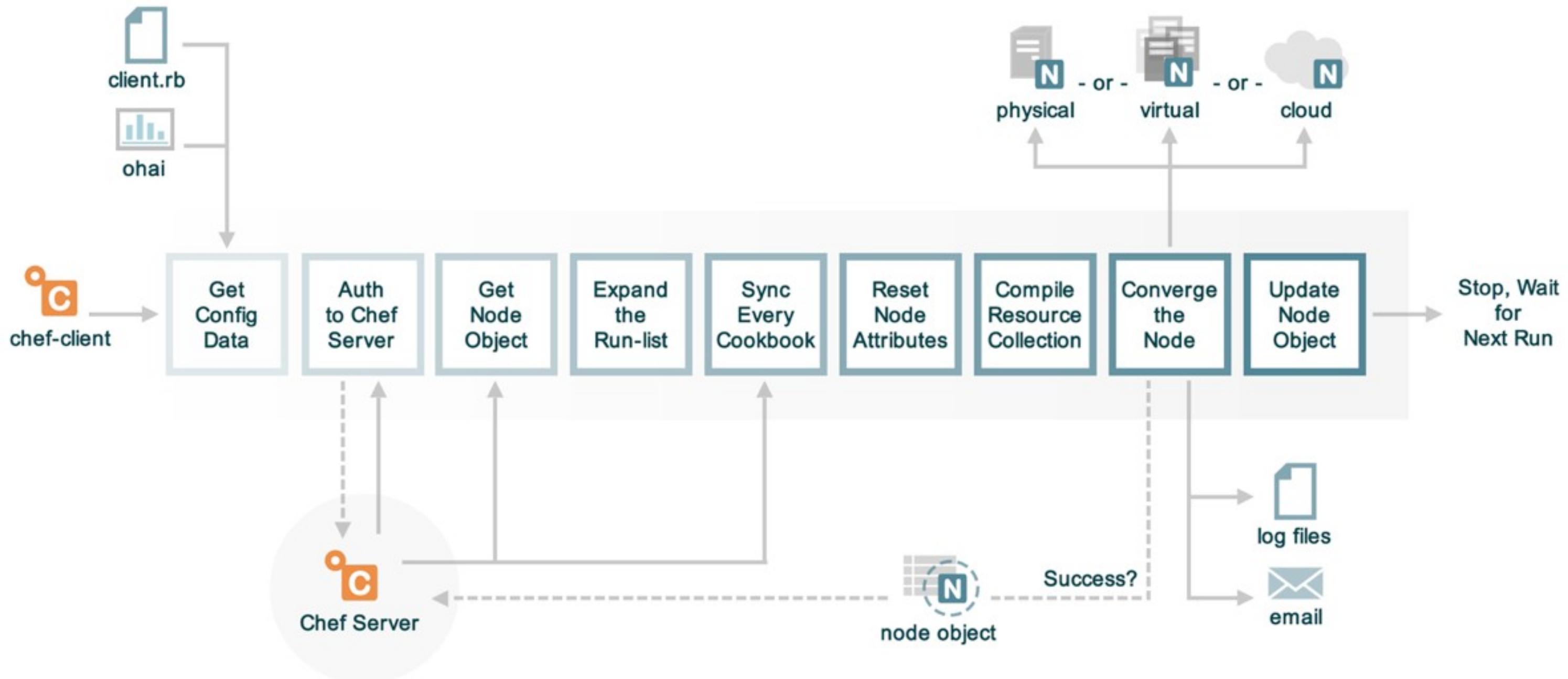


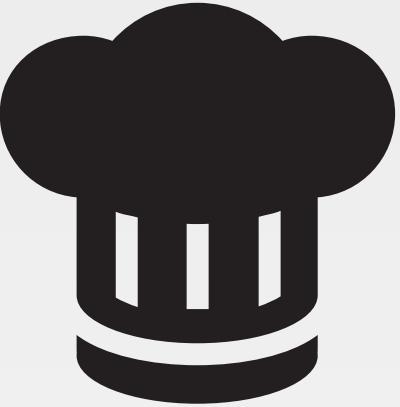
# GL: View How chef-client is Configured

## Objective:

- Review the overview of the chef-client run
- Review the chef-client configuration file

# The Chef Client Run





# GL: View How chef-client is Configured

## Objective:

- ✓ Review the overview of the chef-client run
- ❑ Review the chef-client configuration file

# GL: View chef-client config Directory



```
> knife winrm 'role:web' ' dir C:\chef\client.rb' -a  
cloud.public_hostname --winrm-user administrator --winrm-password  
'Training1234'
```

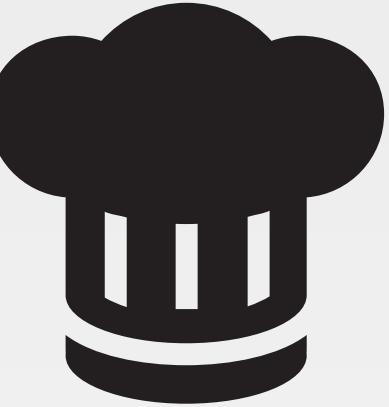
```
54.146.147.44 Volume in drive C has no label.  
54.146.147.44 Volume Serial Number is D4E5-7A7A  
54.146.147.44  
54.146.147.44 Directory of C:\chef  
54.146.147.44  
54.146.147.44 09/20/2018 06:05 PM 332 client.rb  
54.146.147.44 1 File(s) 332 bytes  
54.146.147.44 0 Dir(s) 11,205,259,264 bytes free  
174.129.71.79 Volume in drive C has no label.  
174.129.71.79 Volume Serial Number is D4E5-7A7A  
174.129.71.79  
174.129.71.79 Directory of C:\chef  
174.129.71.79
```

# GL: View chef-client Configuration



```
> knife winrm 'role:web' 'type C:\chef\client.rb' -a  
cloud.public_hostname --winrm-user administrator --winrm-password  
'Training1234'
```

```
54.146.147.44 chef_server_url  "https://api.chef.io/organizations/janesmith11org"  
54.146.147.44 validation_  
54.146.147.44 client_name "chef-validator"  
54.146.147.44 file_cache_path    "c:/chef/cache"  
54.146.147.44 file_backup_path   "c:/chef/backup"  
54.146.147.44 cache_options      ({:path => "c:/chef/cache/checksums", :skip_expires => true})  
54.146.147.44 node_name "node2"  
54.146.147.44 log_level        :info  
54.146.147.44 log_location     STDOUT  
174.129.71.79 chef_server_url  "https://api.chef.io/organizations/janesmith11org"  
174.129.71.79 validation_  
174.129.71.79 client_name "chef-validator"  
174.129.71.79 file_cache_path    "c:/chef/cache"
```



# GL: View How chef-client is Configured

## Objective:

- ✓ Review the overview of the chef-client run
- ✓ Review the chef-client configuration file

# CONCEPT



## Managing chef-client

chef-client is a complicated application. Reviewing the conceptual flow of the application and the location of the configuration file helps make it easier to understand. However, there is still much more to learn if you wanted to manage it with a recipe defined in a cookbook.



# Community Cookbooks

Someone already wrote that cookbook?

Available through the community site called  
Supermarket

<https://supermarket.chef.io>

# Demo: Community Cookbooks

- Community cookbooks are managed by individuals.
- Chef does not verify or approve cookbooks in the Supermarket.
- Cookbooks may not work for various reasons.
- Still, there are real benefits to community cookbooks.

The screenshot shows the homepage of the Chef Supermarket at <https://supermarket.chef.io>. The page features a navigation bar with links for COOKBOOKS, CONTRIBUTORS, and TOOLS & PLUGINS, along with options to CREATE ACCOUNT and SIGN IN. A search bar with a dropdown menu for 'Cookbooks' and a 'Search' button is prominently displayed. A blue banner at the top right announces 'New Supermarket Announcements!'. Below the banner, a welcome message reads: 'Welcome to Supermarket. Find, explore and view Chef cookbooks for all of your ops needs.' Two buttons for 'Sign Up For a Chef Account' and 'Sign In With Your Chef Account' are visible. The page is divided into three main sections: 'Explore' (with links to 'Browse Cookbooks' and 'Read the Chef Blog'), 'Learn' (with links to 'Learn Chef', 'Read the Chef Docs', 'Community Guidelines', and 'How to Contribute'), and 'Share' (with links to 'Share your cookbooks', 'Chat on IRC at #chef on irc.freenode.net', 'Join the Supermarket Mailing List', 'Contribute to Supermarket', and 'Share Your Ideas for Improving Chef'). At the bottom, 'Community Stats' are displayed: 2,433 Cookbooks and 64,385 Chefs.

# DISCUSSION

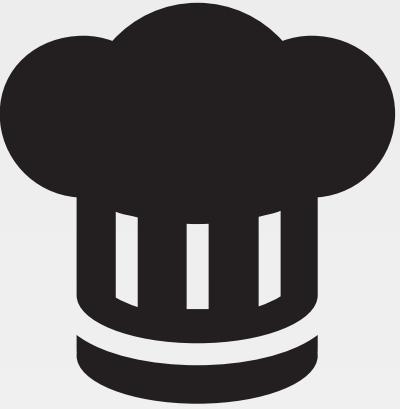


## Introducing the chef-client Cookbook

The chef-client cookbook allows you to manage and configure chef-client as a service on Linux-based nodes, or as a task on Windows nodes, configure logging, caching, etc.

Bootstrapping installs the chef-client executable.

The chef-client cookbook is used to configure chef-client.



# Introducing chef-client Cookbook

*We will use the chef-client community cookbook to configure chef-client on each of our nodes to run periodically*

## Objective:

- Create a cookbook that wraps the chef-client cookbook
- Upload chef-client cookbook to Chef Server
- Configure each nodes to run chef-client as a service
- Converge each node and verify the service is running

# DISCUSSION



## Wrapper Cookbooks

Don't use forked community cookbooks in production, or you will miss out on upstream changes, and will have to rebase

Instead use **wrapper cookbooks** to wrap upstream cookbooks and change their behavior without forking

# Supermarket Cookbooks

A wrapper cookbook is a new cookbook that encapsulates the functionality of the original cookbook.

It defines new default values for the recipes.

Wrapper Cookbook

chef-client  
cookbook  
(Attributes)

(New additional attributes)

<https://docs.chef.io/supermarket.html#wrapper-cookbooks>

<https://www.chef.io/blog/2013/12/03/doing-wrapper-cookbooks-right/>

# GL: Create my\_chef\_client Wrapper Cookbook



```
> cd chef-repo  
> chef generate cookbook cookbooks\my_chef_client
```

Generating cookbook my\_chef\_client

- Ensuring correct cookbook file content
- Committing cookbook files to git
- Ensuring delivery configuration
- Ensuring correct delivery build cookbook content
- Adding delivery configuration to feature branch
- Adding build cookbook to feature branch
- Merging delivery content feature branch to master

Your cookbook is ready. Type `cd cookbooks\my\_chef\_client` to enter it.

...

# GL: Edit my\_chef\_client Default Recipe

~\chef-repo\cookbooks\my\_chef\_client\recipes\default.rb

```
#  
# Cookbook Name:: my_chef_client  
# Recipe:: default  
  
#  
# Copyright (c) 2018 The Authors, All Rights Reserved.
```

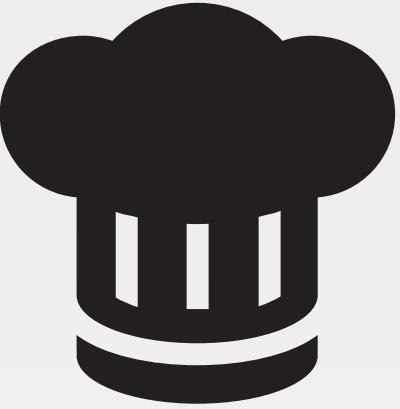
```
include_recipe 'chef-client::default'
```

This recipe just calls the recipe **chef-client::default**

# GL: Update my\_chef\_client metadata.rb

```
~\chef-repo\cookbooks\my_chef_client\metadata.rb
```

```
name          'my_chef_client'  
maintainer    'The Authors'  
maintainer_email 'you@example.com'  
license        'all_rights'  
description    'Installs/Configures my_chef_client'  
long_description 'Installs/Configures my_chef_client'  
version        '0.1.0'  
  
depends      'chef-client'
```



# Introducing chef-client Cookbook

*We will use the chef-client community cookbook to configure chef-client on each of our nodes to run periodically*

## Objective:

- ✓ Create a cookbook that wraps the chef-client cookbook
- ❑ Upload chef-client cookbook to Chef Server
- ❑ Configure each nodes to run chef-client as a service
- ❑ Converge each node and verify the service is running

# GL: Install the Dependencies



```
> cd cookbooks\my_chef_client  
> berks install
```

```
Resolving cookbook dependencies...  
Fetching 'my_chef_client' from source at .  
Fetching cookbook index from https://supermarket.chef.io...  
Using chef-client (8.1.8)  
Using logrotate (2.2.0)  
Using my_chef_client (0.1.0) from source at .  
Using ohai (5.2.0)  
Installing windows (3.1.3)  
Using compat_resource (12.19.0)  
Using cron (4.1.3)
```

# GL: View Berksfile.lock



```
> gc Berksfile.lock
```

## DEPENDENCIES

```
my_chef_client
  path: .
  metadata: true
```

## GRAPH

```
chef-client (8.1.8)
  cron (>= 2.0.0)
  logrotate (>= 1.9.0)
  windows (>= 2.0.0)
  compat_resource (12.19.0)
  cron (4.1.3)
  compat_resource (>= 0.0.0) ...
```

# GL: View the Berkshelf in Your Home Directory



```
> dir ~\.berkshelf\cookbooks
```

```
drwxr-xr-x 12 YOU staff 408 2 Dec 15:46 chef_handler-1.1.6
drwxr-xr-x 12 YOU staff 408 2 Dec 15:46 cron-1.6.1
drwxr-xr-x 21 YOU staff 714 2 Dec 15:46 logrotate-1.8.0
drwxr-xr-x 15 YOU staff 510 2 Dec 15:46 windows-1.36.6
drwxr-xr-x 9 YOU staff 306 28 Nov 15:22 build-essential-2.1.3
drwxr-xr-x 25 YOU staff 850 6 Nov 16:27 build-essential-2.1.2
drwxr-xr-x 11 YOU staff 374 6 Nov 16:27 cpu-0.2.0
```

Note: Windows users can also use `ls -force ~\.berkshelf\cookbooks`

LOCAL

# GL: Upload Cookbooks to Chef Server



```
> berks upload
```

```
Uploaded chef-client (8.1.8) to:  
'https://api.chef.io:443/organizations/awesomestudent'  
Uploaded compat_resource (12.19.0) to:  
'https://api.chef.io:443/organizations/awesomestudent'
```

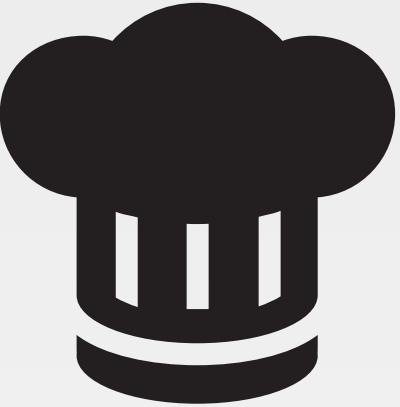
FOCAL

# GL: View Cookbooks on Chef Server



```
> knife cookbook list
```

chef-client	8.1.8
compat_resource	12.19.0
cron	4.1.3
logrotate	2.2.0
my_chef_client	0.1.0
myiis	0.2.1
ohai	5.2.0
windows	3.1.3
workstation	0.1.0



# Introducing chef-client Cookbook

*We will use the chef-client community cookbook to configure chef-client on each of our nodes to run periodically*

## Objective:

- ✓ Create a cookbook that wraps the chef-client cookbook
- ✓ Upload chef-client cookbook to Chef Server
- ❑ Configure each nodes to run chef-client as a service
- ❑ Converge each node and verify the service is running

# DISCUSSION



## Lets Examine the chef-client Cookbook

We're going to use one recipe on our node from the chef-client cookbook.

**chef-client::service**  
**(via chef-client::default)**

# GL: View the chef-client::default Recipe

~\berkshelf\cookbooks\chef-client-<version>\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.  
  
#  
  
if platform?('windows')  
  include_recipe 'chef-client::task'  
else  
  include_recipe 'chef-client::service'  
end
```

# GL: View the chef-client::service Recipe

~\berkshelf\cookbooks\chef-client-<version>\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',
  'winst'
]
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
```

# DISCUSSION



## chef-client as a Service

We will add the chef-client default recipe to the roles for each node.

# GL: Create the new ‘base’ role

~\chef-repo\roles\base.rb

```
name 'base'  
description 'Base Role'  
run_list 'recipe[my_chef_client]'
```

# GL: Add the base Role to web Role

~\chef-repo\roles\web.rb

```
name 'web'  
description 'Web Server'  
run_list 'role[base]', 'recipe[myiis]'
```

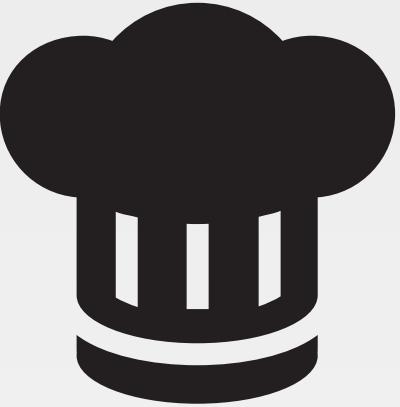
# GL: Upload the roles File



```
> cd ~\chef-repo  
> knife role from file base.rb web.rb
```

Updated Role base

Updated Role web



# Introducing chef-client Cookbook

*We will use the chef-client community cookbook to configure chef-client on each of our nodes to run periodically*

## Objective:

- ✓ Create a cookbook that wraps the chef-client cookbook
- ✓ Upload chef-client cookbook to Chef Server
- ✓ Configure each nodes to run chef-client as a service
- Converge each node and verify the service is running

# GL: Converge All Nodes



```
> knife winrm 'role:web' 'chef-client' -a cloud.public_hostname --winrm-user administrator --winrm-password 'Training1234'
```

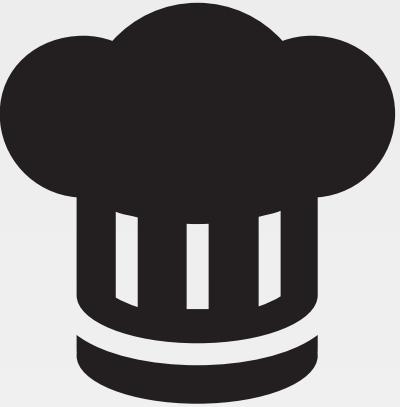
```
54.146.147.44 [2018-09-20T21:21:05+00:00] INFO: *** Chef 13.4.24 ***
54.146.147.44 [2018-09-20T21:21:05+00:00] INFO: Platform: x64-mingw32
...
54.146.147.44 [2018-09-20T21:21:09+00:00] INFO: Starting Chef Run for node2
54.146.147.44 [2018-09-20T21:21:09+00:00] INFO: Running start handlers
54.146.147.44 [2018-09-20T21:21:09+00:00] INFO: Start handlers complete
...
174.129.71.79 [2018-09-20T21:21:20+00:00] INFO: Run List is [role[web]]
174.129.71.79 [2018-09-20T21:21:20+00:00] INFO: Run List expands to [my_chef_client,
myiis]
174.129.71.79 [2018-09-20T21:21:20+00:00] INFO: Starting Chef Run for node1
```

# GL: Verify chef-client is Running



```
> knife winrm 'role:web' 'schtasks | findstr chef-client' -a  
cloud.public_hostname --winrm-user administrator --winrm-password  
'Training1234'
```

54.146.147.44 chef-client	9/20/2018 9:51:00 PM	Ready
174.129.71.79 chef-client	9/20/2018 9:51:00 PM	Ready



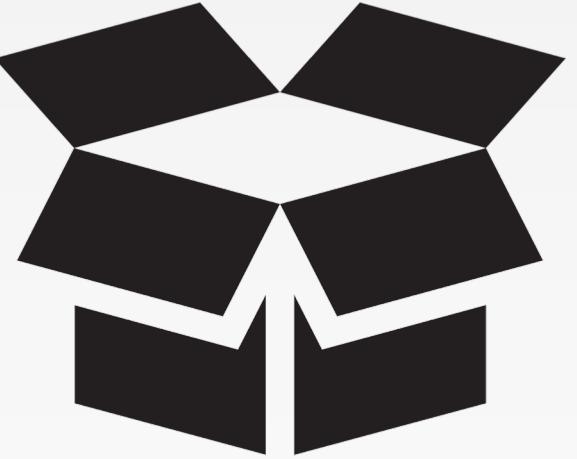
# Introducing chef-client Cookbook

*We will use the chef-client community cookbook to configure chef-client on each of our nodes to run periodically*

## Objective:

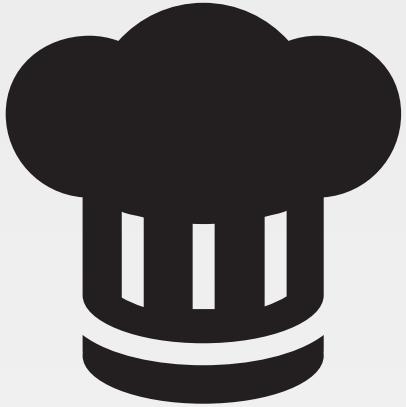
- ✓ Create a cookbook that wraps the chef-client cookbook
- ✓ Upload chef-client cookbook to Chef Server
- ✓ Configure each nodes to run chef-client as a service
- ✓ Converge each node and verify the service is running

# CONCEPT



## chef-client has Default Settings

The chef-client cookbook provides default attributes for a lot of application settings. We can provide new values to override the defaults.



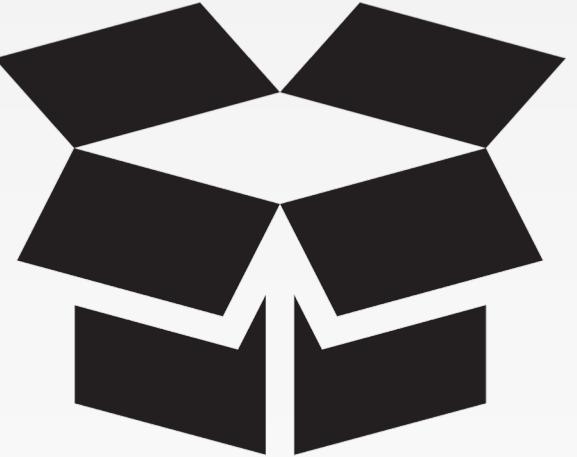
# Converge Faster!

*Converging every 30 minutes is too slow. Can we make it every 5 minutes?*

## Objective:

- Find the attribute to override and the location to override it
- Override the attribute
- Upload the cookbook and converge all nodes with the web role

# CONCEPT



## Attribute Files

The Node Object contains many automatic attributes generate by Ohai.

You can also define attributes within a cookbook. These are like variables or parameters for your cookbook and allow recipes to be data driven.

# GL: Finding the chef-client run Interval Default

~\.berkshelf\cookbooks\chef-client<VER>\attributes\default.rb

```
...
default['chef_client']['log_file']      = 'client.log'
default['chef_client']['interval']      = '1800'
default['chef_client']['splay']          = '300'
default['chef_client']['conf_dir']       = '/etc/chef'
default['chef_client']['bin']            = '/usr/bin/chef-client'
...
```

1800 seconds (30 minutes) is the time to wait between converges.

# CONCEPT

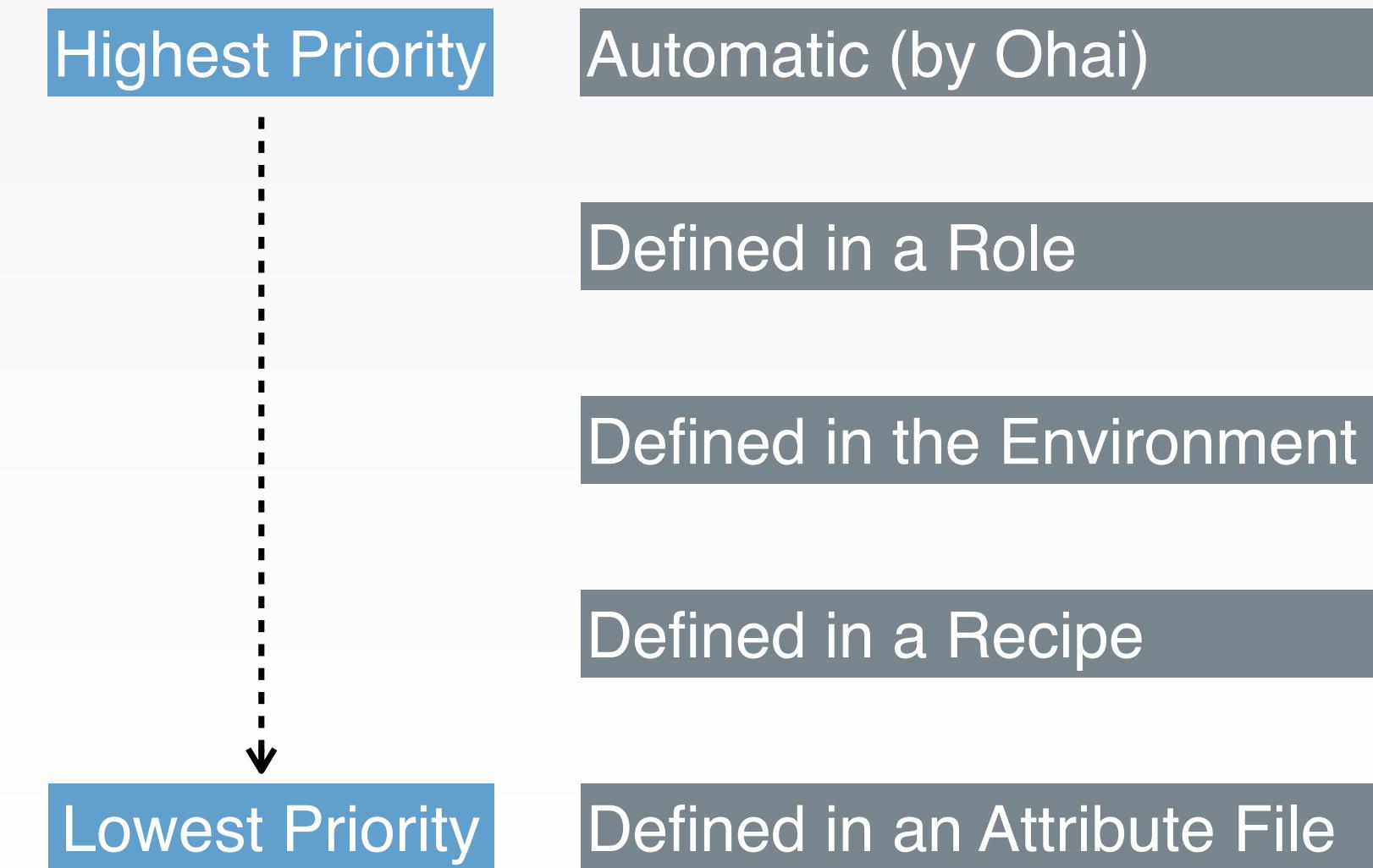


## Defining Attributes

precedence      attribute name      attribute value

```
default[ "attributename" ] = "value"
```

# Default Attribute Precedence

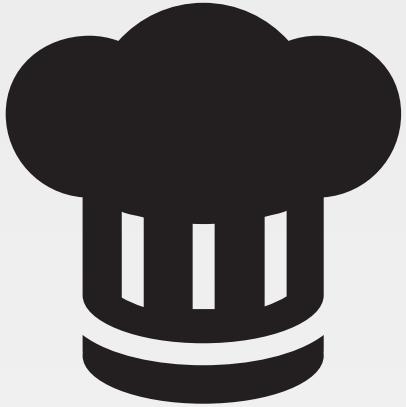


Please note this is a simplified diagram, and the precedence shown can be overridden.



# Best Practice: Do Not Fork Community Cookbooks

- Unable to grab updated versions of the cookbook without merging
- Breaking of default expectations that people come to expect
- A small change means a new version; making it even harder to reintegrate when versions collide.



# Converge Faster!

*Converging every 30 minutes is too slow. Can we make it every 5 minutes?*

## Objective:

- ✓ Find the attribute to override and the location to override it
- ❑ Override the attribute
- ❑ Upload the cookbook and converge all nodes with the web role

# GL: Edit my\_chef\_client Default Recipe

~\chef-repo\cookbooks\my\_chef\_client\recipes\default.rb

```
#  
# Cookbook Name:: my_chef_client  
# Recipe:: default  
  
#  
# Copyright (c) 2018 The Authors, All Rights Reserved.  
  
node.default['chef_client']['interval'] = '300'  
  
include_recipe 'chef-client::default'
```

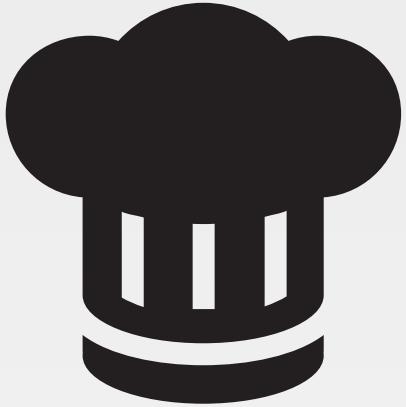
Note 'node.default' notation when setting an attribute value from within a recipe

# GL: Update my\_chef\_client metadata.rb

~\chef-repo\cookbooks\my\_chef\_client\metadata.rb

```
name          'my_chef_client'  
maintainer    'The Authors'  
maintainer_email 'you@example.com'  
license        'all_rights'  
description    'Installs/Configures my_chef_client'  
long_description 'Installs/Configures my_chef_client'  
version        '0.1.1'
```

```
Depends 'chef-client'
```



# Converge Faster!

*Converging every 30 minutes is too slow. Can we make it every 5 minutes?*

## Objective:

- ✓ Find the attribute to override and the location to override it
- ✓ Override the attribute
- Upload the cookbook and converge all nodes with the web role

# GL: Run berks install



```
> cd cookbooks\my_chef_client  
> berks install
```

```
...  
Fetching 'my_chef_client' from source at .  
Fetching cookbook index from https://supermarket.chef.io...  
Using chef-client (8.1.8)  
Using logrotate (2.2.0)  
Using my_chef_client (0.1.1) from source at .  
Using ohai (5.2.0)  
Using windows (3.1.3)  
Using compat_resource (12.19.0)
```

LOCAL

# GL: Upload the Cookbook to the Chef Server



```
> berks upload
```

```
Skipping chef-client (8.1.8) (frozen)
Skipping compat_resource (12.19.0) (frozen)
Skipping cron (4.1.3) (frozen)
Skipping logrotate (2.2.0) (frozen)
Uploaded my_chef_client (0.1.1) to: 'https://api.chef.io:443/organizations/awesomestudent'
Skipping ohai (5.2.0) (frozen)
Skipping windows (3.1.3) (frozen)
```

LOCAL

# GL: Converge All Nodes



```
> knife winrm 'role:web' 'chef-client' -a cloud.public_hostname --  
winrm-user administrator --winrm-password 'Training1234'
```

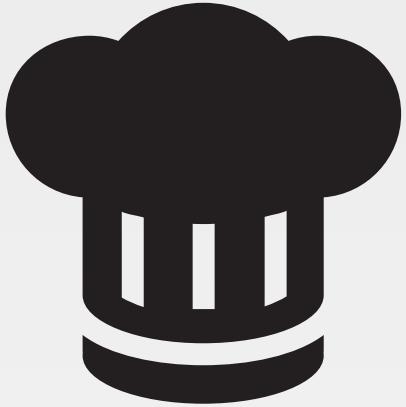
```
34.196.63.231 [2018-01-24T15:17:50+00:00] INFO: *** Chef 12.13.37 ***  
34.196.63.231 [2018-01-24T15:17:50+00:00] INFO: Platform: i386-mingw32  
34.196.63.231 [2018-01-24T15:17:50+00:00] INFO: Chef-client pid: 2380  
34.196.63.231 [2018-01-24T15:18:28+00:00] INFO: Run List is [role[web]]  
34.196.63.231 [2018-01-24T15:18:28+00:00] INFO: Run List expands to [my_chef_client,  
myis]  
34.196.63.231 [2018-01-24T15:18:28+00:00] INFO: Starting Chef Run for node1  
34.196.63.231 [2018-01-24T15:18:28+00:00] INFO: Running start handlers  
34.196.63.231 [2018-01-24T15:18:28+00:00] INFO: Start handlers complete.  
...
```

# GL: Verify chef-client is Running



```
> knife winrm 'role:web' 'schtasks | findstr chef-client' -a  
cloud.public_hostname --winrm-user administrator --winrm-password  
'Training1234'
```

54.146.147.44 chef-client	9/20/2018 9:51:00 PM	Ready
174.129.71.79 chef-client	9/20/2018 9:51:00 PM	Ready



# Converge Faster!

*Converging every 30 minutes is too slow. Can we make it every 5 minutes?*

## Objective:

- ✓ Find the attribute to override and the location to override it
- ✓ Override the attribute
- ✓ Upload the cookbook and converge all nodes with the web role

# DISCUSSION



## Q&A

What questions can we help you answer?

- Chef Supermarket
- Wrapper Cookbooks
- chef-client
- node attributes



**CHEF**<sup>TM</sup>