

Desired State and Data – Using Templates

Extracting the Content for Clarity

Objectives

After completing this module, you should be able to

- Explain when to use a template resource
- Create a template file
- Use ERB tags to display node data in a template
- Define a template resource



Cleaner Recipes

In the last section we updated our two cookbooks to display information about our node.

We added this content to the file resource in their respective recipes.

Apache Recipe

 `~/cookbooks/apache/recipes/server.rb`

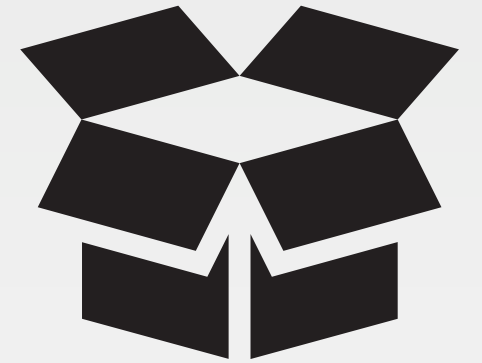
```
package 'httpd'

file '/var/www/html/index.html' do
  content "<h1>Hello, world!</h1>
<h2>ipaddress: #{node['ipaddress']}</h2>
<h2>hostname: #{node['hostname']}</h2>
"
end

service 'httpd' do
  action [ :enable, :start ]
end
```

CONCEPT

Backslash



We can use double-quotes as long as we prefix them with a backslash.

```
"<h1 style=\"color: red;\">Hello, World!</h1>"
```

The diagram shows the HTML code `<h1 style="color: red;">Hello, World!</h1>` with the opening and closing double quotes highlighted in red. Blue arrows point from the bottom of the slide to each red quote, indicating that they are escaped with backslashes in the code shown above.

CONCEPT

Backslash



Backslashes are reserved characters. So to use them you need to use a backslash.

"Root Path: \\"

Unexpected Formatting

```
file '/etc/motd' do
  content 'This is the first line of the file.
          This is the second line. If I try and line it up...'

  Don't even think about pasting ASCII ART in here!
'
end
```

```
This is the first line of the file.
          This is the second line. If I try and line
it up...
```

```
Don't even think about pasting ASCII ART in here!
```

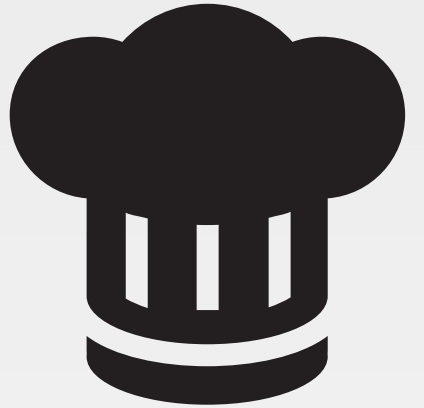
CONCEPT

What We Need



We need the ability to store the data in another file, which is in the native format of the file we are writing out but that still allows us to insert ruby code...

...specifically, the node attributes we have defined.



GL: Cleaner Recipes

Adding the node attributes to our recipes did make it harder to read.

Objective:

- ☐ Decide which resource will help us address this issue



GL: Let's Check the Docs...

Use the file resource to manage files directly on a node.

Use the **cookbook_file** resource to copy a file from a cookbook's **/files** directory. Use the **template** resource to create a file based on a template in a cookbook's **/templates** directory. And use the **remote_file** resource to transfer a file to a node from a remote location.

https://docs.chef.io/resource_file.html

DOCS

cookbook_file



Use the **cookbook_file** resource to transfer files from a sub-directory of COOKBOOK_NAME/files/ to a specified path located on a host that is running the chef-client.

https://docs.chef.io/resource_cookbook_file.html

cookbook_file

```
$ chef generate file cookbooks/workstation motd.file
$ tree cookbooks/workstation/files/default
files/default
└─ motd.file

0 directories, 1 file
```

```
cookbook_file '/etc/motd2' do
  source 'motd.file'
end
```

DOCS

remote_file



Use the **remote_file** resource to transfer a file from a remote location using file specificity. This resource is similar to the file resource.

https://docs.chef.io/resource_remote_file.html

remote_file

```
remote_file '/etc/motd3' do  
  source 'https://docs.chef.io/resource_remote_file.html'  
end
```

DOCS

Template



A cookbook template is an Embedded Ruby (ERB) template that is used to generate files ... Templates may contain Ruby expressions and statements and are a great way to...

Use the template resource to add cookbook templates to recipes; place the corresponding Embedded Ruby (ERB) template in a cookbook's /templates directory.

https://docs.chef.io/resource_template.html

DOCS

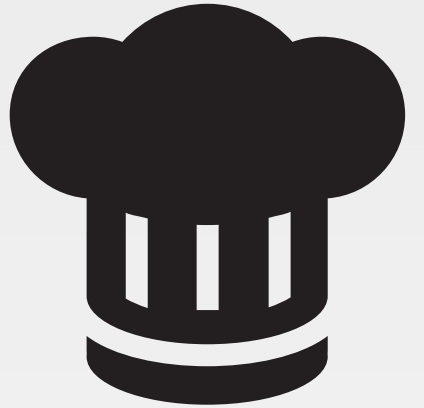
Template



To use a template, two things must happen:

1. A template resource must be added to a recipe
2. An Embedded Ruby (ERB) template must be added to a cookbook

https://docs.chef.io/resource_template.html#using-templates



GL: Cleaner Apache Recipe

Adding the node attributes to the index page did make it harder to read the recipe.

Objective:

- ☐ Create a template with chef generate
- ☐ Define the contents of the ERB template
- ☐ Change the file resource to the template resource in the 'apache' cookbook

GL: What Can chef generate template Do?



```
$ chef generate template --help
```

```
Usage: chef generate template [path/to/cookbook] NAME [options]
```

| | |
|--|--|
| <pre>-C, --copyright COPYRIGHT</pre> | Name of the copyright holder - defaults to 'The Authors' |
| <pre>-m, --email EMAIL</pre> | Email address of the author - defaults to ... |
| <pre>-a, --generator-arg KEY=VALUE</pre> | Use to set arbitrary attribute KEY to VALUE in the |
| <pre>-I, --license LICENSE</pre> | all_rights, apache2, mit, gplv2, gplv3 - defaults to |
| <pre>-s, --source SOURCE_FILE</pre> | Copy content from SOURCE_FILE |
| <pre>-g GENERATOR_COOKBOOK_PATH,</pre> | Use GENERATOR_COOKBOOK_PATH for the |
| <pre>code_generator</pre> | |
| <pre>--generator-cookbook</pre> | |

GL: Use chef to Generate a Template



```
$ cd ~
```

```
$ chef generate template cookbooks/apache index.html
```

```
Recipe: code_generator::template
```

```
  * directory[cookbooks/apache/templates/default] action create
```

```
    - create new directory cookbooks/apache/templates/default
```

```
  * template[cookbooks/apache/templates/index.html.erb] action create
```

```
    - create new file cookbooks/apache/templates/index.html.erb
```

```
    - update content in file cookbooks/apache/templates/index.html.erb from  
none to e3b0c4
```

```
      (diff output suppressed by config)
```

11 00000000

GL: Lets Look at the Template File



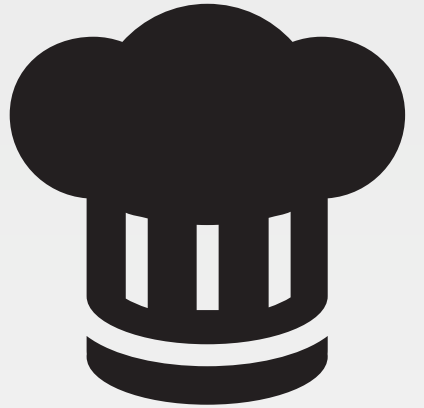
```
$ tree cookbooks/apache/templates
```

```
cookbooks/apache/templates/
```

```
├── default
```

```
└── index.html.erb
```

```
1 directory, 1 file
```



Cleaner Recipes

Adding the node attributes to the default page did make it harder to read the recipe.

Objective:

- ✓ Create a template with chef generate
- ❑ Define the contents of the ERB template
- ❑ Change the file resource to the template resource in the 'apache' cookbook

CONCEPT

ERB



An Embedded Ruby (ERB) template allows Ruby code to be embedded inside a text file within specially formatted tags.

Ruby code can be embedded using expressions and statements.

<https://docs.chef.io/templates.html#variables>

Text Within an ERB Template

```
<% if (50 + 50) == 100 %>
```

```
<%= string_variable %>
```

```
50 + 50 = <%= 50 + 50 %>
```

```
<% else %>
```

```
At some point all of MATH I learned in school changed.
```

```
<% end %>
```

Executes the ruby code within the brackets and do not display the result.

GL: Move Our Source to the Template



```
~/cookbooks/apache/templates/index.html.erb
```

```
<h1>Hello, world!</h1>
```

```
<h2>ipaddress: #{node['ipaddress']}</h2>
```

```
<h2>hostname: #{node['hostname']}</h2>
```


GL: Replace String Interpolation with ERB

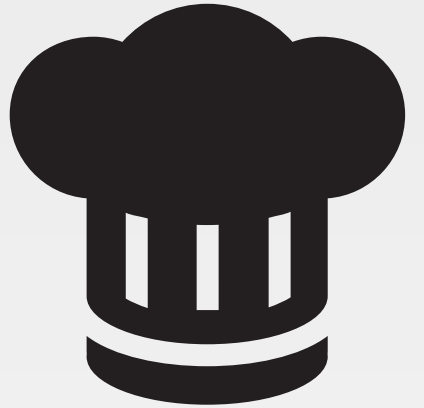


```
~/cookbooks/apache/templates/index.html.erb
```

```
<h1>Hello, world!</h1>
```

```
<h2>ipaddress: <%= node['ipaddress'] %></h2>
```

```
<h2>hostname: <%= node['hostname'] %></h2>
```



Cleaner Recipes

Adding the node attributes to the default page did make it harder to read the recipe.

Objective:

- ✓ Create a template with chef generate
- ✓ Define the contents of the ERB template
- ❑ Change the file resource to the template resource in the 'apache' cookbook

GL: Remove the Existing Content Attribute

 `~/cookbooks/apache/recipes/server.rb`

```
package 'httpd'

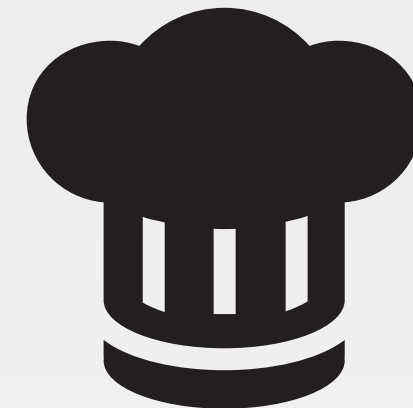
file '/var/www/html/index.html' do
  content "<h1>Hello, world!</h1>
<h2>ipaddress: #{node['ipaddress']}</h2>
<h2>hostname: #{node['hostname']}</h2>
"
end

service 'httpd' do
  action [ :enable, :start ]
end
```

GL: Update the Source Attribute

 `~/cookbooks/apache/recipes/server.rb`

```
package 'httpd'  
  
template '/var/www/html/index.html' do  
  source 'index.html.erb'  
end  
  
service 'httpd' do  
  action [ :enable, :start ]  
end
```



Cleaner Recipes

Adding the node attributes to the default page did make it harder to read the recipe.

Objective:

- ✓ Create a template with chef generate
- ✓ Define the contents of the ERB template
- ✓ Change the file resource to the template resource in the 'apache' cookbook

GL: Change Directories and Apply the Cookbook



```
$ cd ~
```

```
$ sudo chef-client --local-mode -r "recipe[apache]"
```

```
Starting Chef Client, version 12.13.37
```

```
resolving cookbooks for run list: ["apache"]
```

```
Synchronizing Cookbooks:
```

```
- apache (0.1.0)
```

```
Installing Cookbook Gems:
```

```
Compiling Cookbooks...
```

```
Converging 3 resources
```

```
Recipe: apache::server
```

```
* yum_package[httpd] action install (up to date)
```

```
* template[/var/www/html/index.html] action create
```

```
- update content in file /var/www/html/index.html from 158cae to 43191a
```

GL: Update the Cookbook's Patch Number

 `~/cookbooks/apache/metadata.rb`

```
name                'apache'  
maintainer          'The Authors'  
maintainer_email    'you@example.com'  
license             'all_rights'  
description         'Installs/Configures apache'  
long_description    'Installs/Configures apache'  
version             '0.2.1'
```

Return Home and Generate the Template



```
$ cd ~
```

```
$ chef generate template cookbooks/workstation motd
```

```
Recipe: code_generator::template
```

```
* directory[cookbooks/workstation/templates/default] action create
```

```
- create new directory cookbooks/workstation/templates/default
```

```
* template[cookbooks/workstation/templates/motd.erb] action create
```

```
- create new file cookbooks/workstation/templates/motd.erb
```

```
- update content in file cookbooks/workstation/templates/motd.erb from none to  
e3b0c4
```

```
(diff output suppressed by config)
```


Copy the Existing Source into the Template

 `~/cookbooks/workstation/templates/motd.erb`

Property of ...

`IPADDRESS: #{node['ipaddress']}`

`HOSTNAME : #{node['hostname']}`

`MEMORY : #{node['memory']['total']}`

`CPU : #{node['cpu']['0']['mhz']}`

Update the motd.erb to Use ERB

 `~/cookbooks/workstation/templates/motd.erb`

Property of ...

```
IPADDRESS: <%= node['ipaddress'] %>
```

```
HOSTNAME : <%= node['hostname'] %>
```

```
MEMORY   : <%= node['memory']['total'] %>
```

```
CPU       : <%= node['cpu']['0']['mhz'] %>
```

Remove the file Resource

 `~/cookbooks/workstation/recipes/setup.rb`

```
# ... PACKAGE RESOURCES ...

file '/etc/motd' do
  content "Property of ..."

  IPADDRESS: #{node['ipaddress']}
  HOSTNAME   : #{node['hostname']}
  MEMORY     : #{node['memory']['total']}
  CPU        : #{node['cpu']['0']['mhz']}
"

  mode '0644'
  owner 'root'
  group 'root'
end
```

Replace it with the Template Resource

 `~/cookbooks/workstation/recipes/setup.rb`

```
# ... PACKAGE RESOURCES ...
```

```
template '/etc/motd' do  
  source 'motd.erb'
```

```
  mode '0644'
```

```
  owner 'root'
```

```
  group 'root'
```

```
end
```

Change Directories and Apply the Cookbook



```
$ cd ~
```

```
$ sudo chef-client --local-mode -r "recipe[workstation]"
```

```
Starting Chef Client, version 12.13.37
```

```
resolving cookbooks for run list: ["workstation"]
```

```
Synchronizing Cookbooks:
```

```
- workstation (0.1.0)
```

```
Installing Cookbook Gems:
```

```
Compiling Cookbooks...
```

```
Converging 2 resources
```

```
Recipe: workstation::setup
```

```
* yum_package[tree] action install (up to date)
```

```
* template[/etc/motd] action create
```

```
- update content in file /etc/motd from e8c4cc to fb0ae3
```

Update the Cookbook's Patch Number

 `~/cookbooks/workstation/metadata.rb`

```
name                'workstation'  
maintainer          'The Authors'  
maintainer_email    'you@example.com'  
license             'all_rights'  
description         'Installs/Configures workstation'  
long_description    'Installs/Configures workstation'  
version             '0.2.1'
```

Lab: Use the Template

45 minutes



<https://github.com/shekhar2010us/chef-essentials-repo-15/blob/master/labs/chapter%207.md>

DISCUSSION



Discussion

What is the benefit of using a template over defining the content within a recipe? What are the drawbacks?

What do each of the ERB tags accomplish?

DISCUSSION



Q&A

What questions can we help you answer?

- Resources (file, cookbook_file, template, and remote_file)
- Templates
- ERB



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