

# Ryan Coleman

# Writing Better Modules

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forge



# Where I Came From

- Penn Stater
- Professional Traveler
- Blacksmith




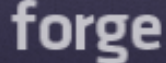
Puppet Forge

forge.puppetlabs.com

Reader

Puppet Labs : Open Source Projects Support Docs Bugs

 puppet labs

 forge

1,014 modules 514,688 downloads

Welcome to the **Puppet Forge**. Puppet Forge is a repository of modules written by our community for **Puppet Open Source** and **Puppet Enterprise** IT automation software.

## Featured Module: riverbed/stingray

Stingray Traffic Manager offers much more than just load balancing. It controls and optimizes end-user services by inspecting, transforming, prioritizing, and routing application traffic.

The Stingray Traffic Manager Puppet module will automatically download and install the Stingray Traffic Manager software onto a node.

[Read more on the Puppet Labs blog...](#)

### Recent Releases

1. [jlondon/phpmyadmin](#) v0.0.3
2. [nono/dkms](#) v0.0.2
3. [dalen/puppetdbquery](#) v1.0.0
4. [nono/zfs](#) v0.0.2
5. [nono/dkms](#) v0.0.1
6. [jgoettsch/talk](#) v0.1.1

### Frequent Contributors

1. [Puppet Labs](#)
2. [Dennis Hoppe](#)
3. [Steffen Zieger](#)
4. [Keith Burdis](#)
5. [Garrett Honeycutt](#)
6. [Gareth Rushgrove](#)
7. [Matthias Sprey](#)

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- [debian](#) (141 modules)
- [rhel](#) (112 modules)
- [CentOS](#) (104 modules)
- [monitoring](#) (64 modules)
- [networking](#) (59 modules)
- [security](#) (55 modules)
- [centos](#) (51 modules)



cprice404/inifile · Puppet Forge

forge.puppetlabs.com/cprice404/inifile

Reader

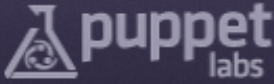
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879 modules

333,721 downloads

Since February 2012

## cprice404/inifile



Author: cprice404

Links: [Project URL](#)

Tags: [ini](#), [settings](#), [files](#)

Latest release: 0.9.0

Release date: Nov 2, 2012

Total downloads: 6,619

Other releases:

### How to Install

Run this code on your puppet node using the Puppet Module Tool:

```
puppet module install cprice404/inifile
```

The Puppet Module Tool is available in Puppet 2.7.14+ and Puppet Enterprise 2.5+ [Read about installing modules](#)

Or: [Download as a .tar.gz](#)

README

Changelog

Types

## INI-file module

This module provides resource types for use in managing INI-style configuration files. The

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### Find Modules

All modules

### Popular Tags

- ubuntu (161 modules)
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- rhel (94 modules)
- monitoring (62 modules)
- networking (55 modules)
- security (50 modules)
- applications (48 modules)

#PuppetCamp

 puppet labs

forge

 inifile.pp

Puppet



```
1  ini_setting { 'enable plugin sync':
2    ensure => present,
3    path   => '/etc/puppet/puppet.conf',
4    section => 'agent',
5    setting => 'pluginsync',
6    value  => 'true',
7  }
```



jhaals/warranty · Puppet Forge

forge.puppetlabs.com/jhaals/warranty

Reader

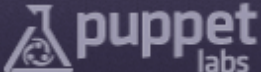
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 **forge**

884 modules 337,840 downloads  
Since February 2012

## jhaals/warranty



Author: [Johan Haals](#)

Links: [Project URL](#)

Tags: [lenovo](#), [dell](#), [warranty](#), [linux](#), [mac](#), [windows](#)

Latest release: **0.0.4**

Release date: Sep 20, 2012

Total downloads: 168

Other releases:

### How to Install

Run this code on your puppet node using the Puppet Module Tool:

```
puppet module install jhaals/warranty
```

The Puppet Module Tool is available in Puppet 2.7.14+ and Puppet Enterprise 2.5+ [Read about installing modules](#)

Or: [Download as a .tar.gz](#)

README

## Warranty

This module provides additional warranty facts.

### Supported Manufacturers

- Machintosh
- Dell
- Lenovo

Please contribute with for more manufacturers.

## Facts

```
warranty => true
warranty_expiration => April 4, 2013
machine_type => MacBook Air (11-inch, Mid 2011)
```

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### Find Modules

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- [report](#) (36 modules)
- [puppet](#) (36 modules)





## maestrodev/wget



Author: **MaestroDev**

Links: [Project URL](#) | [Report issues](#)

Tags: [download](#), [wget](#)

Latest release: **1.1.0**

Release date: Jan 24, 2013

Total downloads: 2,844

Other releases:

### How to Install

Run this code on your puppet node using the Puppet Module Tool:

```
puppet module install maestrodev/wget
```

The Puppet Module Tool is available in Puppet 2.7.14+ and Puppet Enterprise 2.5+ [Read about installing modules](#)

Or: [Download as a .tar.gz](#)

### README

A Puppet module to download files with wget, supporting authentication.

## Example

```
include wget

wget::fetch { "download":
  source      => "http://www.google.com/index.html",
  destination => "/tmp/index.html",
  timeout     => 0,
  verbose     => false,
}

wget::authfetch { "download":
  source      => "http://www.google.com/index.html",
  destination => "/tmp/index.html",
  user        => "user",
  password    => "password",
  timeout     => 0,
  verbose     => false,
}
```

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### Find Modules

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884 modules 337,841 downloads  
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## simondean/iis



Author: [Simon Dean](#)

Links: [Project URL](#) | [Report issues](#)

Tags: [appcmd](#), [dotnet](#), [aspnet](#), [iis](#), [windows](#), [webserver](#)

Latest release: **0.1.3**

Release date: Oct 6, 2012

Total downloads: 426

Other releases:

### How to Install

Run this code on your puppet node using the Puppet Module Tool:

```
puppet module install simondean/iis
```

The Puppet Module Tool is available in Puppet 2.7.14+ and Puppet Enterprise 2.5+ [Read about installing modules](#)

Or: [Download as a .tar.gz](#)

Types

Open issues (3)

## iis\_apppool

### Description

IIS App Pool

### Parameters

name

App pool name

### Properties

ensure

The basic property that the resource should be in. Valid values are `present`, `absent`.

queuelength

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### Find Modules

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### Popular Tags

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[debian](#) (135 modules)

[CentOS](#) (98 modules)

[rhel](#) (94 modules)

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[security](#) (51 modules)

[applications](#) (48 modules)

[report](#) (36 modules)

[puppet](#) (36 modules)





# augeasproviders

Alternative Augeas-based providers for  
Puppet

Latest version: [0.6.0](#)

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[Examples](#)

[Other docs](#)

This project is maintained by [Dominic Cleal](#)  
([Hercules Team](#))

Hosted on GitHub Pages — Theme by [orderedlist](#)

## sysctl provider

This is a custom type and provider supplied by *augeasproviders*.

### manage simple entry

```
sysctl { "net.ipv4.ip_forward":  
  ensure => present,  
  value  => "1",  
}
```

### manage entry with comment

```
sysctl { "net.ipv4.ip_forward":  
  ensure  => present,  
  value   => "1",  
  comment => "test",  
}
```

### delete entry

```
sysctl { "kernel.sysrq":  
  ensure => absent,  
}
```

### remove comment from entry

```
sysctl { "kernel.sysrq":  
  ensure  => present,  
  comment => "",  
}
```

## install

Install a module from the Forge or a release archive.

```
# puppet module install puppetlabs-apache --version 0.0.2
```

## list

List installed modules.

```
# puppet module list
```

## search

Search the Forge for a module.

```
# puppet module search apache
```

## uninstall

Uninstall a puppet module.

```
# puppet module uninstall puppetlabs-apache
```

## upgrade

Upgrade a puppet module.

```
# puppet module upgrade puppetlabs-apache --version 0.0.3
```




forge



puppetlabs/puppetdb · Puppet Forge


forge.puppetlabs.com/puppetlabs/puppetdb

Reader



882 modules 334,254 downloads  
Since February 2012

## puppetlabs/puppetdb



Author: [Puppet Labs](#)

Links: [Project URL](#) | [Report issues](#)

Tags: [storeconfig](#), [puppetdb](#), [puppet](#)

Latest release: **1.1.4**

Release date: Jan 17, 2013

Total downloads: 5,154

Other releases:

### How to Install

Run this code on your puppet node using the Puppet Module Tool:

```
puppet module install puppetlabs/puppetdb
```

The Puppet Module Tool is available in Puppet 2.7.14+ and Puppet Enterprise 2.5+ [Read about installing modules](#)

Or: [Download as a .tar.gz](#)

README

Changelog

Dependencies

Types

Open issues (8)

- [cprice404/inifile](#) ( $\geq 0.9.0$ )
- [puppetlabs/postgresql](#) (2.x)
- [puppetlabs/firewall](#) ( $\geq 0.0.4$ )

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### Find Modules

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#PuppetCamp



forge

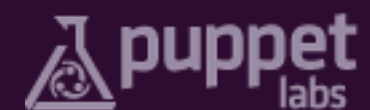
```
2. ryan@ryan: ~ (zsh)
➔ ~ puppet module install puppetlabs/puppetdb
Preparing to install into /tmp ...
Downloading from http://forge.puppetlabs.com ...
Installing -- do not interrupt ...
/tmp
└─ puppetlabs-puppetdb (v1.1.4)
  └─ cprice404-inifile (v0.9.0)
  └─ puppetlabs-firewall (v0.0.4)
  └─ puppetlabs-postgresql (v2.1.0)
    └─ puppetlabs-apt (v1.1.0)
    └─ puppetlabs-stdlib (v3.2.0)
    └─ ripienaar-concat (v0.2.0)
➔ ~
```



# Writing Better Modules



# Why Share?





- Contributors
- Commits
- Code Frequency
- Punchcard

May 4th 2013 - January 25th 2014  
Commits to master, excluding merge commits

Contribution Type: Commits



'B' is for Blacksmith



Keep it modular



```
ryan$ puppet module install puppetlabs/puppetdb
└─ puppetlabs-puppetdb (v1.6.0)
   └─ cprice404-inifile (v0.10.4)
   └─ puppetlabs-firewall (v0.4.0)
   └─ puppetlabs-postgresql (v2.4.1)
      └─ puppetlabs-apt (v1.2.0)
      └─ ripienaar-concat (v0.2.0)
   └─ puppetlabs-stdlib (v4.1.0)
```

Dependencies can be your friend





Style Guide — Documentation — Puppet Labs

docs.puppetlabs.com/guides/style\_guide.html

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# Docs: Style Guide

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## Style Guide

### Style Guide Metadata

Version 1.1.2

### 1. Terminology

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [RFC 2119](#).

### 2. Puppet Version

This style guide is largely specific to Puppet versions 2.6.x; some of its recommendations are based on some language features that became available in version 2.6.0 and later.

### 3. Why a Style Guide?

Puppet Labs develops modules for customers and the community, and these modules should represent the best known practice for module design and style. Since these modules are developed by many people across the organisation, a central reference was needed to ensure a consistent pattern, design, and style.

### Contents

1. Terminology
2. Puppet Version
3. Why a Style Guide?
4. General Philosophies
5. Module Metadata
  - 5.1. Style Versioning
6. Spacing, Indentation, & Whitespace
7. Comments
8. Quoting
9. Resources
  - 9.1. Resource Names
  - 9.2. Arrow Alignment
  - 9.3. Attribute Ordering
  - 9.4. Compression
  - 9.5. Symbolic Links
  - 9.6. File Modes
  - 9.7. Resource Defaults
10. Conditionals
  - 10.1. Keep Resource Declarations Simple
  - 10.2. Defaults for Case Statements and Selectors
11. Classes
  - 11.1. Separate Files

# PL Style Guide

#PuppetCamp



forge





## 9.1. Resource Names

All resource titles should be quoted. (Puppet supports unquoted resource titles if they do not contain spaces or hyphens, but you should avoid them in the interest of consistent look-and-feel.)

Good:

```
package { 'openssh': ensure => present }
```

Bad:

```
package { openssh: ensure => present }
```





## 9.2. Arrow Alignment

All of the fat comma arrows (`=>`) in a resource's attribute/value list should be aligned. The arrows should be placed one space ahead of the longest attribute name.

Good:

```
exec { 'blah':  
  path => '/usr/bin',  
  cwd  => '/tmp',  
}  
  
exec { 'test':  
  subscribe => File['/etc/test'],  
  refreshonly => true,  
}
```

Bad:

```
exec { 'blah':  
  path  => '/usr/bin',  
  cwd   => '/tmp',  
}  
  
exec { 'test':  
  subscribe => File['/etc/test'],  
  refreshonly => true,  
}
```



## 11.1. Separate Files

All classes and resource type definitions must be in separate files in the `manifests` directory of their module. For example:

```
# /etc/puppetlabs/puppet/modules/apache/manifests  
  
# init.pp  
class apache { }  
# ssl.pp  
class apache::ssl { }  
# virtual_host.pp  
define apache::virtual_host () { }
```

This is functionally identical to declaring all classes and defines in `init.pp`, but highlights the structure of the module and makes everything more legible.



puppet-lint

Download Gem

View On GitHub

Home

Checks

Changelog

Issues

This project is maintained by [rodjek](#)

Hosted on [GitHub Pages](#) using the Dinky theme

# Check that your Puppet manifest conform to the style guide

## Install It!

```
$ gem install puppet-lint
```

## Run It!

```
$ puppet-lint --with-filename /etc/puppet/modules
foo/manifests/bar.pp: trailing whitespace found on line 1
apache/manifests/server.pp: variable not enclosed in {} on line 56
...
```

## Fix Them!

Head on over to the [checks page](#) to see a description of each check and get some help on how to clear those errors.

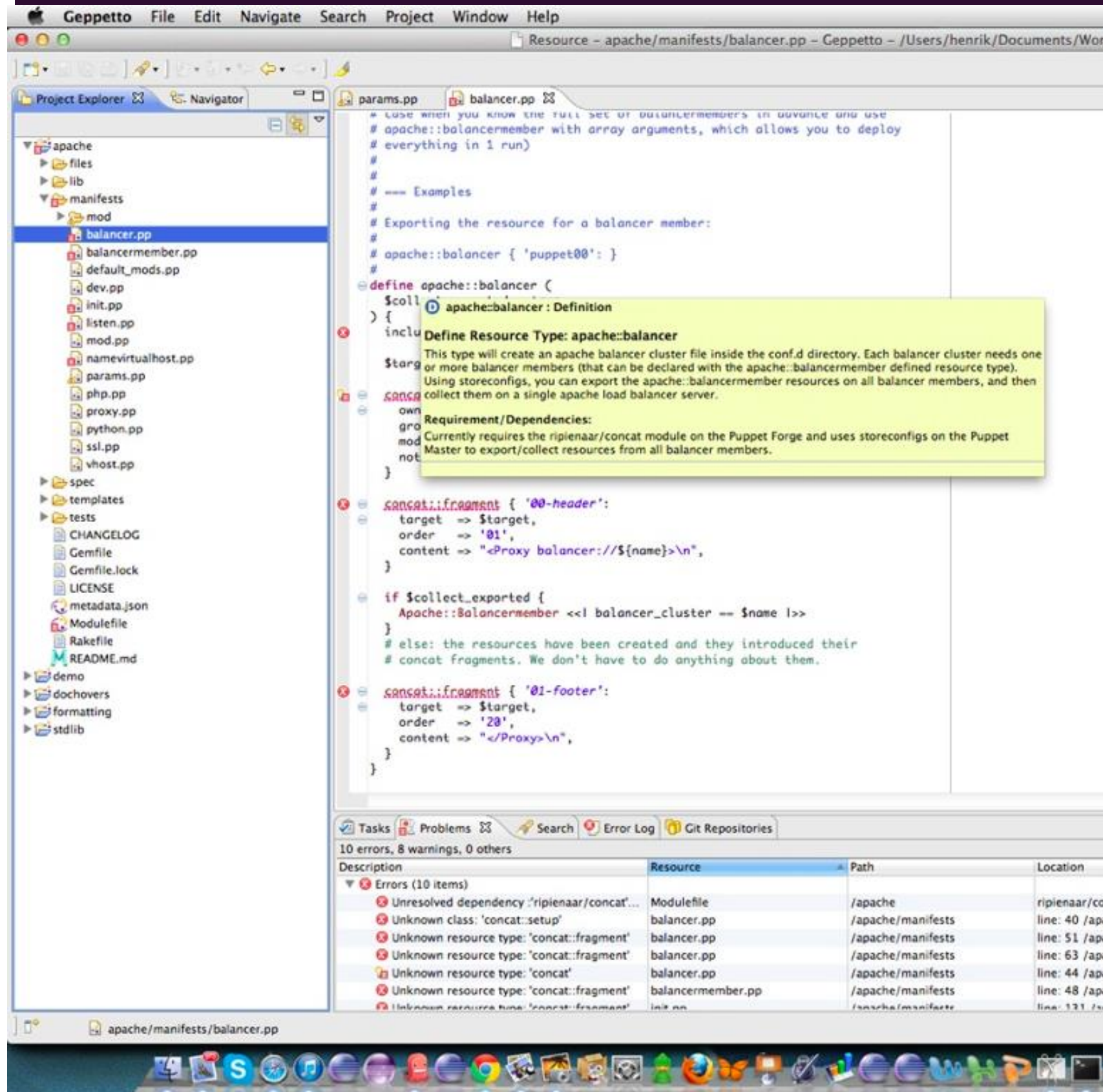


# Development Tools







# GEPPETO



server.pp — manifests (git: master)

server.pp

```
22 class mysql::server {
23     $config_hash      = {},
24     $enabled           = true,
25     $manage_service   = true,
26     $package_ensure   = $mysql::package_ensure,
27     $package_name      = $mysql::server_package_name,
28     $service_name      = $mysql::service_name,
29     $service_provider  = $mysql::service_provider
30 } inherits mysql {
31
32     Class['mysql::server'] -> Class['mysql::config']
33
34     $config_class = { 'mysql::config' => $config_hash }
35
36     create_resources( 'class', $config_class )
37
38     package { 'mysql-server':
39         ensure => $package_ensure,
40         name   => $package_name,
41     }
42
43     if $enabled {
44         $service_ensure = 'running'
45     } else {
46         $service_ensure = 'stopped'
47     }
48
49     if $manage_service {
```

Line: 1 | Puppet | Tab Size: 4 |  





# Vim

- vim-pathogen or vundle (for plugins)
- snipmate (like TextMate)
- tabular
- syntastic
- mv-vim-puppet



# Class Layout & Parameter Naming





<http://ruth-tay.deviantart.com>

[puppetconf.com](http://puppetconf.com)

puppetconf<sup>2013</sup>

#puppetconf

```
1  class { 'ntp::service':
2    manage_service => false,
3  }
4
5  class { 'ntp::servers':
6    servers => [ 'ntp1.corp.com', 'ntp2.corp.com' ],
7  }
8
9  class { 'ntp::config':
10    restrict      => 'restrict 127.0.0.1',
11    config_template => 'different/module/custom.template.erb',
12  }
```

VS

```
class { '::ntp':
  servers      => [ 'ntp1.corp.com', 'ntp2.corp.com' ],
  restrict     => 'restrict 127.0.0.1',
  manage_service => false,
  config_template => 'different/module/custom.template.erb',
}
```



# Private classes should be discrete

branch: **master** **puppetlabs-ntp** / manifests / **install.pp**

 **apenney** 16 days ago Convert some classes to not be parameterized.

1 contributor



file | 13 lines (9 sloc) | 0.191 kb

[Edit](#)[Raw](#)[Blame](#)[History](#)[Delete](#)

```
1  #
2  class ntp::install {
3
4      $package_ensure = $ntp::package_ensure
5      $package_name    = $ntp::package_name
6
7      package { 'ntp':
8          ensure => $package_ensure,
9          name    => $package_name,
10     }
11
12 }
```





# Validate your input

```
1 class ntp (  
2     $autoupdate          = $ntp::params::autoupdate,  
3     $config              = $ntp::params::config,  
4     $config_template     = $ntp::params::config_template,  
5     $driftfile           = $ntp::params::driftfile,  
6     $keys_enable         = $ntp::params::keys_enable,  
7     $keys_file           = $ntp::params::keys_file,  
8     $keys_controlkey     = $ntp::params::keys_controlkey,  
9     $keys_requestkey     = $ntp::params::keys_requestkey,  
10    $keys_trusted         = $ntp::params::keys_trusted,  
11    $package_ensure       = $ntp::params::package_ensure,  
12    $package_name         = $ntp::params::package_name,  
13    $panic                = $ntp::params::panic,  
14    $preferred_servers    = $ntp::params::preferred_servers,  
15    $restrict             = $ntp::params::restrict,  
16    $servers              = $ntp::params::servers,  
17    $service_enable       = $ntp::params::service_enable,  
18    $service_ensure       = $ntp::params::service_ensure,  
19    $service_manage       = $ntp::params::service_manage,  
20    $service_name         = $ntp::params::service_name,  
21 ) inherits ntp::params {  
22  
23     validate_absolute_path($config)  
24     validate_string($config_template)  
25     validate_absolute_path($driftfile)  
26     validate_bool($keys_enable)  
27     validate_re($keys_controlkey, ['^\d+$', ''])  
28     validate_re($keys_requestkey, ['^\d+$', ''])  
29     validate_array($keys_trusted)  
30     validate_string($package_ensure)
```





## validate\_re

Perform simple validation of a string against one or more regular expressions. The first argument of this function should be a string to test, and the second argument should be a stringified regular expression (without the // delimiters) or an array of regular expressions. If none of the regular expressions match the string passed in, compilation will abort with a parse error.

If a third argument is specified, this will be the error message raised and seen by the user.

The following strings will validate against the regular expressions:

```
validate_re('one', '^one$')  
validate_re('one', [ '^one', '^two' ])
```

The following strings will fail to validate, causing compilation to abort:

```
validate_re('one', [ '^two', '^three' ])
```

A helpful error message can be returned like this:

```
validate_re($::puppetversion, '^2.7', 'The $puppetversion fact value does not match 2.7')
```



## validate\_array

Validate that all passed values are array data structures. Abort catalog compilation if any value fails this check.

The following values will pass:

```
$my_array = [ 'one', 'two' ]  
validate_array($my_array)
```

The following values will fail, causing compilation to abort:

```
validate_array(true)  
validate_array('some_string')  
$undefined = undef  
validate_array($undefined)
```



## validate\_absolute\_path

Validate the string represents an absolute path in the filesystem. This function works for windows and unix style paths.

The following values will pass:

```
$my_path = "C:/Program Files (x86)/Puppet Labs/Puppet"  
validate_absolute_path($my_path)  
$my_path2 = "/var/lib/puppet"  
validate_absolute_path($my_path2)
```

The following values will fail, causing compilation to abort:

```
validate_absolute_path(true)  
validate_absolute_path([ 'var/lib/puppet', '/var/foo' ])  
validate_absolute_path([ '/var/lib/puppet', 'var/foo' ])  
$undefined = undef  
validate_absolute_path($undefined)
```



```
class openssh (  
  $service_ensure = disabled,  
  $service_enable = false,  
) { ... }
```

<https://github.com/stdmod/puppet-modules>

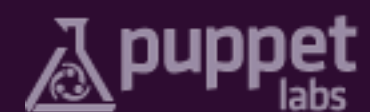
A community-driven effort to standardize on param names



forge



# Roles & Profiles



```

13 class role::forge::web {
14   include profile::server
15   include profile::forge
16   include profile::forge::web
17 }

```

Roles are the service to be offered, roll-up profiles

Profiles merge tech  
modules with  
business logic

```

43 include puppetlabs::ssl
44 include puppetlabs::gpg
45 include ::git
46
47 # Add sudo rights for forge admins:
48 sudo::entry {
49   "Forge admins: access to forge-web":
50     entry => "%forge-admins ALL=(forge-web) NOPASSWD: ALL";
51   "Forge admins: access to restart forge-web service":
52     entry => "%forge-admins ALL=(ALL) NOPASSWD: /etc/init.d/unicorn_forge-web";
53 }

```

```

140 unicorn::app { 'forge-web':
141   approot      => $app_root,
142   workers      => $unicorn_workers,
143   pidfile      => $unicorn_pidfile,
144   socket       => $unicorn_socket,
145   user         => $user,
146   group        => $group,
147   config_file  => "${app_root}/forge-unicorn.rb",
148   config_template => "profile/forge/web/unicorn_config.rb.erb",
149   preload_app  => true,
150   rack_env     => $rack_env,
151   source       => 'bundler',
152   require      => [ Class['ruby::dev'], Bundler::Install[$app_root] ],
153 }

```





# Containment



# Anchor Pattern

```
class ntp {  
  file { ['/etc/ntp.conf':  
    ...  
    require => Package['ntp'],  
    notify => Class['ntp::service'],  
  }  
  include ntp::service  
  anchor { 'ntp_first': } -> Class['ntp::service'] -> anchor { 'ntp_last': }  
  package { 'ntp':  
    ...  
  }  
}  
  
include ntp  
exec { ['/usr/local/bin/update_custom_timestamps.sh':  
  require => Class['ntp'],  
}
```



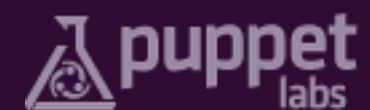
# Contain (Puppet 3.4+)

```
class ntp {  
  file { ['/etc/ntp.conf':  
    ...  
    require => Package['ntp'],  
    notify  => Class['ntp::service'],  
  ]  
  contain ntp::service  
  package { 'ntp':  
    ...  
  }  
}  
  
include ntp  
exec { ['/usr/local/bin/update_custom_timestamps.sh':  
  require => Class['ntp'],  
}]
```



# Documentation

the most important part!



forge



# Answer these questions

- What technology does your module manage?
- What does it intend to do?
- How does it do it? (impact on the system)
- How should one use it?





We start with listing the module's name, followed by a table of contents.

```
#modulename

####Table of Contents

1. [Overview](#overview)
2. [Module Description - What the module does and why it is useful](#module-description)
3. [Setup - The basics of getting started with [Modulename]](#setup)
    * [What [Modulename] affects](#what-[modulename]-affects)
    * [Setup requirements](#setup-requirements)
    * [Beginning with [Modulename]](#beginning-with-[Modulename])
4. [Usage - Configuration options and additional functionality](#usage)
5. [Reference - An under-the-hood peek at what the module is doing and how](#reference)
5. [Limitations - OS compatibility, etc.](#limitations)
6. [Development - Guide for contributing to the module](#development)
```

The table of contents is optional but suggested as best practice, particularly for larger or more complicated modules.

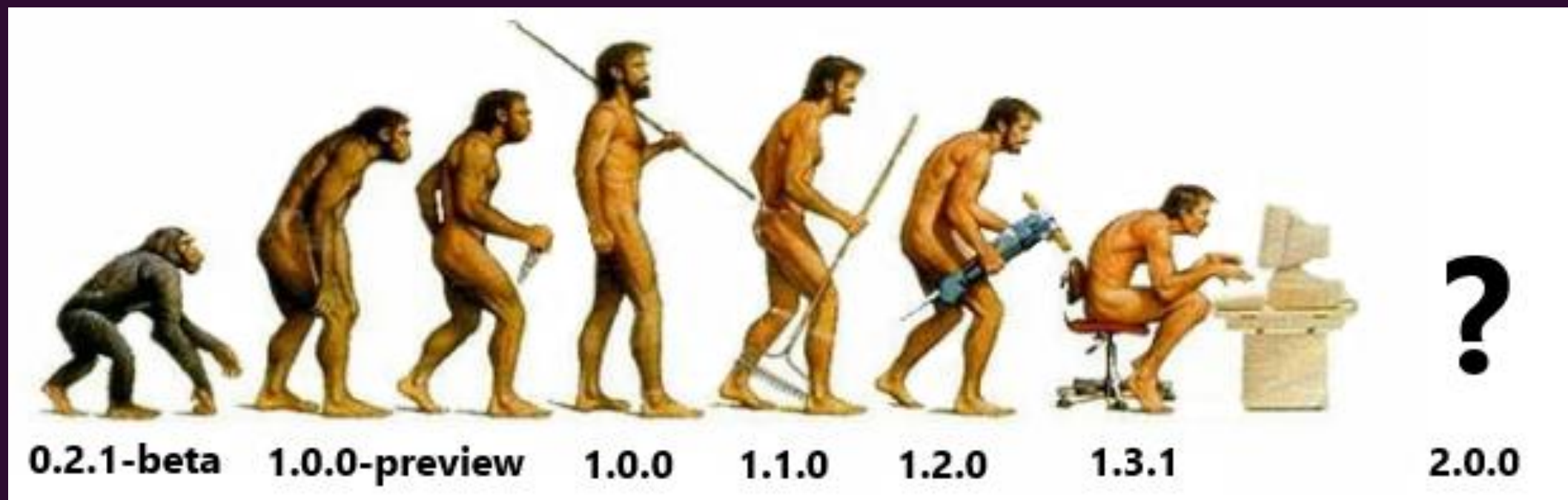
The table of contents is followed by a brief, overview summary of your module.

```
#Overview

one-maybe-two sentence summary of what the module does/what problem it solves. This is your 30
```

[http://docs.puppetlabs.com/puppet/3/reference/modules\\_documentation.html](http://docs.puppetlabs.com/puppet/3/reference/modules_documentation.html)





# Semantic Versioning

- Based on Major.Minor.Patch scheme
  - X.0.0 Major version for breaking change
  - 0.X.0 Minor version for new non-breaking functionality
  - 0.0.X Patch version for backwards compatible bug fixes



<http://links.puppetlabs.com/bgtm>

## Structure of a module

### Requirements

Before reading this guide we recommend that you become familiar with [Puppet](#) such that you have a basic understanding of the Puppet [language](#), you know what constitutes a [class](#), and you know how to put together a [basic module](#).

### Step One: Giving Your Module Purpose

Before you begin writing your module, you must define what it will do. Defining the range of your module's work helps you avoid accidentally creating a sprawling monster of a module that is unwieldy and difficult to work with. Your module should have one area of responsibility. For example, a good module addresses installing MySQL but **does not address** installing another program/service that requires MySQL.

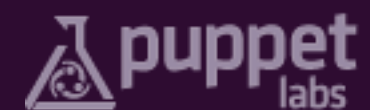
To help plan your module appropriately, ask yourself some questions:

- ★ What task do you need your module to accomplish?
- ★ What work is your module addressing?
- ★ What higher function should your module have within your Puppet environment?

*(Tip: If you describe the function of your module and you find yourself using the word 'and', it's time to split the module at the 'and'.)*



# Data & Modules





# Why separate?



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# Two Types of Data

- Site
  - Which port do I bind to?
- Logistics
  - Which package for this OS?



# Logistics

- `params.pp`
- `ripienaar/module_data`





```
1 class ntp::params {
2
3     $autoupdate      = false
4     $config_template = 'ntp/ntp.conf.erb'
5     $keys_enable     = false
6     $keys_controlkey = ''
7     $keys_requestkey = ''
8     $keys_trusted    = []
9     $package_ensure  = 'present'
10    $preferred_servers = []
11    $restrict         = [
12        'default kod nomodify notrap nopeer noquery',
13        '-6 default kod nomodify notrap nopeer noquery',
14        '127.0.0.1',
15        '-6 ::1',
16    ]
17    $service_enable   = true
18    $service_ensure   = 'running'
19    $service_manage   = true
20    $udlc             = false
21
22    # On virtual machines allow large clock skews.
23    $panic = str2bool($::is_virtual) ? {
24        true    => false,
25        default => true,
26    }
27
28    case $::osfamily {
29        'AIX': {
30            $config = '/etc/ntp.conf'
31            $keysfile = '/etc/ntp.keys'
32            $driftfile = '/etc/ntp.drift'
33            $package_name = [ 'bos.net.tcp.client' ]
34            $service_name = 'xntpd'
35            $servers = [
36                '0.debian.pool.ntp.org iburst',
37                '1.debian.pool.ntp.org iburst',
38                '2.debian.pool.ntp.org iburst',
39                '3.debian.pool.ntp.org iburst',
40            ]
41        }
42        'Debian': {
43            $config = '/etc/ntp.conf'
```



[http://forge.puppetlabs.com/ripienaar/module\\_data](http://forge.puppetlabs.com/ripienaar/module_data)

```
case $::operatingsystem {
  'Amazon': {
    $basedir           = '/usr'
    $client_package_name = 'mysql'
    $config_file       = '/etc/my.cnf'
    $datadir           = '/var/lib/mysql'
    $log_error          = '/var/log/mysqld.log'
    $php_package_name   = 'php-mysql'
    $root_group         = 'root'
    $server_package_name = 'mysql-server'
    $service_name        = 'mysqld'
    $socket             = '/var/lib/mysql/mysql.sock'
    $ssl_ca              = '/etc/mysql/cacert.pem'
    $ssl_cert            = '/etc/mysql/server-cert.pem'
    $ssl_key             = '/etc/mysql/server-key.pem'
    $tmpdir              = '/tmp'
    # mysql::bindings
    $java_package_name  = 'mysql-connector-java'
    $perl_package_name  = 'perl-DBD-MySQL'
    $python_package_name = 'MySQL-python'
    $ruby_package_name  = 'ruby-mysql'
    $ruby_package_provider = 'gem'
  }
}
```

```
1  ---
2  mysql::basedir: '/usr'
3  mysql::client_package_name: 'mysql'
4  mysql::config_file: '/etc/my.cnf'
5  mysql::datadir: '/var/lib/mysql'
6  mysql::log_error: '/var/log/mysqld.log'
7  mysql::php_package_name: 'php-mysql'
8  mysql::root_group: 'root'
9  mysql::server_package_name: 'mysql-server'
10 mysql::service_name: 'mysqld'
11 mysql::socket: '/var/lib/mysql/mysql.sock'
12 mysql::ssl_ca: '/etc/mysql/cacert.pem'
13 mysql::ssl_cert: '/etc/mysql/server-cert.pem'
14 mysql::ssl_key: '/etc/mysql/server-key.pem'
15 mysql::tmpdir: '/tmp'
16 mysql::java_package_name: 'mysql-connector-java'
17 mysql::perl_package_name: 'perl-DBD-MySQL'
18 mysql::python_package_name: 'MySQL-python'
19 mysql::ruby_package_name: 'ruby-mysql'
20 mysql::ruby_package_provider: 'gem'
```

./data/operatingsystem/Amazon.yaml

Params.pp



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# Site

- node definitions
- ENC



```
# /etc/puppetlabs/puppet/manifests/site.pp
node 'www1.example.com' {
  include common
  include apache
  include squid
}
node 'db1.example.com' {
  include common
  include mysql
}
```



### Classes

pe_puppetdb	Edit parameters	Remove class
pe_puppetdb::master	Edit parameters	Remove class
puppet_enterprise::license	Edit parameters	Remove class

Add a class

### Pe\_puppetdb parameters ⓘ

Reset to defaults

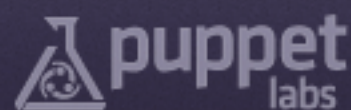
database_password	\$pe_puppetdb::params::db_	
database_port	5432	Reset to default
database_username	pe-puppetdb	Reset to default
listen_address	\$puppetdb::params::listen_	
listen_port	\$puppetdb::params::listen_	
manage_database	true	Reset to default
node_ttl	4d	Reset to default
open_listen_port	\$puppetdb::params::open_	
open_sql_listen_port	\$puppetdb::params::open_	

### Other parameters ⓘ

Add a parameter	Value	+
-----------------	-------	---

Done or Cancel



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# Docs: Hiera 1: Overview

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## Hiera 1

- ◆ Overview
- ◆ Complete Example
- ◆ Installation
- ◆ Configuration and hiera.yaml
- ◆ Hierarchies
- ◆ Writing Data Sources
- ◆ Variables and Interpolation
- ◆ Usage with Puppet
- ◆ Usage on the Command Line
- ◆ Writing New Backends

### Download the Docs

Learn Puppet in Small Bits



read



apply



repeat

### Download Puppet Enterprise

## Hiera 1: Overview

1. Getting Started With Hiera
  1. Learning From Example
2. Why Hiera?
  1. Making Puppet Better
  2. Avoiding Repetition

Hiera is a key/value lookup tool for configuration data, built to make **Puppet** better and let you **set node-specific data without repeating yourself**. See "[Why Hiera?](#)" below for more information, or get started using it right away:

## Getting Started With Hiera

To get started with Hiera, you'll need to do all of the following:

- ◆ Install Hiera, if it isn't already installed.
- ◆ Make a `hiera.yaml` config file.
- ◆ Arrange a hierarchy that fits your site and data.
- ◆ Write data sources.
- ◆ Use your Hiera data in Puppet (or any other tool).

```
---
:backends:
  - json
:json:
  :datadir: /etc/puppet/hiera
:hierarchy:
  - "node/%{::fqdn}"
  - common
```

```
{
  "vmwaretools::version" : "8.6.5-621624",
  "ntp::restrict" : true,
  "ntp::autoupdate" : true,
  "ntp::enable" : true,
  "ntp::servers" : [
    "grover.example.com iburst",
    "kermit.example.com iburst"
  ]
}
```



# Automatic Data Lookup

## Built into Puppet 3

Indirection Reference — Documentation — Puppet Labs

 [docs.puppetlabs.com/references/latest/indirection.html#databinding](https://docs.puppetlabs.com/references/latest/indirection.html#databinding)

### **data\_binding**

Where to find external data bindings.

◆ **Terminus Setting:** `data_binding_terminus`

#### **hiera**

Retrieve data using Hiera.


#### **none**

A Dummy terminus that always returns nil for data lookups.







Here's the magic!


 common.yaml

YAML







```
1  forge::package: 'screen'
```


 init.pp

Puppet







```
1  class forge(  
2    $package = 'ssh'  
3  ) {  
4  
5    package { $package:  
6      ensure => present,  
7    }  
8  
9  }
```

 site.pp

Puppet





```
1  class { 'forge': } # OR # include forge
```



# Data Lookup Order

- Use explicit class declaration values
- Query Data Binding
- Use the default value from class.
- Fail compilation with an error if no value can be found.

class.pp

```
1 class { 'forge':  
2   package => 'screen',  
3 }
```

common.yaml

```
1 forge::package: 'screen'
```

forge.pp

```
1 class forge(  
2   $package = 'apache',  
3   $package_version,  
4 ) {  
5  
6   package { $forge::package:  
7     ensure => $forge::package_version,  
8   }  
9  
10 }
```





882 modules 334,573 downloads  
Since February 2012

## domcleal/foreman\_data\_binding



Author: **Dominic Cleal**

Links: [Project URL](#) | [Report issues](#)

Tags: [hiera](#), [terminus](#), [data\\_binding](#), [class](#), [data](#), [foreman](#)

Latest release: **0.1.0**

Release date: Jan 18, 2013

Total downloads: 17

### How to Install

Run this code on your puppet node using the Puppet Module Tool:

```
puppet module install domcleal/foreman_data_binding
```

The Puppet Module Tool is available in Puppet 2.7.14+ and Puppet Enterprise 2.5+ [Read about installing modules](#)

Or: [Download as a .tar.gz](#)

README

License

Open issues (0)

## foreman\_data\_binding

Data binding terminus for Puppet 3+ that uses Foreman's smart class parameters feature to resolve class parameters. Drop-in replacement for Hiera

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eg. apache, my

Find

[All modules](#)

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[networking](#) (55 modules)

[security](#) (50 modules)

[applications](#) (48 modules)



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binford2k/hiera\_rest · Puppet Forge

forge.puppetlabs.com/binford2k/hiera\_rest

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930 modules

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binford2k/hiera\_rest

Author: Ben Ford

Links: [Project URL](#) | [Report issues](#)

Tags: [rest](#), [hiera](#)

Latest release: 0.0.1

Release date: Nov 20, 2012

Total downloads: 72

How to Install

Run this code on your puppet node using the Puppet Module Tool:

puppet module install binford2k/hiera\_rest

The Puppet Module Tool is available in Puppet 2.7.14+ and Puppet Enterprise 2.5+ [Read about installing modules](#)

Or: [Download as a .tar.gz](#)

README

Open issues (0)

Introduction

Hiera is a configuration data store with pluggable back ends; hiera-rest is a backend written to tie into a specific configuration management database. Although this database is proprietary, you could easily use it as a base for any other REST based database by editing the queries in the restquery method. This allows you to glue Hiera to an existing database

Log In

Sign Up

Publish a Module

Find Modules

eg. apache, my

Find

All modules

Popular Tags

ubuntu (165 modules)

debian (136 modules)

rhel (102 modules)

CentOS (101 modules)

monitoring (63 modules)

networking (56 modules)

security (52 modules)

applications (50 modules)

centos (40 modules)

# Module Testing

A Brief Overview

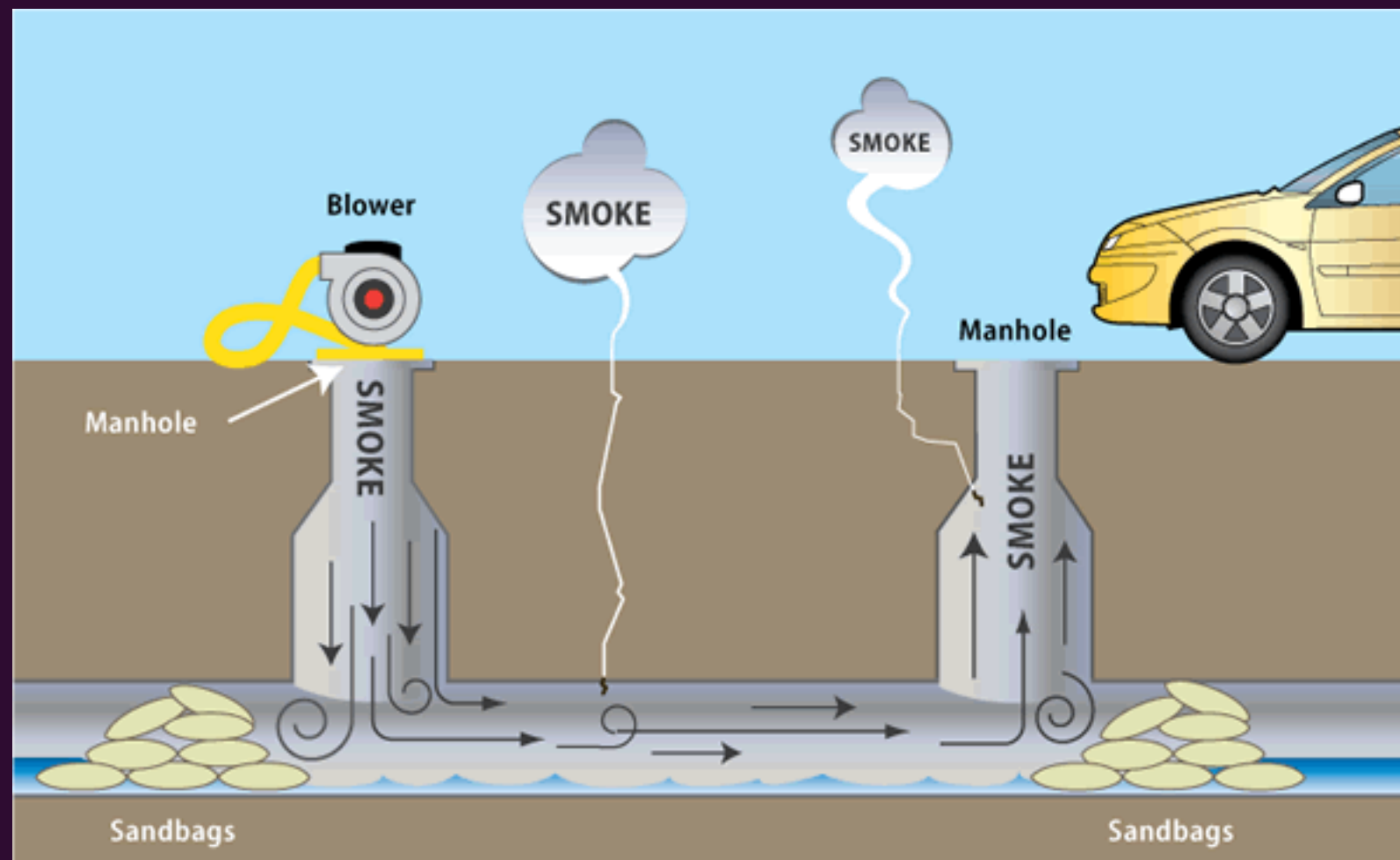


forge





# Smoke Testing



[http://www.dsrsd.com/img/img\\_wrw/Sewer\\_Web.png](http://www.dsrsd.com/img/img_wrw/Sewer_Web.png)



```
puppet apply ./tests/apache.pp
```

branch: **master** ▾

**puppetlabs-apache** / **tests** / **apache.pp**



**hunner** a year ago Add example module includes for testing

**2** contributors

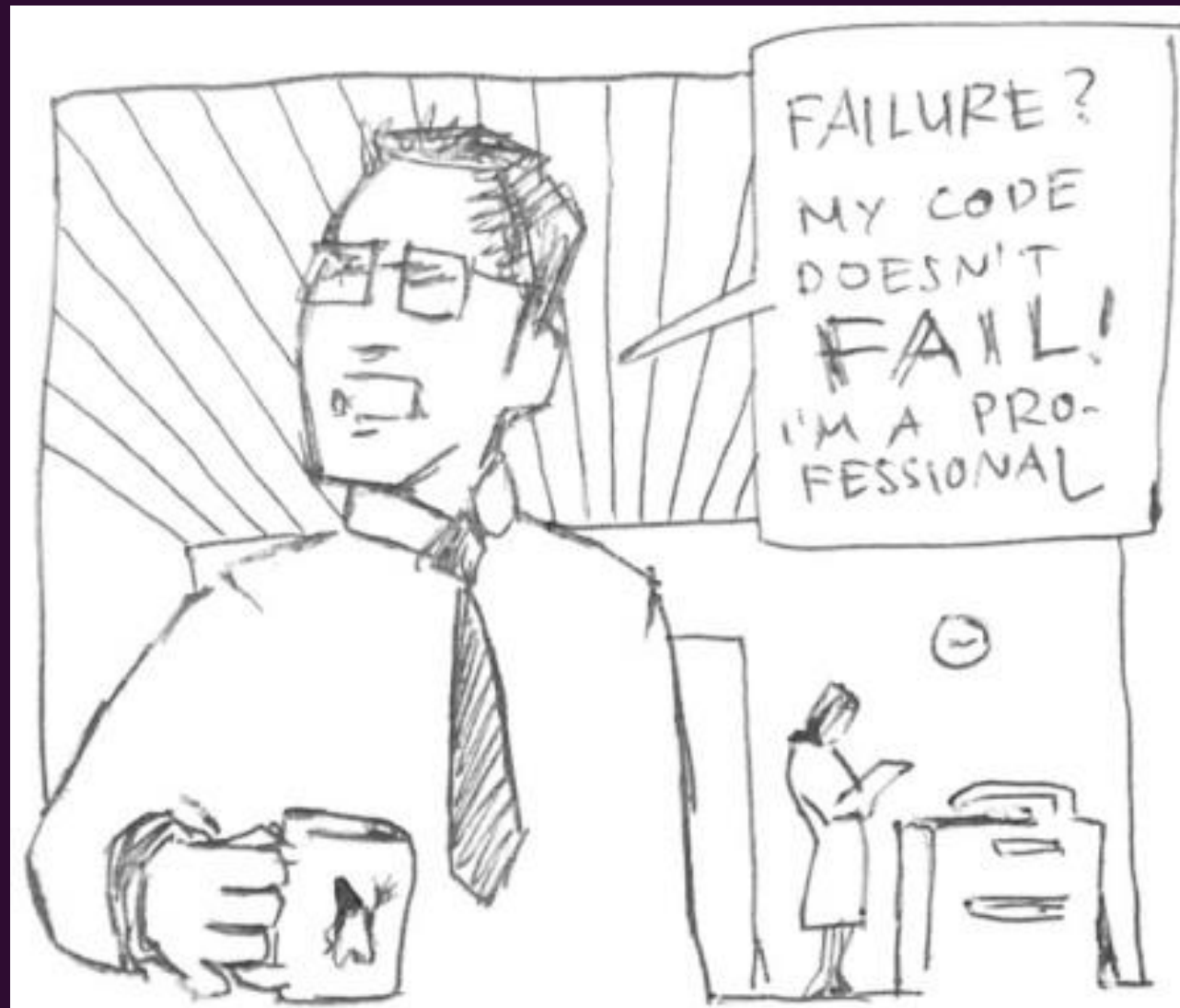


file | 7 lines (6 sloc) | 0.158 kb

```
1 include apache
2 include apache::mod::php
3 include apache::mod::cgi
4 include apache::mod::userdir
5 include apache::mod::disk_cache
6 include apache::mod::proxy_http
```



# Unit Testing



<http://www.pieterg.com/Media/277>



# rspec-puppet

RSpec tests for your Puppet manifests

[View the Project on GitHub](#)  
rodjek/rspec-puppet

Download  
Gem

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TAR Ball

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[Home](#)

[Tutorial](#)

[Setup](#)

[Matchers](#)

[Changelog](#)

build passing

This project is maintained by [rodjek](#)

Hosted on GitHub Pages — Theme by [orderedlist](#)

## Matchers

### Classes, Defined Types and Hosts

#### include\_class

In order to test that your manifest has successfully included a class, you should use the `include_class` matcher

```
it { should include_class('my::class') }
```

#### contain\_\*

In order to test that your manifest contains a particular Puppet resource, you should use the generic `contain_<resource>` class.

```
it { should contain_service('apache') }
```

If the resource type you're testing for contains `::` in it, replace the `::` with `__` (two underscores). For example, to test that your manifest contains `apache::vhost` you would do

```
it { should contain_apache__vhost('my awesome vhost') }
```

#### with\_\* and without\_\*

Further to this, you can test for the presence or absence of parameters on these resources by chaining any number of `.with_<parameter>` or `.without_<parameter>` methods onto the end of your test. These methods can either take an exact value or a regular expression.

```
it { should contain_service('mysql-server').with_ensure('present') }  
it { should contain_file('/etc/logrotate.d/apache').with_content(/com
```



branch: master

puppetlabs-apache / spec / classes / apache\_spec.rb



**apenney** 2 months ago Rework again to make a completely seperate module, site\_apache, and

5 contributors



file | 268 lines (257 sloc) | 8.494 kb

Ed

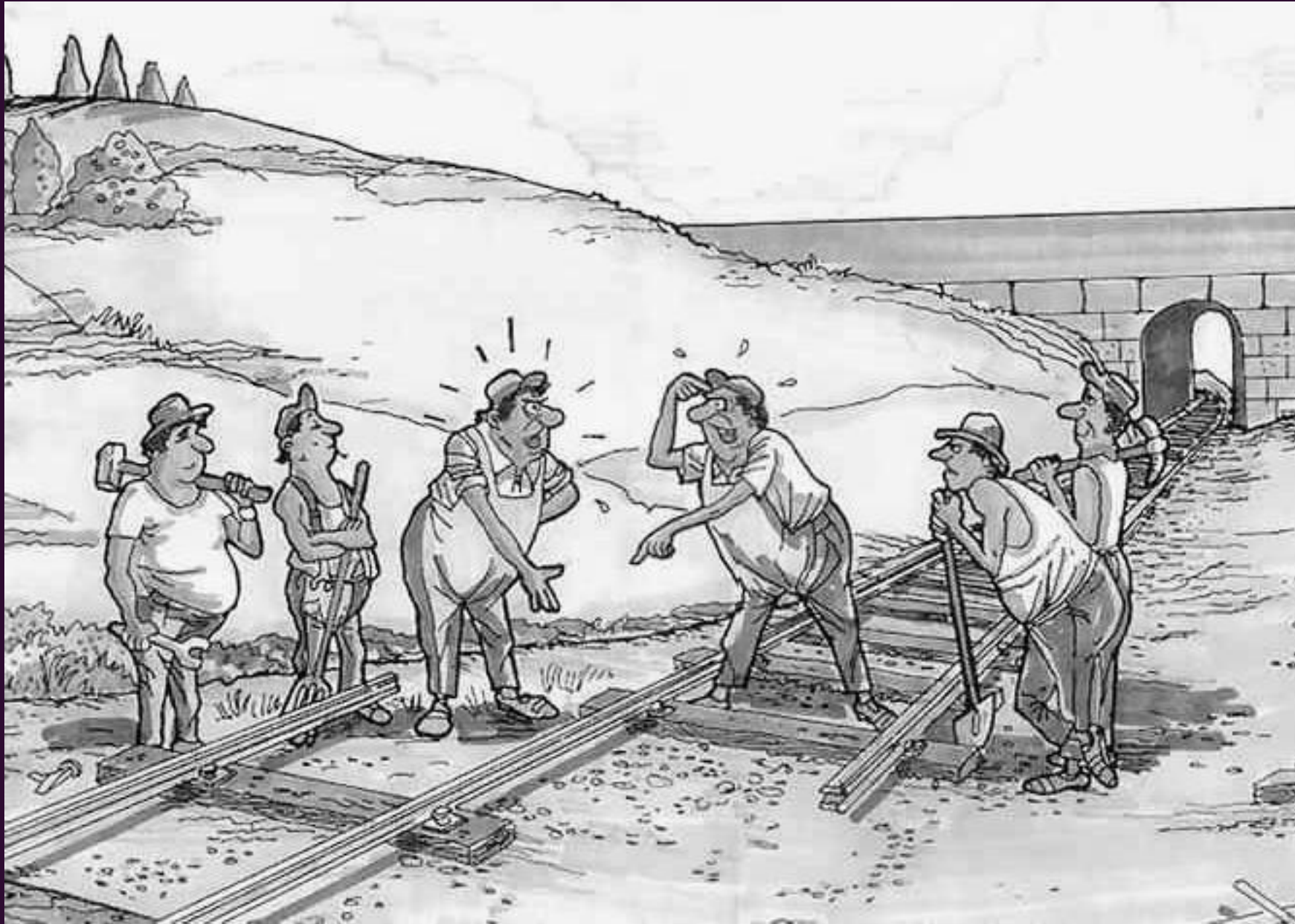
```
1  require 'spec_helper'
2
3  describe 'apache', :type => :class do
4    context "on a Debian OS" do
5      let :facts do
6        {
7          :osfamily           => 'Debian',
8          :operatingsystemrelease => '6',
9          :concat_basedir     => '/dne',
10         }
11      end
12      it { should include_class("apache::params") }
13      it { should contain_package("httpd") }
14      it { should contain_user("www-data") }
15      it { should contain_group("www-data") }
16      it { should contain_service("httpd").with(
17        'ensure'   => 'true',
18        'enable'   => 'true',
19        'subscribe' => 'Package[httpd]'
20      ) }
21    }
22    it { should contain_file("/etc/apache2/sites-enabled").with(
23      'ensure' => 'directory',
24      'recurse' => 'true',
25      'purge'   => 'true',
26      'notify'  => 'Service[httpd]',
27      'require' => 'Package[httpd]'
28    ) }
29  }
```

forge

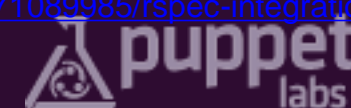




# Integration Testing



<http://robots.thoughtbot.com/post/33771089985/rspec-integration-tests-with-capybara>



forge





# rspec-system



forge



# Acceptance Testing

```
25 describe 'postgresql::db' do
26   it 'should idempotently create a db that we can connect to' do
27     begin
28       pp = <<-EOS
29         $db = 'postgresql_test_db'
30         include postgresql::server
31
32         postgresql::db { $db:
33           user      => $db,
34           password  => postgresql_password($db, $db),
35         }
36       EOS
37
38       puppet_apply(pp) do |r|
39         r.exit_code.should_not == 1
40         r.refresh
41         r.exit_code.should == 0
42       end
43
44       psql('--command="select datname from pg_database" postgresql_test_db') do |r|
45         r.stdout.should =~ /postgresql_test_db/
46         r.stderr.should be_empty
47         r.exit_code.should == 0
48       end
49     ensure
50       psql('--command="drop database postgresql_test_db" postgres')
51     end
52   end
end
```



# Beaker





```
1  require 'spec_helper_acceptance'
2
3  describe "ntp class:" do
4    it 'should run successfully' do
5      pp = "class { 'ntp': }"
6
7      # Apply twice to ensure no errors the second time.
8      apply_manifest(pp, :catch_failures => true) do |r|
9        expect(r.stderr).to eq("")
10      end
11      apply_manifest(pp, :catch_failures => true) do |r|
12        expect(r.stderr).to eq("")
13        expect(r.exit_code).to be_zero
14      end
15    end
16
17    context 'service_ensure => stopped:' do
18      it 'runs successfully' do
19        pp = "class { 'ntp': service_ensure => stopped }"
20
21        apply_manifest(pp, :catch_failures => true) do |r|
22          expect(r.stderr).to eq("")
23        end
24      end
25    end
26
27    context 'service_ensure => running:' do
28      it 'runs successfully' do
29        pp = "class { 'ntp': service_ensure => running }"
30
31        apply_manifest(pp, :catch_failures => true) do |r|
32          expect(r.stderr).to eq("")
33        end
34      end
35    end
36  end
```

# Writing Better Modules

- Keep them simple & modular
- Consistent Style
- Useful Documentation
- Separate Code From Data
- Test Against Regressions



# Want to help?



#PuppetCamp



forge





# puppetconf<sup>2014</sup>

**Join us in San Francisco, September 23-24**

Learn and share the latest in DevOps, cloud  
automation and continuous delivery

**40%  
OFF**

**REGISTER NOW**

*Offer Expires 1/31*



**forge**



# Thank You!

Feel free to email or tweet anytime RE: Forge!

[ryan@puppetlabs.com](mailto:ryan@puppetlabs.com) - @ryanycoleman

[forge.puppetlabs.com](http://forge.puppetlabs.com)

