

WHAT'S WRONG WITH MY PUPPET?

OSDC 2016, BERLIN

That person on stage



5 years



6 years



3 months and counting



<http://ffrank.github.io/>

@felis_rex

Let's get started then



<http://jalapenoberry.com/blog/post/is-this-thing-on/545/>

**IT'S ALWAYS
SOMETHING
WITH SOFTWARE**

THINGS WITH PUPPET (E.G.)

1. weird behavior of the agent or master
2. the manifest or catalog fails
3. complex manifests don't function as expected

More advanced than actual words



Puppet Error Messages

The decoder handbook

O RLY?

@crayfishx

1. UNDERSTANDING BEHAVIOR



<http://www.babygaga.com/buzz/show/1066/when-your-fur-baby-meets-your-human-baby-how-to-make-the-introduction-as-smooth-as-possible>

The hammer

STRACE

The wrench

CONFIG PRINT

LET'S SEE IT IN ACTION

Where is puppet.conf?

```
$ strace -e trace=file \
  puppet apply -e 'notify { "test": }' \
  2>&1 | grep 'puppet\.conf'
```

```
stat("/home/ffrank/.puppetlabs/etc/puppet/puppet.conf", \
  {st_mode=S_IFREG|0644, st_size=225, ...}) = 0
open("/home/ffrank/.puppetlabs/etc/puppet/puppet.conf", \
  O_RDONLY|O_CLOEXEC) = 7
```

From where is provider X loaded?

```
$ strace -e trace=file \  
  puppet apply -e 'package { "test": }' \  
  2>&1 | grep 'apt\.rb'
```

```
stat("/home/ffrank/gems/gems/CFPropertyList-2.3.2/lib/puppet/provi  
0x7fff342fc620) = -1 ENOENT (No such file or directory)  
stat("/home/ffrank/gems/gems/activesupport-4.2.1/lib/puppet/provid  
0x7fff342fc620) = -1 ENOENT (No such file or directory)  
stat("/home/ffrank/gems/gems/addressable-2.4.0/lib/puppet/provider  
0x7fff342fc620) = -1 ENOENT (No such file or directory)  
stat("/home/ffrank/gems/gems/aspector-0.14.0/lib/puppet/provider/p  
0x7fff342fc620) = -1 ENOENT (No such file or directory)  
...
```

```
stat("/home/ffrank/gems/gems/puppet-4.4.1/lib/puppet/provider/pack  
{st_mode=S_IFREG|0644, st_size=3354, ...}) = 0
```

About puppet.conf though...

```
$ puppet config print all | grep 'puppet\.conf'
```

```
config_file_name = puppet.conf  
config = /home/ffrank/.puppetlabs/etc/puppet/puppet.conf
```

So the option is named `config`...

```
$ puppet config print config  
/home/ffrank/.puppetlabs/etc/puppet/puppet.conf
```

Be mindful of the section though

```
$ puppet config print config --section master  
$ puppet config print config --section agent
```

Mostly irrelevant, but there are choice exceptions.

Alternative call

```
$ puppet agent --configprint all  
$ puppet master --configprint masterport  
$ puppet apply --configprint all | grep catalog_cache_terminus
```

2. FAILURE FORENSICS



<http://www.sammypetboarding.com/cleaning.htm>

The master failing badly:

```
$ puppet agent --test
...
err: Could not retrieve catalog from remote server:
      Error 400 on SERVER:
      undefined method `empty?' for nil:NilClass at
```

The agent failing:

```
$ puppet agent --test
...
Error: Failed to apply catalog:
      undefined method `ancestors' for nil:NilClass
```

NEEDS SOME CONTEXT!

Meet the `--trace` option.

LET'S SEE IT IN ACTION

```
ffrank@fflaptop:~$ puppet agent --test
Error: Evaluation Error: \
  Error while evaluating a Function Call, (<unknown>): \
  found character that cannot start any token \
  while scanning for the next token at line 4 column 7 \
  at [...] /env/production/manifests/site.pp:45:8 \
  on node fflaptop.local
```

Looking at line 45 of site.pp will help,
but let's practice tracing instead

```
ffrank@fflaptop:~$ puppet agent --test --trace
Error: Evaluation Error: ...
.../lib/puppet/indirector/rest.rb:208:in `is_http_200?'
.../lib/puppet/indirector/rest.rb:106:in `find'
.../lib/puppet/indirector/indirection.rb:194:in `find'
.../lib/puppet/configurer.rb:377:in `block in retrieve_new_catalog'
.../lib/puppet/util.rb:386:in `block in thinmark'
/usr/lib/ruby/2.1.0/benchmark.rb:294:in `realtime'
.../lib/puppet/util.rb:385:in `thinmark'
.../lib/puppet/configurer.rb:376:in `retrieve_new_catalog'
```

Combine this with one more trick

```
$ puppet master --compile fflaptop.local --trace
```

```
Notice: Scope(Class[main]): compiling site.pp
```

```
Error: Evaluation Error: Error while evaluating a Function...
```

```
.../lib/psych.rb:376:in `parse'  
.../lib/psych.rb:376:in `parse_stream'  
.../lib/psych.rb:324:in `parse'  
.../lib/psych.rb:251:in `load'  
.../lib/hiera/backend/yaml_backend.rb:19:in `block (2 levels) in l  
.../lib/hiera/filecache.rb:53:in `read_file'  
.../lib/hiera/backend/yaml_backend.rb:18:in `block in lookup'
```

As for non-contrived examples

```
Error: undefined method `ref' for nil:NilClass on node vagrant.edw
.../puppet/resource/catalog.rb:527:in `block in to_catalog'
.../puppet/resource/catalog.rb:515:in `each'
.../puppet/resource/catalog.rb:515:in `to_catalog'
.../puppet/resource/catalog.rb:402:in `to_resource'
.../puppet/parser/compiler.rb:23:in `compile'
.../puppet/indirector/catalog/compiler.rb:116:in `block (2 levels)'
.../puppet/util/profiler/none.rb:6:in `profile'
.../puppet/util/profiler.rb:31:in `profile'
.../puppet/indirector/catalog/compiler.rb:114:in `block in compile'
.../puppet/util.rb:161:in `block in benchmark'
...
```

3. IT'S WORKING BUT IT'S WEIRD



That feeling when...

```
# in node alice  
@@backup_job { 'alice_files': ... }
```

...and nothing happens on bob

```
Backup_job<<| |>>
```

NON-FUNCTIONAL RESOURCES ARE ALWAYS AWKWARD

Debug mode is often inconclusive

**WHAT YOU WANT TO DO
IS INSPECT THE CATALOG**

LET'S DO THAT THEN

The easy way

```
$ puppet catalog find | less
```

```
Notice: Compiled catalog for exporter in environment production in
{
  "tags": ["settings", "httpfile", "exporter", "class", "node"],
  "name": "fflaptop.local",
  "version": 1461197958,
  "code_id": null,
  ...
  "resources": [
    {
      "type": "File",
      "title": "/tmp/README.md",
      "tags": ["file", "class", "httpfile"],
      "file": "[...]/env/production/manifests/site.pp",
      "line": 14,
      "exported": false,
      "parameters": {
        "name": "site",

```

FOR THE THOROUGH

1. Find out where the catalog is cached

```
$ puppet agent --configprint catalog_cache_terminus
```

2a. for json

```
$ puppet agent --configprint client_datadir
```

2b. for yaml

```
$ puppet agent --configprint clientyamldir
```

...one of these holds <certname>.json or .yaml

Digging into the catalog

1. Request a YAML copy

```
$ puppet agent --test --catalog_cache_terminus yaml
```

2. Launch the REPL

```
$ irb -rpuppet -ryaml
```

3. Try and load the catalog

```
irb(main):001:0> data = YAML.load(File.new('../client_yaml/catalogo
```

oops...

```
Puppet::Error: Could not parse for environment *root*:  
no 'environments' in  
{:current_environment=>#<Puppet::Node::Environment:0x0...
```

First initialize the puppet runtime

```
irb(main):002:0> Puppet.initialize_settings  
=> "notice"
```

Now try again

```
irb(main):003:0> data = YAML.load(File.new('../catalog/exporter.y  
=> #<Puppet::Resource::Catalog:0x00000000928100 @in_to={Stage[main
```

Okay we got a catalog. Now what?

```
irb(main):004:0> require 'pry' ; binding.pry  
[1] pry(main)> cd data  
[2] pry(#<Puppet::Resource::Catalog>):1> ls
```

When Puppet really acts up though

USE PRY

When not in the debugging mood...


DO GET HELP



<http://i.giphy.com/c5eqVJN7oNLTq.gif>

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<http://ask.puppet.com>

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Puppet Version



puppet/extlib

extlib provides functions out of scope puppetlabs/stdlib

Version 0.11.3 • Apr 17, 2016 • 300 downloads

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<http://forge.puppet.com>

THE MAILING LIST

The screenshot shows the Google Groups interface for the 'Puppet Users' group. At the top left is the Google logo. To its right is a search bar labeled 'Search for topics'. Below the search bar, the word 'Groups' is displayed in red. To the right of 'Groups' are several buttons: a red 'NEW TOPIC' button, a refresh button with a circular arrow icon, a 'Mark all as read' button, and a 'Filters' dropdown menu. On the left side, there is a sidebar with 'My groups' (Home, Starred), 'Favorites' (with a yellow callout box: 'Click on a group's star icon to add it to your favorites'), and 'Recently viewed' (listing GitHub and Puppet Users). The main content area shows the 'Puppet Users' group header, indicating it is 'Shared publicly' and has '30 of 14937 topics (99+ unread)'. Below the header is a description: 'Discussion about using Puppet, the configuration management software, and its moc. Conversations on this list are subject to the Puppet Community Guidelines / Code of'. Three topics are listed: 'Puppet now has a Community Slack (1)' by Kylo Ginsberg (1 post, 2 views), 'Does the puppet agent start puppetmaster? (4)' by César (4 posts, 9 views), and 'How to Read New Files Dynamically with Hiera? (6)' by o...@soluto.com (6 posts, 35 views).

<https://groups.google.com/forum/#!forum/puppet-users>

Also there is IRC, Slack, PUGs...



<http://www.ranker.com/list/cutest-pug-pictures/pet-project>

**THANKS FOR
LISTENING**

BEFORE WE START Q&A THOUGH



WE ARE HIRING

...system architects, project managers, data engineers...



Competent colleagues



Cool projects



Prestigious customers



Steep learning curve



Informal culture



Plenty of creative opportunities



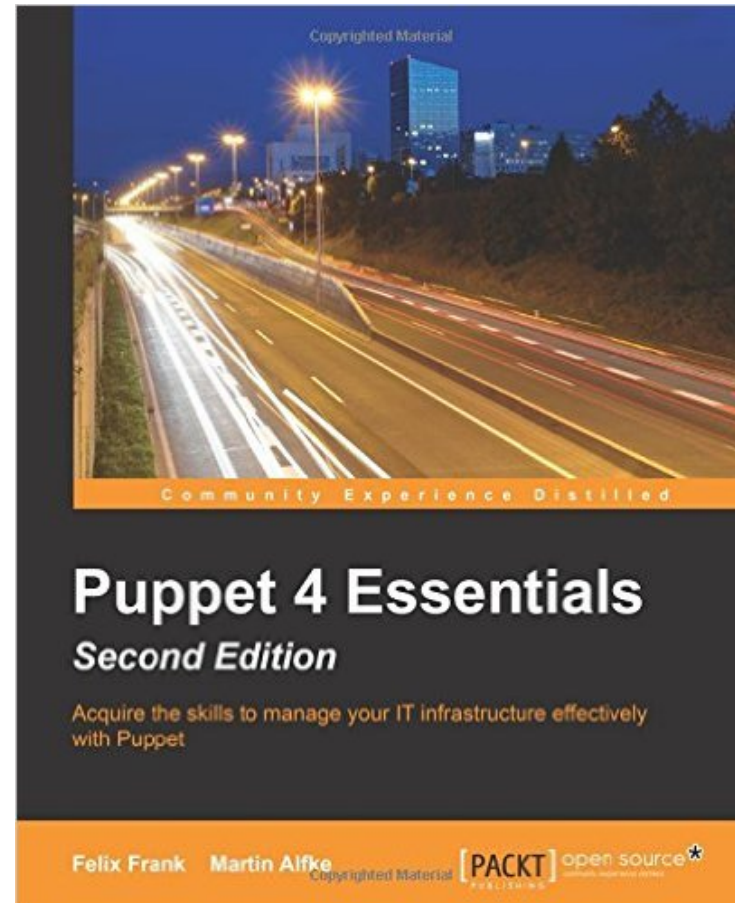
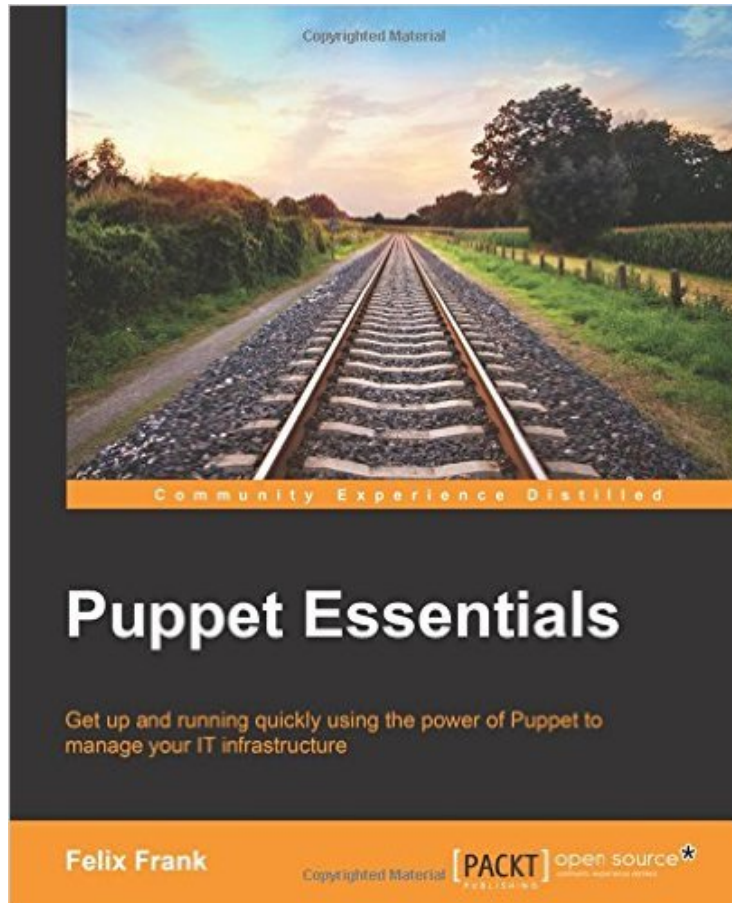
Flexible working hours



Nice little extras

<https://www.unbelievable-machine.com/en/careers/>

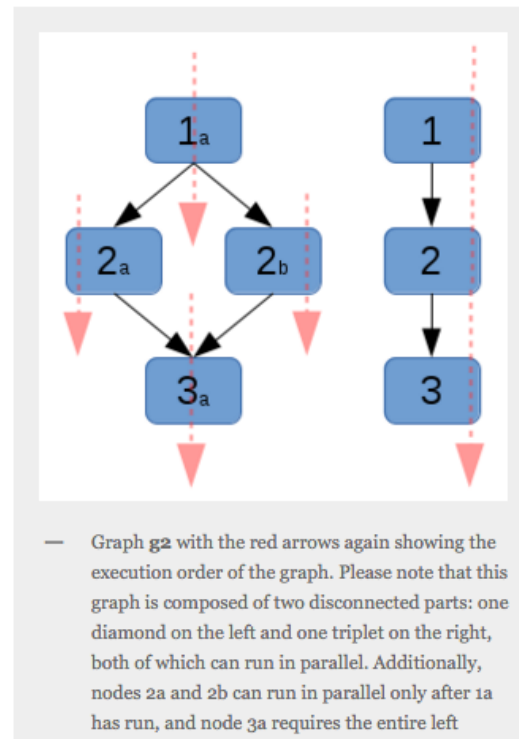
Recommended reading



Check out mgmt

dependency sort order (a topological sort) with red arrows.

Unfortunately, the execution of this graph typically has a single worker that runs through a linearized, [topologically sorted](#) version of it. There is no reason that a graph with a number of [disconnected parts](#) cannot run each separate section in parallel with each other.



<https://ttboj.wordpress.com/tag/mgmt/>

QUESTIONS