A Hard Puppexit from 3 to 4

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Outline

Motivations

Migration

Not All Smooth...

Conclusion
Motivations
Strategic Motivations

- Puppet 4 release: April 2015
- Puppet 3 end of life: December 2016
- Others migrating too
- Update PuppetDB and MCollective afterwards
- Some modules Puppet 4-only
Technical Motivations

• Stricter compiler
• Stronger typing
• Enumerables at last:
  ```ruby
  ['a', 'b'].each { }
  ```
• Support for here documents
• Speed up?
Migration
Timeline

- Volunteering
  - puppet agent -t --noop --masterport 8144
Timeline

- Puppet 3 agents talking to Puppet 4 masters
Timeline

- Puppet 4 agents talking to Puppet 4 masters
Deployment (1)

One RPM called `puppet-agent`:

- Bundles Puppet 4, MCollective, Facter, Ruby, various gems, OpenSSL, ...
- All-in-one layout: `/opt/puppetlabs/...`

Advantages:

- Easier to support for us and Puppet Labs
Deployment (II)

Drawbacks:

- 2 weeks, several bug reports to build the 1\textsuperscript{st} time
- Paths, service names, [...] changed

Approach:

- Deployed config files in both locations
- Used intermediate, empty, v0.0.0 package
Validation and Testing (I)

How:

- **ModuleSync**: sync templates to all modules/hostgroups
- Lint, validation, RSpec tests
- Run tests locally or as part of GitLab CI
Validation and Testing (II)

Why:

- To catch regressions
- To save time: fewer Puppet runs, lesser need for environments
- To help testing new Puppet versions earlier on

→ Users who checked their code with CI cleaned up a lot and now pass puppet-lint
Collaboration (I)

- Invited key users to help test early on
- Reinstallation tests advised (just one node)
- Report central problems and update their code
- Similar questions, could’ve worked on our FAQs
Collaboration (II)

Number of ServiceNow tickets

Would longer phases have made for a smoother user transition?
The Switch

- Old and new masters in separate sub-hostgroups
- Old and new masters listening to different ports
- Puppet agent configuration files in separate locations
Not All Smooth...
Nodes Left Behind (I)

Some nodes:
- ... kept on talking to Puppet 3 masters
- ... kept on running Puppet 3 agents

Because:
- ... of broken catalogues
- ... puppet agent --disable
Nodes Left Behind (II)

Number of requests to /node

→ Regularly sent lists to users, helping them out where needed
Lost Crontabs

- Started managing all user crontabs
- If users had any, the upgrade purged them
- More people than we thought have user crontabs
Relative Paths No Longer Searched

Fails in Puppet 4:

```ruby
class abc::def {
  define iterator { notify {${name:} } }
  iterator { ['a', 'b', 'c']: }
}
```

Works in Puppet 3 and 4:

```ruby
class abc::def {
  define iterator { notify {${name:} } }
  ::abc::iterator { ['a', 'b', 'c']: }
}
```
Empty Strings Now False

```perl
$variable = ''

if $variable {
    # You're running Puppet 4
} else {
    # You're running Puppet 3
}
```

- Consequences can be disastrous
- The `--noop` option should highlight a change
- Most annoying when the narrower scope was felt
Updating 3.x Manifests for Puppet 4.x

https://docs.puppet.com/upgrade/updating_manifests.html
Catalogue Compilation Time Increased

All P3 agents talking to P4 masters

QA agents upgraded to P4

All agents upgraded to P4

11 Mar 17 Mar 23 Mar 29 Mar 4 Apr 10 Apr 16 Apr
Conclusion
Outlook

• We now have better tools for our everyday life
• Puppet 4 → 5 will be easier
Opportunities

• To update the MCollective shell agent
• To update PuppetDB
  • PostgreSQL DB less subject to bloat?
  • Better log clean-up?
  • Faster garbage collector?
  • Improved overall performance?

• ...
A Great Thanks... 

... to our colleagues in IT and our users for an excellent collaboration!
Run... Fix

Puppet 4 servers in place, listening on special port

```
# puppet agent --noop -t -v --masterport 8144
Info: Retrieving pluginfacts
Info: Retrieving plugin
Info: Loading facts
Warning: Not using cache on failed catalog
Error: Could not retrieve catalog; skipping run
```
Type Comparisons Mismatches

Fails in Puppet 4:

```ruby
$memcachesize = '262144'

if $memcachesize > 4194304 {
    $my_cachesize = '4194304'
}
```

Works in Puppet 3 and 4:

```ruby
if $memcachesize + 0 > 4194304 {
    $my_cachesize = '4194304'
}
```
OS Version Comparison

Fails in Puppet 4:

```ruby
if $::operatingsystemmajrelease <= 6 {
  # ...
}
```

Works in Puppet 3 and 4:

```ruby
if versioncmp($::operatingsystemmajrelease, '6') <= 0) {
  # ...
}
```
File Modes Must Be Octal Strings

Fails in Puppet 4:

```plaintext
defile { '/tmp/file' :
    ensure => file,
    mode   => 644,
}
```

Works in Puppet 3 and 4:

```plaintext
defile { '/tmp/file' :
    ensure => file,
    mode   => '0644',
}
```
Variables

- Reserved words have actually become reserved:
  - We once had a parameter called `alias`
  - We needed to rename it to `dns_alias`

- Variables can’t start with an upper-case letter

→ Compilation errors