

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:

```
['a', 'b'].each{ }
```

- Support for here documents
- Speed up?

Migration

Timeline

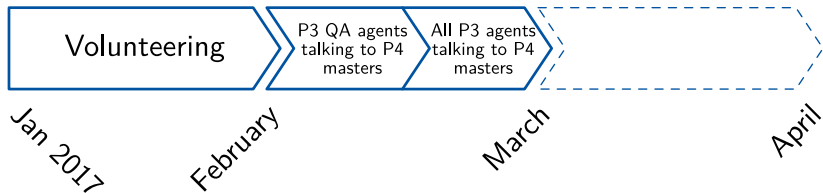


Timeline



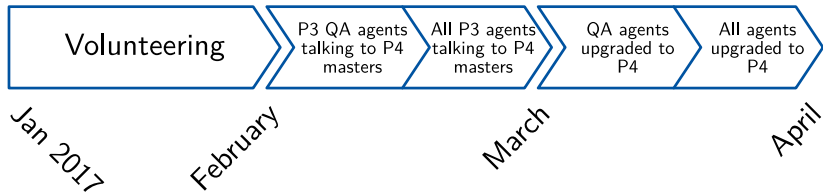
- Volunteering
- `puppet agent -t --noop --masterport 8144`

Timeline



- Puppet 3 agents talking to Puppet 4 masters

Timeline



- Puppet 4 agents talking to Puppet 4 masters

Deployment (I)

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 1st 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

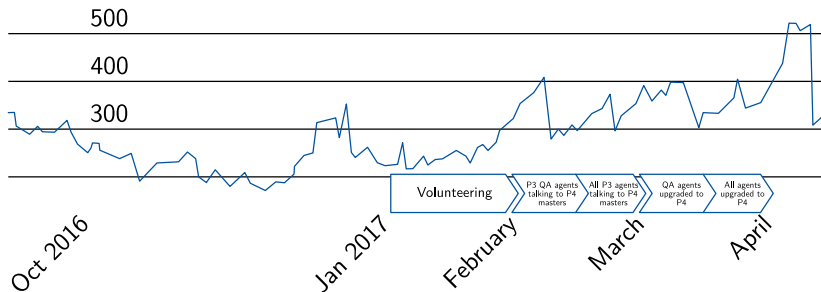
→ Users who checked their code with CI cleaned up a lot and now pass `puppet-lint`

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:

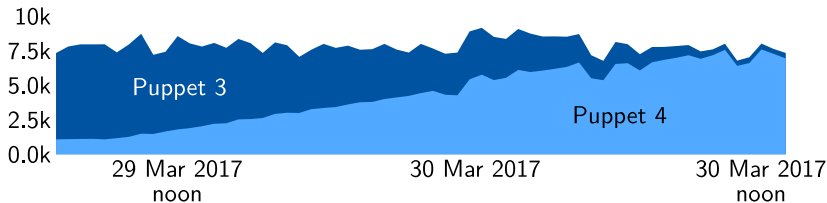
- ... kept on talking to Puppet 3 masters
- ... kept on running Puppet 3 agents

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:

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

Works in Puppet 3 and 4:

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

Empty Strings Now False

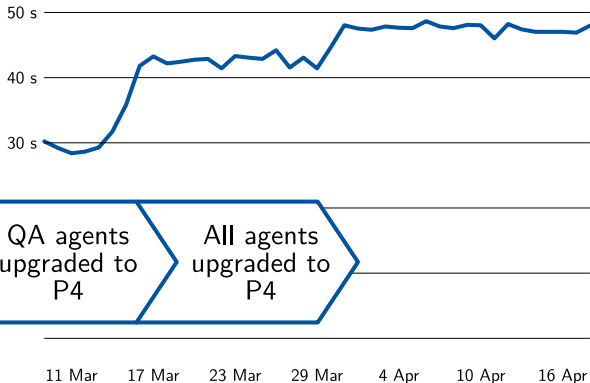
```
$variable = ''  
  
if $variable {  
  # You're running Puppet 4  
} else {  
  # You're running Puppet 3  
}
```

- 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!



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Backup Slides

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
Error: Could not retrieve catalog from remote server: Error 500 on SERVER: {"message":"Server Error: Evaluation Error: Comparison of: String > Integer, is not possible. Caused by 'A String is not comparable to a non String'. at /mnt/puppetnfsdir/environments/production/modules/afs/manifests/config.pp:50:24 on node aiadm17.cern.ch","issue_kind":"RUNTIME_ERROR"}
Warning: Not using cache on failed catalog
Error: Could not retrieve catalog; skipping run
```

Type Comparisons Mismatches

Fails in Puppet 4:

```
$memcachesize = '262144'  
  
if $memcachesize > 4194304 {  
    $my_cachesize = '4194304'  
}
```

Works in Puppet 3 and 4:

```
if $memcachesize + 0 > 4194304 {  
    $my_cachesize = '4194304'  
}
```

OS Version Comparison

Fails in Puppet 4:

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

Works in Puppet 3 and 4:

```
if versioncmp($::operatingsystemmajrelease, '6') <= 0) {  
  # ...  
}
```

File Modes Must Be Octal Strings

Fails in Puppet 4:

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

Works in Puppet 3 and 4:

```
file { '/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