WRITING ANSIBLE MODULES FOR FOREMAN AND KATELLO

$ WHOAMI

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♥ FOSS ♥

♥ automation ♥

WTF?!

- 15 minute version of 45 minute talk
- how to best automate Foreman/Katello using Ansible
- spoiler: `command: hammer` is not the answer!

WHY NOT X?!

- `ansible-module-foreman` by Thomas Krahn (@Nosmoht) is probably the oldest
  - Well maintained
  - Supports only Foreman
- Upstream Ansible `foreman` and `katello` modules
  - Deprecated since Ansible 2.8
  - "one" module for everything

FOREMAN ANSIBLE MODULES

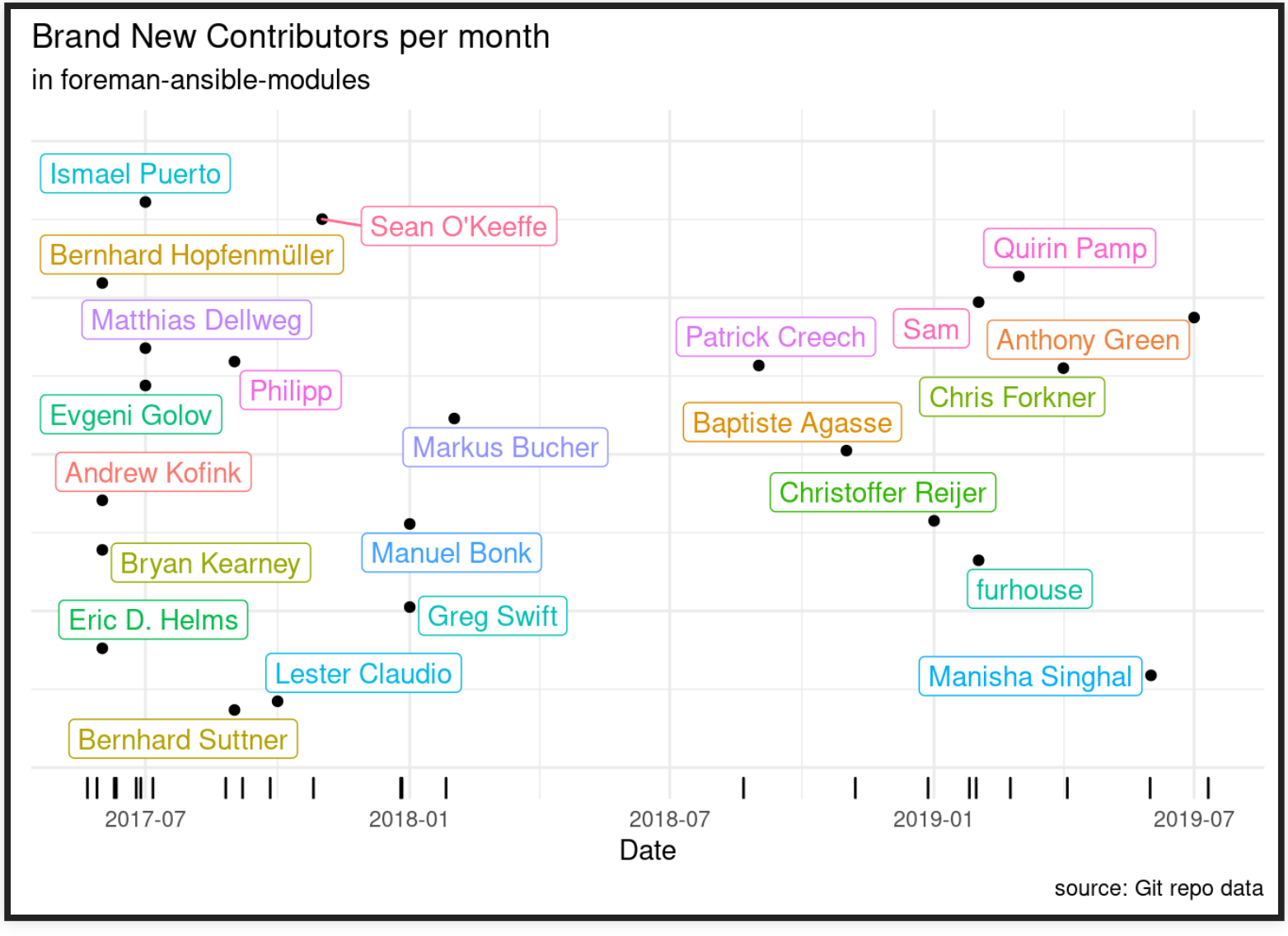
- Started June 2017 as a repository to clean up upstream modules
- One module per Foreman entity or action
- Extensive test-suite
- Abstraction framework for common tasks (connect, search, create, update, delete)

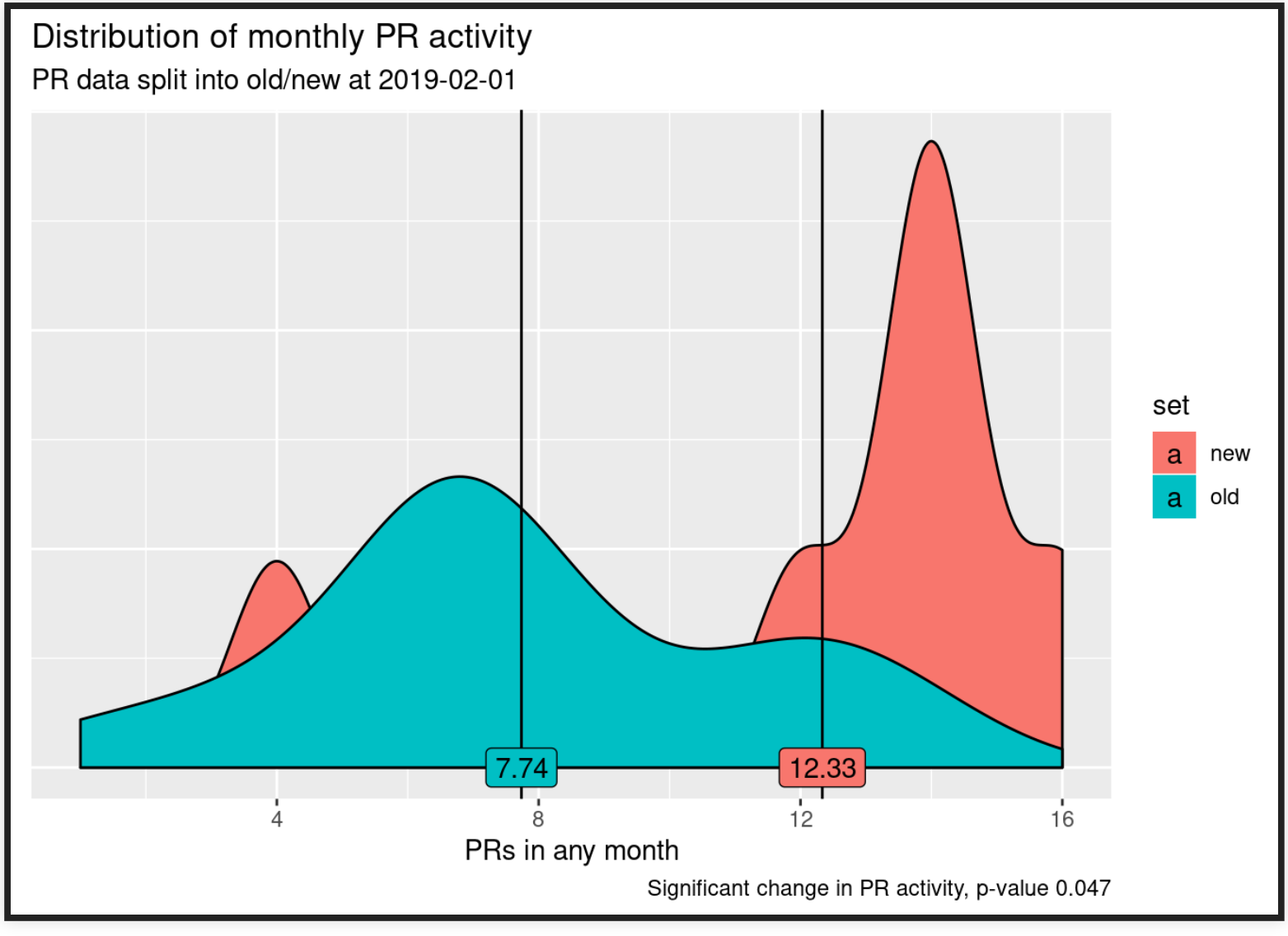
FOREMAN ANSIBLE MODULES

- Initially, we still used `nailgun`
  - `nailgun` releases are Satellite version specific
  - Plugins not in Satellite are not supported
  - Doesn't work without Katello installed
- Recent switch to `apypie`
  - Consumes the `apidoc.json` published by Foreman / `apipie-rails`
- Migration quite easy thanks to the existing framework and tests

FOREMAN ANSIBLE MODULES - STATS

- 43 🌟 on GitHub
- 24 Contributors (8 Red Hat, 7 ATIX)
- 8 new Contributors in 2019


Brand New Contributors per month
in foreman-ansible-modules
Ismael Puerto
Sean O'Keeffe
Bernhard Hopfenmüller
Quirin Pamp
Matthias Dellweg
Patrick Creech
Sam
Anthony Green
Philipp
Chris Forkner
Evgeni Golov
Baptiste Agasse
Markus Bucher
Andrew Kofink
Christoffer Reijer
Manuel Bonk
Bryan Kearney
furhouse
Eric D. Helms
Greg Swift
Lester Claudio
Manisha Singhal
Bernhard Suttner
2017-07
2018-01
2018-07
2019-01
2019-07
Date
source: Git repo data


Distribution of monthly PR activity
PR data split into old/new at 2019-02-01
7.74
12.33
4
8
12
16
PRs in any month
set
a
new
a
old
Significant change in PR activity, p-value 0.047

FOREMAN ANSIBLE MODULES - OUTLOOK

- Collection on Ansible Galaxy
- RPM on yum.theforeman.org

LET'S WRITE A MODULE!

UNDER THE HOOD

Most modules manage objects/entities in Foreman

1. Find an existing entity
2. Compare existing entity with the data provided by the user
3. Save the entity

We have a framework to support that

First a wrapper around `AnsibleModule`:

```
from ansible.module_utils.foreman_helper import
  ForemanEntityApypieAnsibleModule

module = ForemanEntityApypieAnsibleModule(
 argument_spec=dict(name=dict(required=True)))
```

Load user provided parameters and connect to the API:

```
entity_dict = module.clean_params()
module.connect()
```

Find the entity and ensure it looks like the user wanted:

```
entity = module.find_resource_by_name('architectures',
  name=entity_dict['name'], failsafe=True)
changed = module.ensure_resource_state('architectures',
  entity_dict, entity, name_map)
module.exit_json(changed=changed)
```

Translate Ansible params to Foreman API params:

```
name_map = { 'name': 'name' }
```

```
from ansible.module_utils.foreman_helper import
  ForemanEntityApypieAnsibleModule

name_map = { 'name': 'name' }
module = ForemanEntityApypieAnsibleModule(
 argument_spec=dict(name=dict(required=True)))
entity_dict = module.clean_params()
module.connect()

entity = module.find_resource_by_name('architectures',
  name=entity_dict['name'], failsafe=True)
changed = module.ensure_resource_state('architectures',
  entity_dict, entity, name_map)
module.exit_json(changed=changed)
```

```
if not module.desired_absent:
  if 'operatingsystems' in entity_dict:
    entity_dict['operatingsystems'] =
      module.find_resources_by_title('operatingsystems',
        entity_dict['operatingsystems'], thin=True)
```

```
if not module.desired_absent:
  if 'operatingsystems' in entity_dict:
    search_list = ["title~{}".format(title) for title
                   in entity_dict['operatingsystems']]
    entity_dict['operatingsystems'] =
      module.find_resources('operatingsystems', search_list,
                            thin=True)
```

THANKS!

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