MONASH University

Developing and Operating MyTardis at Monash University

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Monash eResearch Centre

https://www.monash.edu/eresearch

In collaboration with:

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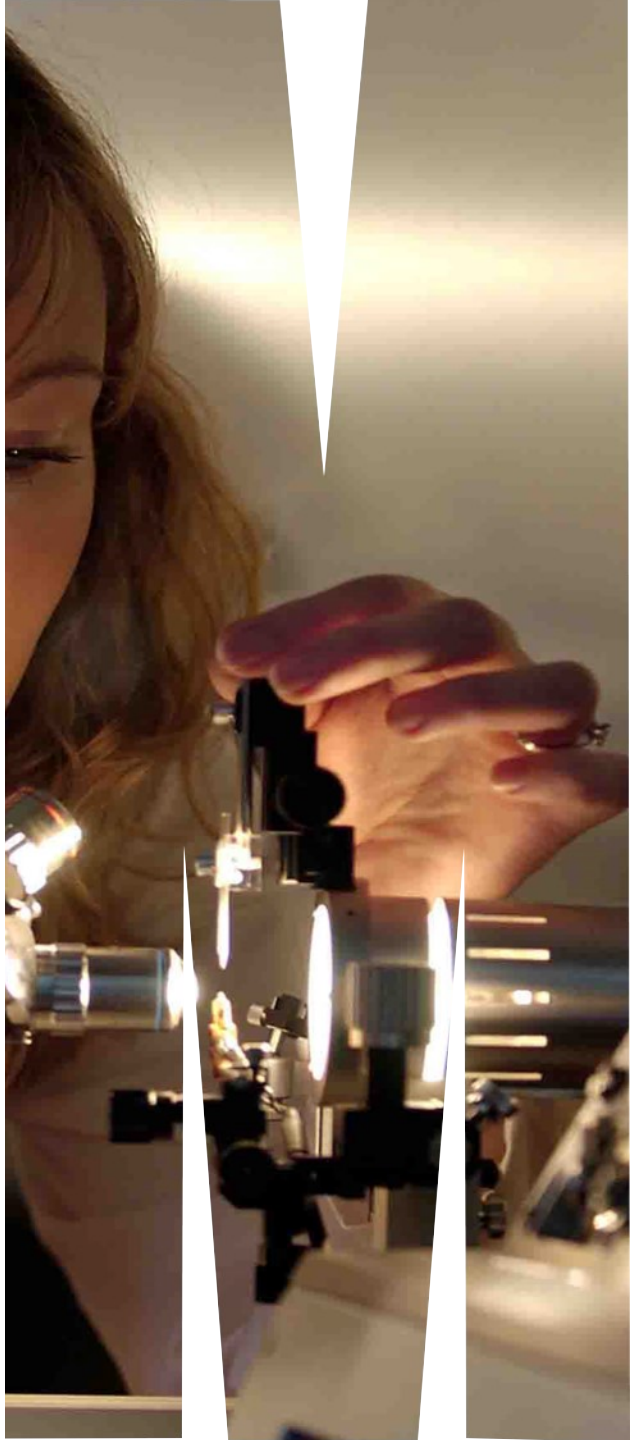


Objectives

Developing MyTardis

MyTardis Codebase

Contributing to Mytardis

Maintaining MyTardis

Continuous Integration

Operating MyTardis

Infrastructure as code

Managing Mytardis deployment at Monash

Developing MyTardis at Monash University

MyTardis

- Open source project hosted at https://github.com/mytardis/mytardis
- Licensed under GPL V3.0
- Latest release is v3.9.0
- Documentation http://mytardis.readthedocs.org
  - User documentation
    - Organising data, Acessing data, sharing and publishing data
  - Administrator documentation
    - Installation, Settings, Migration, enable/disable apps
  - Developer documentation
    - Architecture, Tests, source code

Developing MyTardis at Monash University

Contributing to MyTardis

- Feature requests
- Reporting Bugs
  - https://github.com/mytardis/mytardis/issues
- Submitting Pull Request
  - https://github.com/mytardis/mytardis/blob/develop/CONTRIBUTING.rst
- Help users and contributors via Slack/Github
  - https://mytardis.slack.com/

User password change and reset functions via UI and API auth-rewrite feature ux improvement
#324 opened on 2 Dec 2013 by grischa future

Redirect to next page is not working bug
#1196 opened on 26 Jul by manishkumr 4.0

Tell elasticsearch tokenizer to split on underscores
#1285 by wettenhj was merged on 10 Sep

Developing MyTardis at Monash University

Maintaining MyTardis

Automated Python Security and Dependency Updates

Dependencies defined in **requirements-base.txt** 37

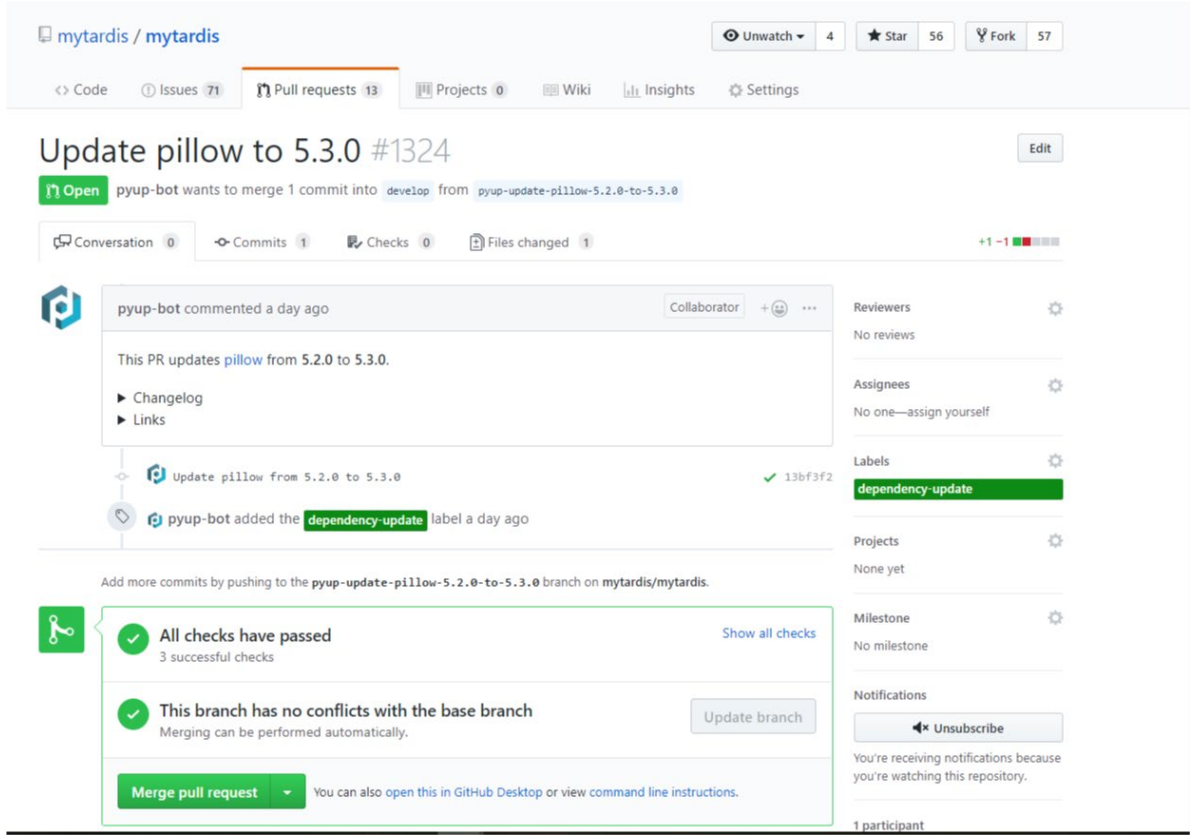
paramiko / **paramiko**	2.4.2
celery / **py-amqp** amqp	1.4.9
waylan / **beautifulsoup** beautifulsoup4	4.6.3
celery / **billiard**	3.3.0.23
mozilla / **bleach**	2.1.4
celery / **celery**	3.1.26.post2
django / **django**	1.11.16
django-extensions / **django-extensions**	1.8.1
django-haystack / **django-haystack**	2.8.1
mjumbewu / **django-jstemplate**	1.3.8
kevin1024 / **django-npm**	1.0.0
macropin / **django-registration** django-registration-redux	2.4

Developing MyTardis at Monash University

Maintaining MyTardis

Automated Python Security and Dependency Updates

- https://pyup.io/



Developing MyTardis at Monash University

Maintaining MyTardis

Enforcing Coding Standard and error detection

- https://www.pylint.org/

```
(venv) C:\Users\Manish Kumar\Documents\GitHub\MK\mytardis>pylint tardis.apps.social_auth
Using config file C:\Users\Manish Kumar\Documents\GitHub\MK\mytardis\.pylintrc


------------------------------------
Your code has been rated at 10.00/10
```

Developing MyTardis at Monash University

Maintaining MyTardis

Code review and code quality monitoring

- **Codacy** https://www.codacy.com/

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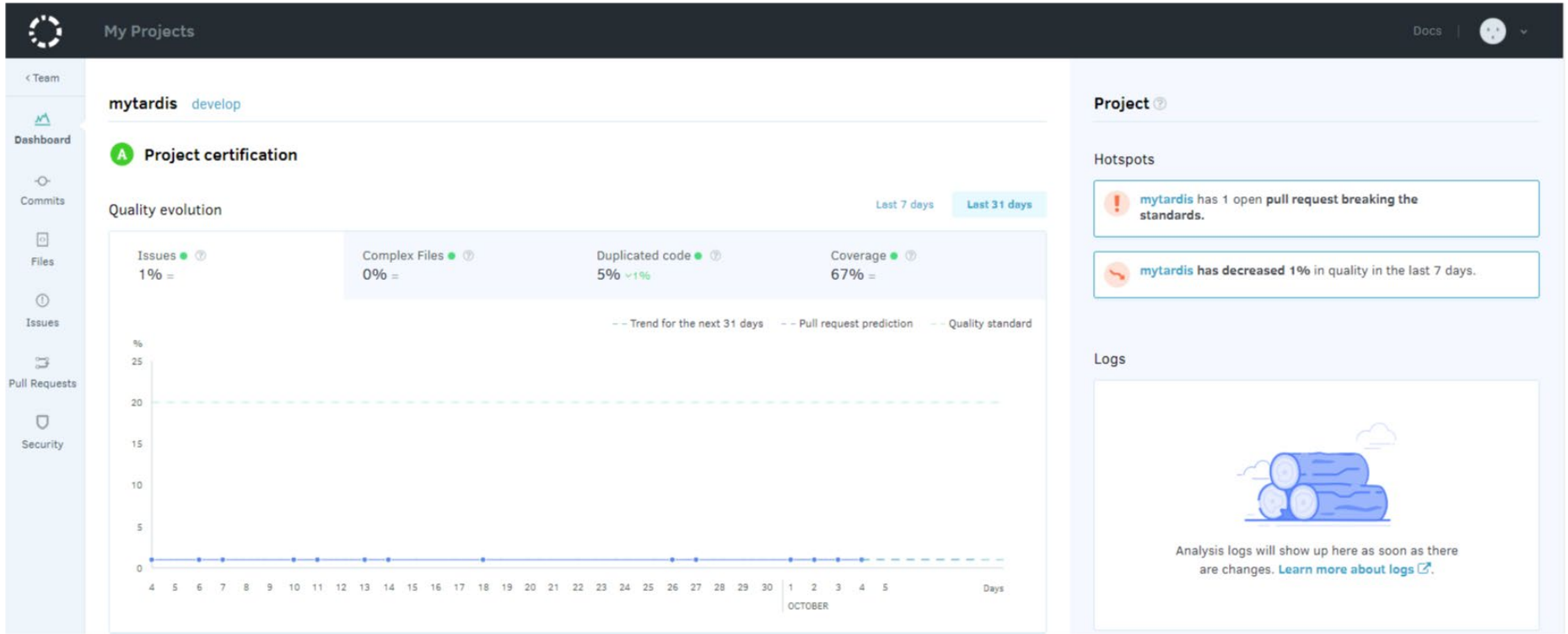
Maintaining MyTardis

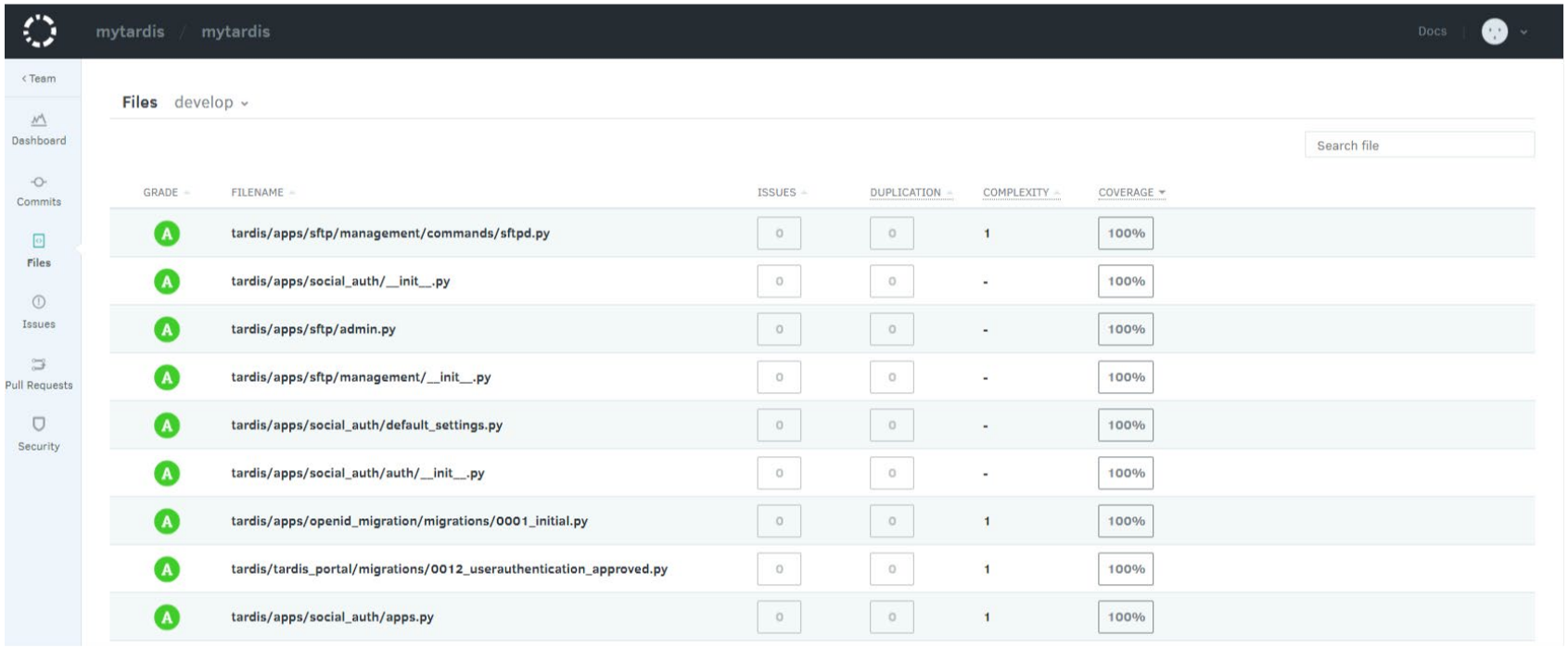
Code review and code quality monitoring



Developing MyTardis at Monash University

Maintaining MyTardis

Code review and code quality monitoring



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Maintaining MyTardis

Automated testing

- Unit Tests
  - ./test.py

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Maintaining MyTardis

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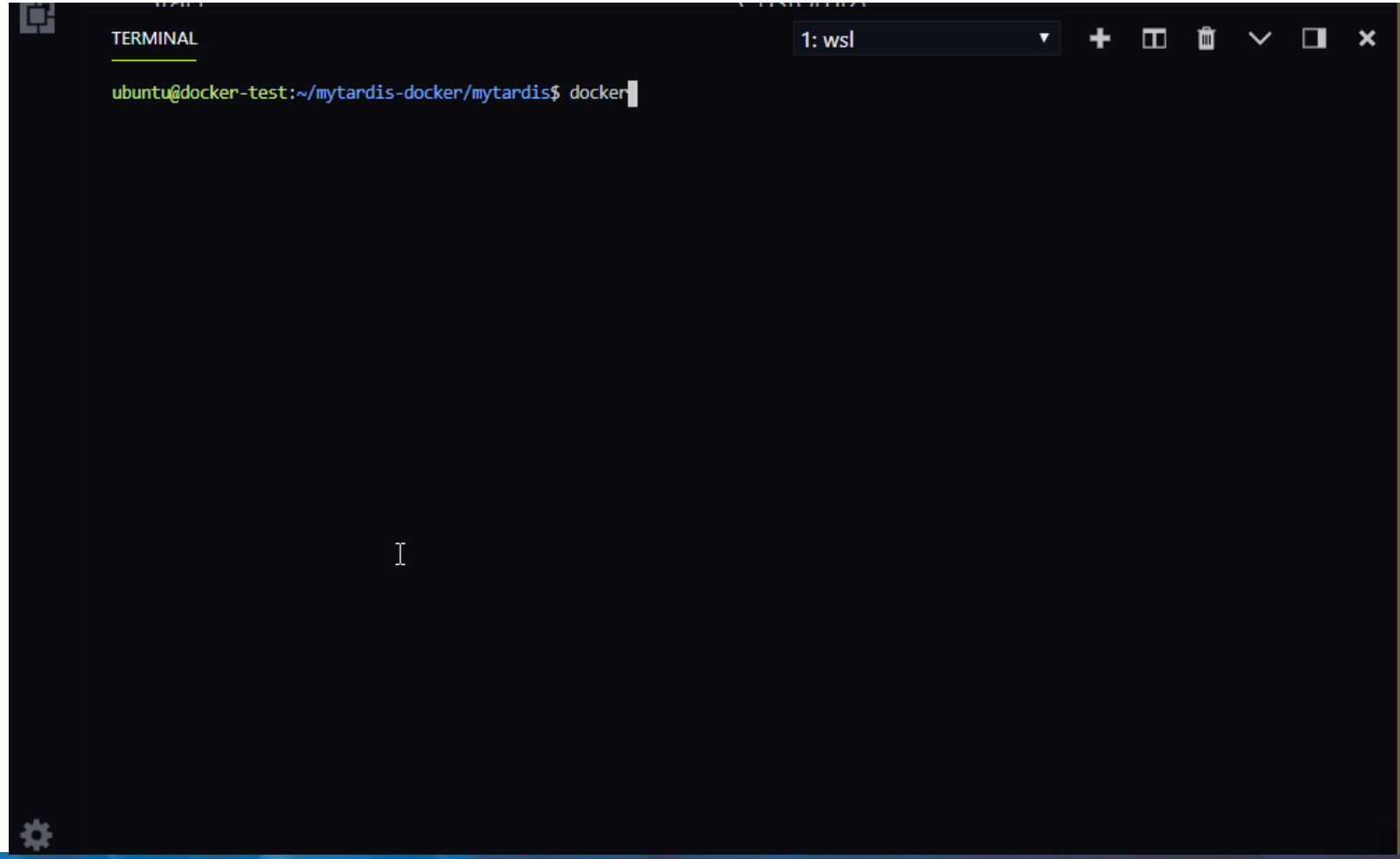

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Maintaining MyTardis

Automated testing

- **BDD**
  - **./test.py behave**

Developing MyTardis at Monash University

Maintaining MyTardis

Automated testing

- **BDD**
  - **./test.py behave**

TERMINAL

```
ubuntu@docker-test:~/mytardis-docker/mytardis$
```

Developing MyTardis at Monash University

Maintaining MyTardis

Automated testing

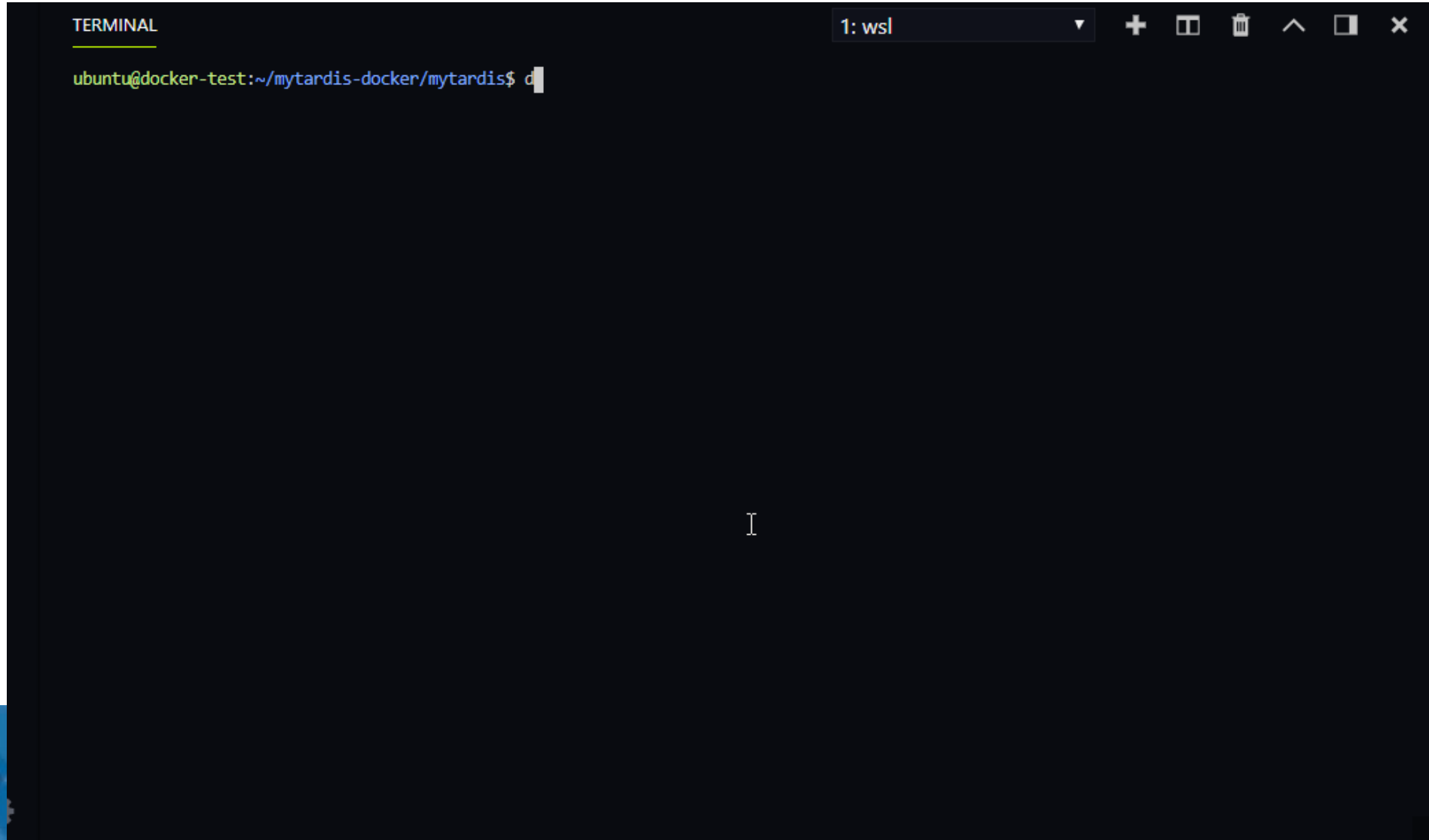
- **Qunit tests**
  - **Npm test**

Developing MyTardis at Monash University

Maintaining MyTardis

Automated testing

- **Qunit tests**
  - **Npm test**



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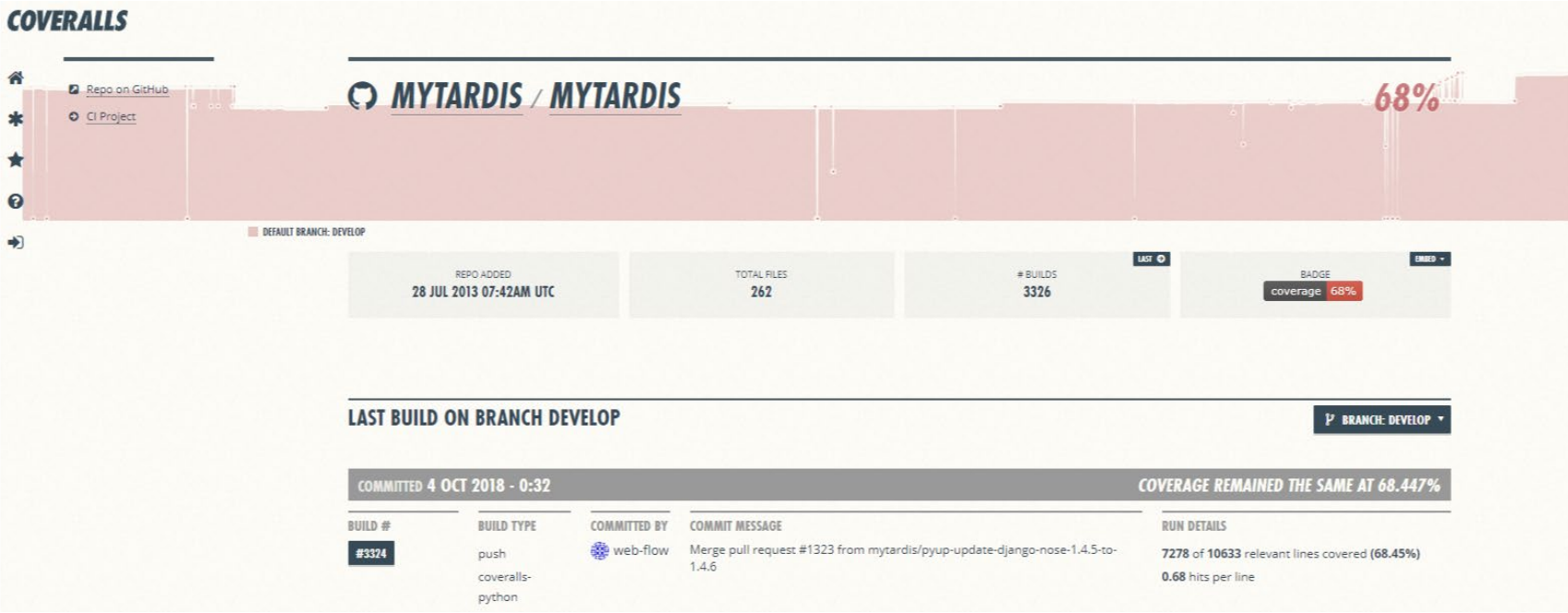
Maintaining MyTardis

Test coverage

- https://coveralls.io/



Developing MyTardis at Monash University

Continuous Integration

Developing MyTardis at Monash University

Continuous Integration

- How we do it
  - Developers check out code into their private workspaces
  - When done, commit the changes to the repository
  - The CI server monitors the repository and checks out changes when they occur
  - The CI server builds the system and runs unit and integration tests

Developing MyTardis at Monash University

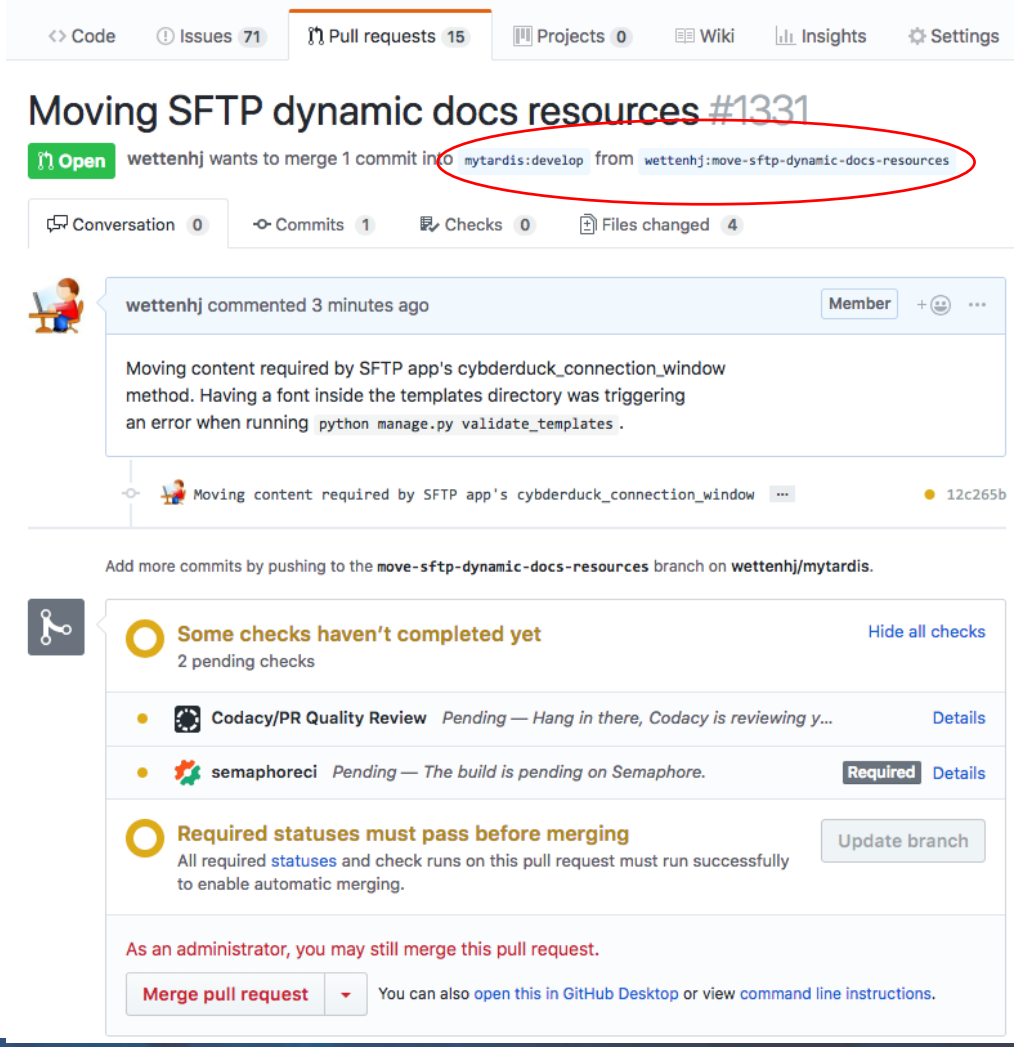
Continuous Integration

- How we do it
  - The CI server releases deployable artefacts for testing
  - The CI server assigns a build label to the version of the code it just built
  - The CI server informs the team of the successful build
  - If the build or tests fail, the CI server alerts the team
  - The team fixes the issue at the earliest opportunity
  - Continue to continually integrate and test throughout the project

Developing MyTardis at Monash University

Continuous Integration

- Semaphore
  - PR submitted
  - Codacy check
  - Semaphore build
  - PR ready to be merged



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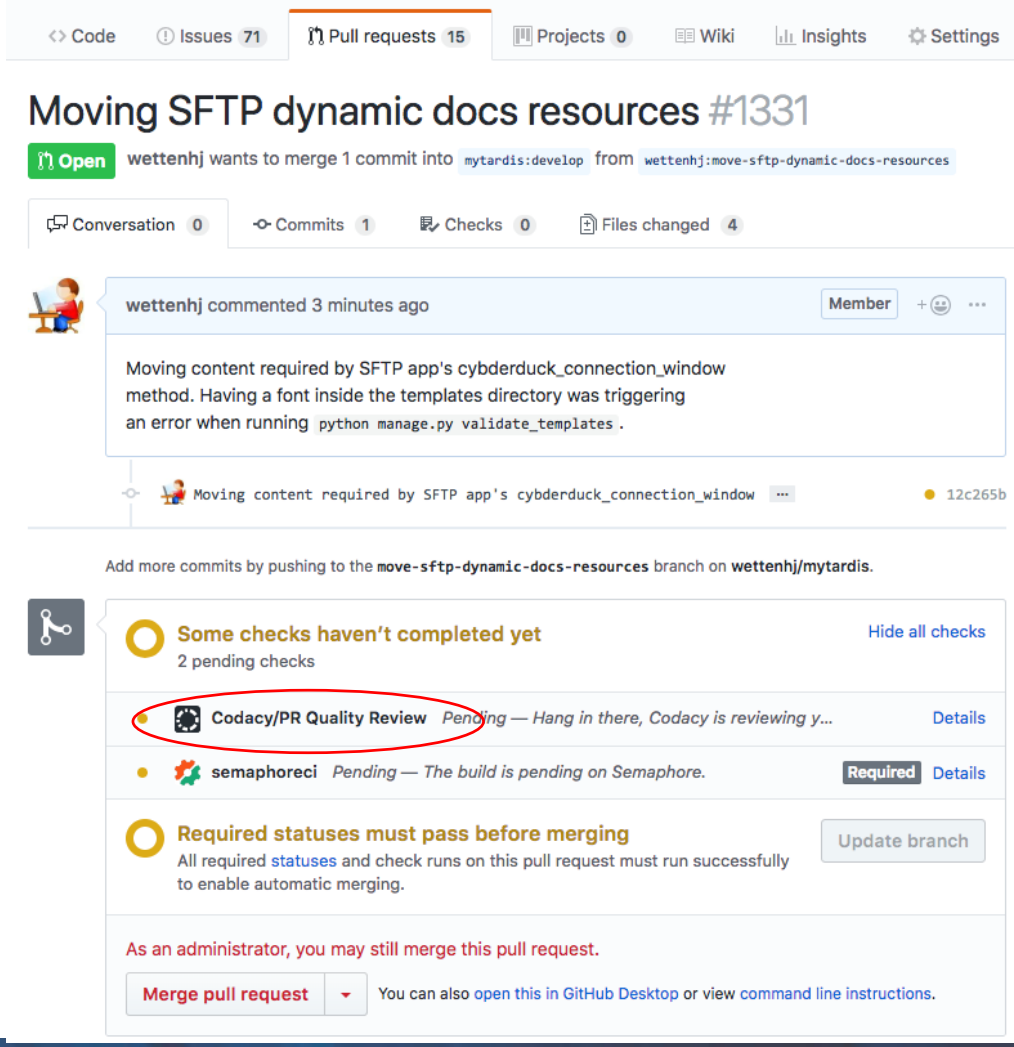

Developing MyTardis at Monash University

Continuous Integration

- Semaphore
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mytardis / mytardis PUBLIC

Insights Project settings

Branch: pull-request-1331

View pull request

Moving content required by SFTP app's cybderduck_connection_window

method. Having a font inside the templates directory was triggering

an error when running "python manage.py validate_templates".

wettenhj created a build based on revision 12c265b 12 minutes ago

Pull Request #1331

PASSED build 1 11:29

all tests 11:29

1 more setup command +

Launch SSH

```
docker-compose -f docker-test.yml run -e TEST_TYPE=memory -e CODACY_PROJECT_TOKEN=$CODACY_PROJECT_TOKEN -e COVERALLS_REPO_TOKEN=$COVERALLS_REPO_TOKEN
-e CI_NAME=SemaphoreCI -e CI_BUILD_NUMBER=$SEMAPHORE_BUILD_NUMBER -e CI_BRANCH=$BRANCH_NAME -e PULL_REQUEST_NUMBER=$PULL_REQUEST_NUMBER test
```

02:51

```
docker-compose -f docker-test.yml run -e TEST_TYPE=pg test
```

00:43

```
docker-compose -f docker-test.yml run -e TEST_TYPE=behave test
```

00:34

```
docker-compose -f docker-test.yml run -e TEST_TYPE=mysql test
```

01:01

```
docker-compose -f docker-test.yml run -e TEST_TYPE=pylint test
```

02:57

```
for image in mytardis/mytardis-base mytardis/mytardis-run mytardis/mytardis-test; do if [ ! -v PULL_REQUEST_NUMBER ]; then if [ ! "$(git tag --
points-at $BRANCH_NAME)" == "" ]; then tag=$(git tag --points-at $BRANCH_NAME); docker tag $image $image:$tag; docker push $image:$tag; elif [
"$BRANCH_NAME" == "master" ]; then docker push $image; elif [ "$BRANCH_NAME" == "develop" ]; then tag=develop; docker tag $image $image:$tag; docker
push $image:$tag; fi; fi; done
```

00:00

Developing MyTardis at Monash University

Continuous Integration

- Semaphore
  - PR submitted
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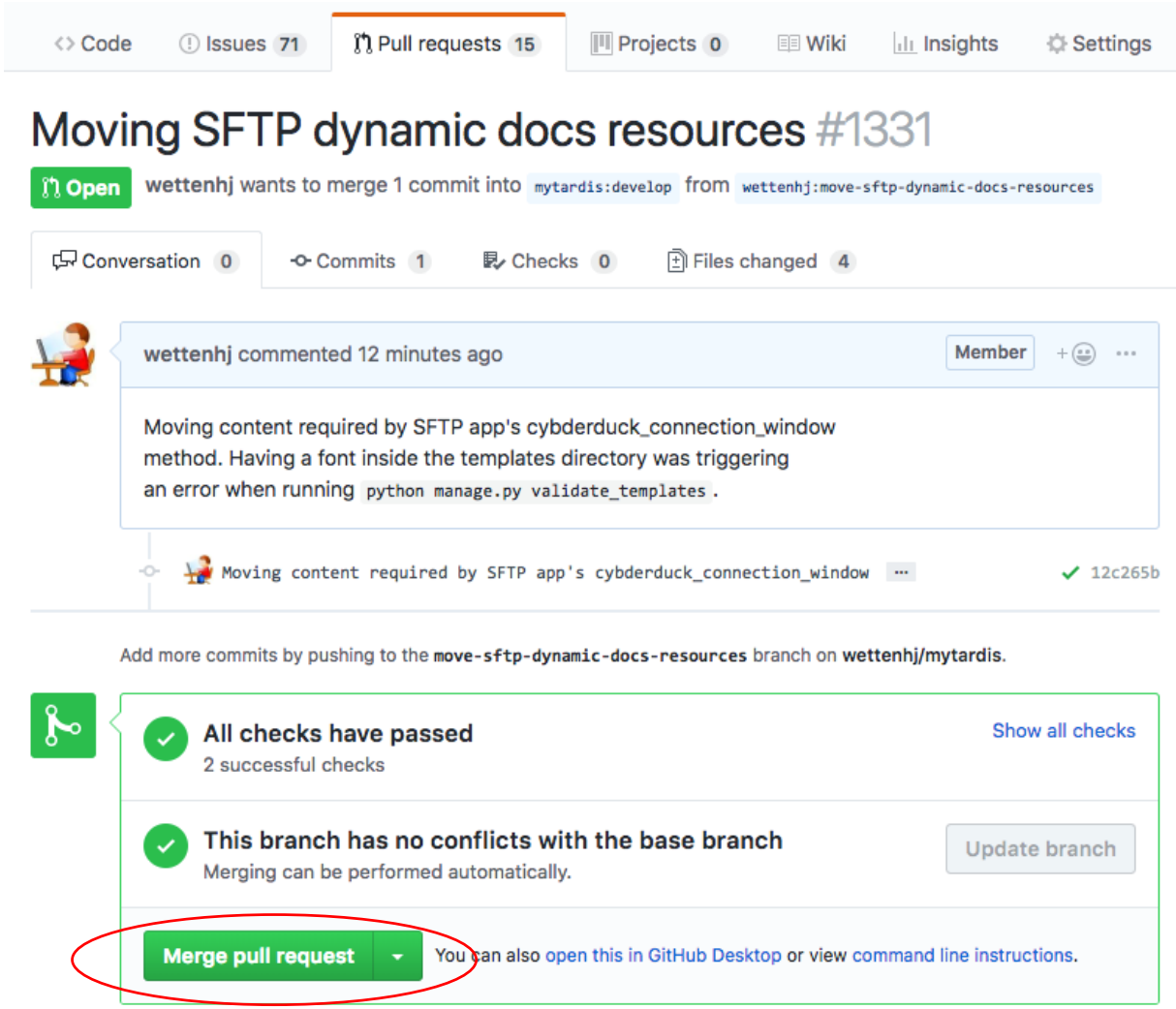

Developing MyTardis at Monash University

Continuous Integration

- Semaphore

PUBLIC REPOSITORY

mytardis/mytardis-run

Last pushed: 4 hours ago

Repo Info | Tags | Collaborators | Webhooks | Settings

Tag Name	Compressed Size	Last Updated
develop	434 MB	4 hours ago
v3.9.0	341 MB	2 days ago
latest	341 MB	2 days ago
v4.0.0-RC9	433 MB	10 days ago
v4.0.0-RC8	432 MB	24 days ago
v4.0.0-RC6	432 MB	a month ago
v4.0.0-RC5	432 MB	a month ago
v4.0.0-RC3	429 MB	a month ago
v4.0.0-RC1	430 MB	a month ago

Developing MyTardis at Monash University

MyTardis Release process

- Minor release(Monthly)
- Major release(as needed)
- Security and patch release(anytime within release cycle)

Day of the Month	Tasks
8th	Feature Freeze day: •Announce creation of series-x.y branch and feature freeze on #general MyTardis Slack channel •Create meta issue to track release on http://github.com/mytardis/release issues •Merge any final Pull Requests labelled with this milestone into develop that have been approved (i.e., reviewed and have approval status). •Create series-x.y branch from develop •Tag and release X.Y.0-rc1
11th	Update Store.Monash test stack with latest X.Y.0-rc release.
14-24th (as needed)	Tag and release subsequent RCs as needed. Generally should aim for at least a couple.
22nd	Release day: •Cherry-pick any final patches for features in this release that have been merged into develop. •Ensure all tests on series-x.y are passing on Semaphore •Tag X.Y.0 version from series-x.y •Check that all tests for tag X.Y.0 pass •Create github release

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Infrastructure as code

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Operating MyTardis at Monash University

Infrastructure as Code

- Nectar cloud(Based on OpenStack)
- Heat
- Salt

Operating MyTardis at Monash University

Infrastructure as Code

- Nectar cloud(Based on OpenStack)
  - provides
    - flexible scalable computing power
    - computing infrastructure
    - software and services

- Heat
- Salt

Operating MyTardis at Monash University

Infrastructure as Code

- Nectar cloud(Based on OpenStack)
- Heat
  - Heat template
  - Heat create stack
  - Heat update stack
- Salt

```yaml
heat_template_version: 2013-05-23

description: Simple template to deploy a single compute instance

resources:
  my_instance:
    type: OS::Nova::Server
    properties:
      image: cirros-0.3.3-x86_64
      flavor: m1.small
      key_name: my_key
      networks:
        - network: private-net
```

Operating MyTardis at Monash University

Infrastructure as Code

- Nectar cloud(Based on OpenStack)
- Heat
  - Heat template
  - Heat create stack
  - Heat update stack

```
python deploy_all.py --deployment qat --salt_master_ip=118.138.233.109 --ssh_key_name=cloud-nodes --
security_group=open-to-all --celery_n_servers 2 --celeryd_filters_n_servers 2 > qat-store-monash.json
```

```
heat stack-create qat-store-monash --template-file qat-store-monash.json
```

Operating MyTardis at Monash University

Infrastructure as Code

- Nectar cloud(Based on OpenStack)
- Heat
  - Heat template
  - Heat create stack
  - Heat update stack
- Salt

```
        "Web1": {
            "Properties": {
                "availability_zone": {
                    "Ref": "WebAvailabilityZone1"
                },
                "flavor": {
                    "Ref": "WebVMFlavour"
                },
                "image": {
                    "Fn::FindInMap": [
                        "OSNameToImageID",
                        {
                            "Ref": "WebOSName"
                        },
                        "ID"
                    ]
                },
                "key_name": {
                    "Ref": "WebKeyPair"
                },
                "networks": [],
                "security_groups": [
                    "open-to-all"
                ],
                "user_data": {
                    "Fn::Base64": "#!/bin/bash\napt-get update\napt-get re
 qat\nroles:\n- www\n\nEOF\nchmod 644 /etc/salt/grains\n\n\nSALT_MINION_
/salt/minion_id\necho '118.138.233.170 salt' >> /etc/hosts\nreboot\n"
                }
            },
            "Type": "OS::Nova::Server"
        }
```

Operating MyTardis at Monash University

Infrastructure as Code

- Nectar cloud(Based on OpenStack)
- Heat
- Salt
  - Configuration Management
    - Run commands on managed systems
    - Define re-usable configurations
    - Apply commands and configurations to specific systems

Operating MyTardis at Monash University

Infrastructure as Code

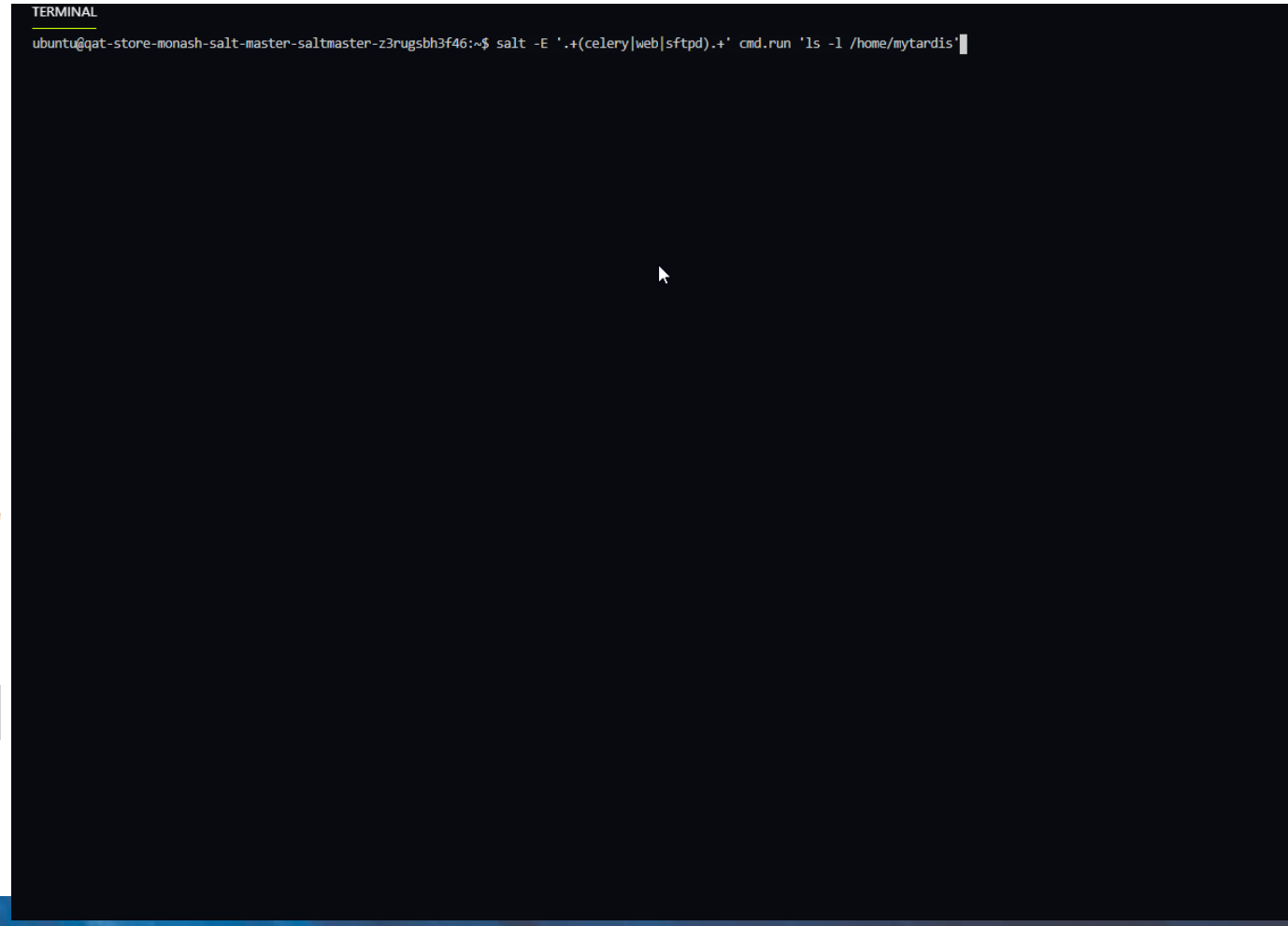
- Salt
  - Configuration Management
    - Run commands on managed systems
    - Define re-usable configurations
    - Apply commands and configurations to

```
salt -E '.+(celery|web|sftpd).+' cmd.run 'ls -l /home/mytardis'
```

target

module.function

arguments



Operating MyTardis at Monash University

Infrastructure as Code

- Salt
  - Configuration Management
    - Run commands on managed systems
    - Define re-usable configurations
      - Salt state
    - Apply commands and configurations to specific systems

Salt '*web*' state.apply

storedotstar-salt-states / networking / firewall / web.sls

```
http:
  iptables.append:
    - table: filter
    - chain: INPUT
    - jump: ACCEPT
    - match: state
    - connstate: NEW
    - dport: 80
    - proto: tcp
    - save: True
    - require:
      - iptables: clean_iptables_ipv4

https:
  iptables.append:
    - table: filter
    - chain: INPUT
    - jump: ACCEPT
    - match: state
    - connstate: NEW
    - dport: 443
    - proto: tcp
    - save: True
    - require:
      - iptables: clean_iptables_ipv4
```

Operating MyTardis at Monash University

Infrastructure as Code

- Nectar cloud(Based on OpenStack)
- Heat
- Salt
  - Configuration Management
    - Run commands on managed systems
    - Define re-usable configurations
    - Apply commands and configurations to specific systems

storedotstar-salt-states / top.sls

```
base:
  '*':
    - common.pkgs
    - common.timezone
    - ssh
    - storage
    - networking.hosts
    - networking.firewall.default
    - logging.rsyslog
    - logging.munin_node
    - admin.authorized_keys
  'G@roles:saltmaster':
    - logging.munin_master
  'G@roles:elasticsearch_loadbalancer':
    - haproxy
  'G@roles:elasticsearch':
    - database.elasticsearch
  'G@roles:postgresql*':
    - database.postgres_client
  'G@roles:postgresql_server_master':
    - database.postgres_server
  'G@roles:postgresql_server_slave':
    - database.postgres_server
  'G@roles:postgresql_pgpool':
    - database.postgres_pgpool
  'G@roles:haproxy':
    - haproxy
  'G@roles:www':
    - tardis.web
```

http://www.mytardis.org/

https://github.com/mytardis/mytardis

https://mytardis.readthedocs.io

store.star.help@monash.edu

MyTardis has been supported by:

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