

# Recording Ansible

**building ansible with Ansible**

**& testing it with Ansible**

David Moreau-Simard ([fosstodon.org/@rfc2549](https://fosstodon.org/@rfc2549))

Config Management Camp 2023

## \$ whoami

```
---
- name: David Moreau-Simard
  hosts:
    - dmsimard:matrix.org
    - fosstodon.org/@rfc2549
  vars:
    location: Montreal, Canada (or rabbit holes)
    profile: sysadmin, dev/ops, CI/CD, SRE
  roles:
    - Ansible user since version 1.8 or so (2014?)
    - Previously in the Ansible community team @ Red Hat
    - Part time open source contributor (between dev ops and dad ops)
```

# About this presentation

- You can try this at home and even help improve it: it's open source 🎉
- Not exhaustive: meant as a high level overview with references to explore
- Happy to chat about it, feel free to reach out !

# Ansible

☰ README.rst

[pypi v2.14.1](#) [docs latest](#) [chat IRC](#) [Azure Pipelines failed](#) [code of conduct](#) [Ansible](#) [mailing lists](#) [Ansible](#) [license](#) [GPL v3.0](#)  
[openssf best practices](#) [in progress 66%](#)

## Ansible

Ansible is a radically simple IT automation system. It handles configuration management, application deployment, cloud provisioning, ad-hoc task execution, network automation, and multi-node orchestration. Ansible makes complex changes like zero-downtime rolling updates with load balancers easy. More information on the [Ansible website](#).

### Design Principles

- Have an extremely simple setup process with a minimal learning curve.
- Manage machines quickly and in parallel.
- Avoid custom-agents and additional open ports, be agentless by leveraging the existing SSH daemon.
- Describe infrastructure in a language that is both machine and human friendly.
- Focus on security and easy auditability/review/rewriting of content.
- Manage new remote machines instantly, without bootstrapping any software.
- Allow module development in any dynamic language, not just Python.
- Be usable as non-root.
- Be the easiest IT automation system to use, ever.

<https://github.com/ansible/ansible/blob/devel/README.rst>

# Configuration management with Ansible

```
- name: Setup nginx
hosts: web01
become: true
handlers:
  - name: Restart nginx
    service:
      name: nginx
      state: restarted
tasks:
  - name: Install nginx
    package:
      name: nginx
      state: present
  - name: Configure virtual host
    template:
      src: vhost.conf.j2
      dest: /etc/nginx/conf.d/service.conf
    notify:
      - Restart nginx
  - name: Ensure nginx is started
    service:
      name: nginx
      state: started
      enabled: true
```

## Other use cases

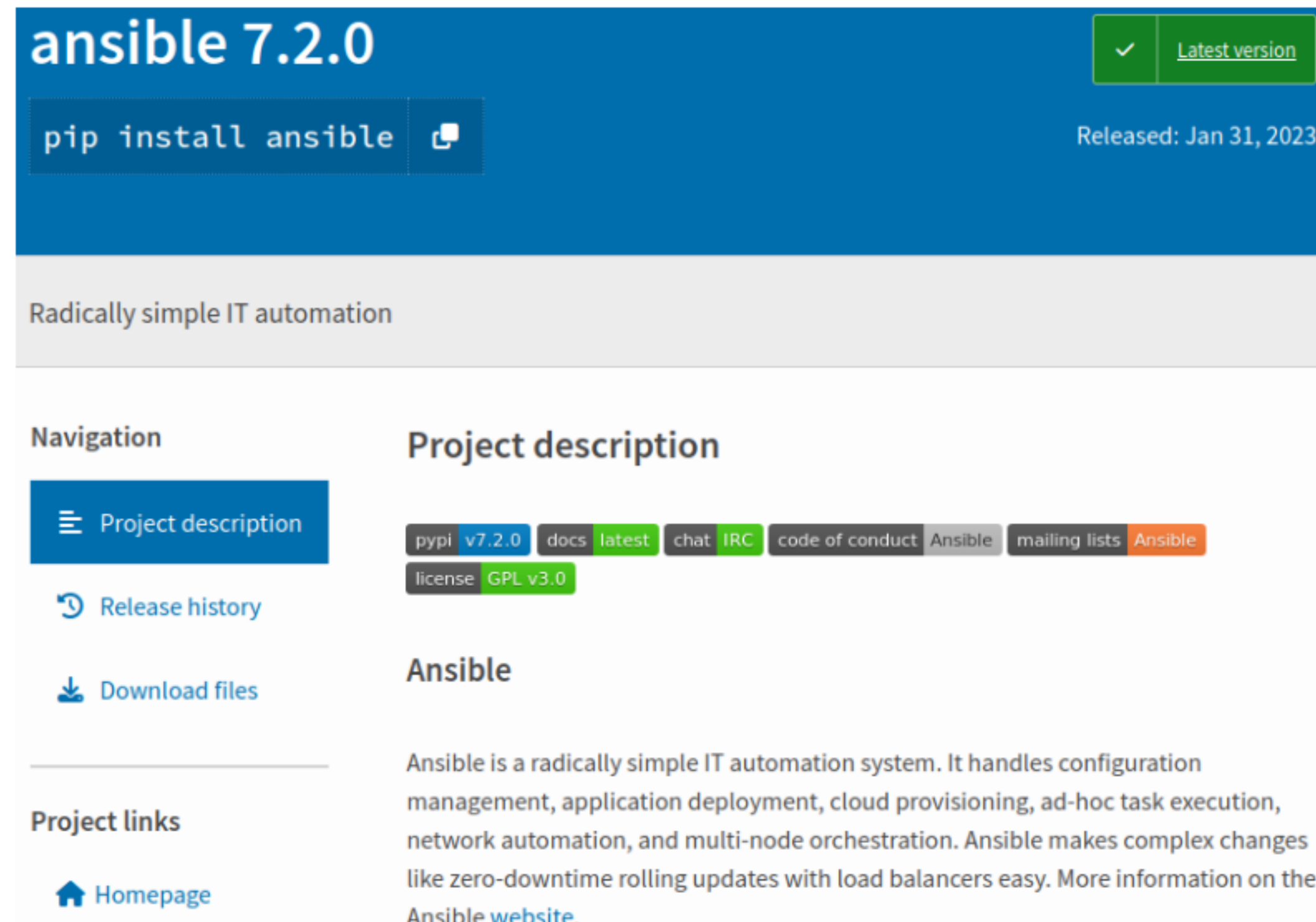


<https://www.youtube.com/watch?v=TVq88JeJbw4>

<3 geerlingguy

# ansible

Includes ansible-core and is a batteries-included package that provides a curated set of Ansible collections



The screenshot shows the PyPI page for the 'ansible' package. At the top, the package name 'ansible 7.2.0' is displayed in a blue header, with a green checkmark and 'Latest version' badge to the right. Below this, a dark blue box contains the command 'pip install ansible' and a copy icon. The release date 'Released: Jan 31, 2023' is shown on the right. A light gray banner below the header reads 'Radically simple IT automation'. The main content area is divided into two columns. The left column, titled 'Navigation', contains links for 'Project description' (highlighted in blue), 'Release history', and 'Download files'. The right column, titled 'Project description', features a horizontal menu with links for 'pypi v7.2.0', 'docs latest', 'chat IRC', 'code of conduct Ansible', 'mailing lists Ansible', and 'license GPL v3.0'. Below the menu, the section is titled 'Ansible' and contains a paragraph describing the system as a radically simple IT automation tool for configuration management, deployment, and orchestration, with a link to the project website.

<https://pypi.org/project/ansible/>

# ansible-core

Contains the base engine and a small subset of modules and plugins

Provides the CLIs for: ansible, ansible-doc, ansible-inventory, ansible-playbook, ansible-galaxy, ansible-test

## ansible-core 2.14.2

✓ [Latest version](#)

```
pip install ansible-core
```

Released: Jan 30, 2023

Radically simple IT automation

### Navigation

- Project description
- Release history
- Download files

### Project links

- Homepage

### Project description

pypi v2.14.2 docs latest chat IRC Azure Pipelines succeeded code of conduct Ansible mailing lists Ansible license GPL v3.0 openssf best practices in progress 66%

#### Ansible

Ansible is a radically simple IT automation system. It handles configuration management, application deployment, cloud provisioning, ad-hoc task execution, network automation, and multi-node orchestration. Ansible makes complex changes like zero-downtime rolling updates with load balancers easy. More information on the Ansible [website](#).

<https://pypi.org/project/ansible-core/>



**Can we build ansible with Ansible ?**

**What could go wrong ?**

~\(\ツ)/~

# Building a python source distribution package

## Doing it manually

```
$ git clone https://github.com/ansible/ansible ~/src/ansible
$ cd ~/src/ansible; python3 setup.py sdist
$ ls dist/
ansible-core-2.15.0.dev0.tar.gz # <-- ansible-core !
```

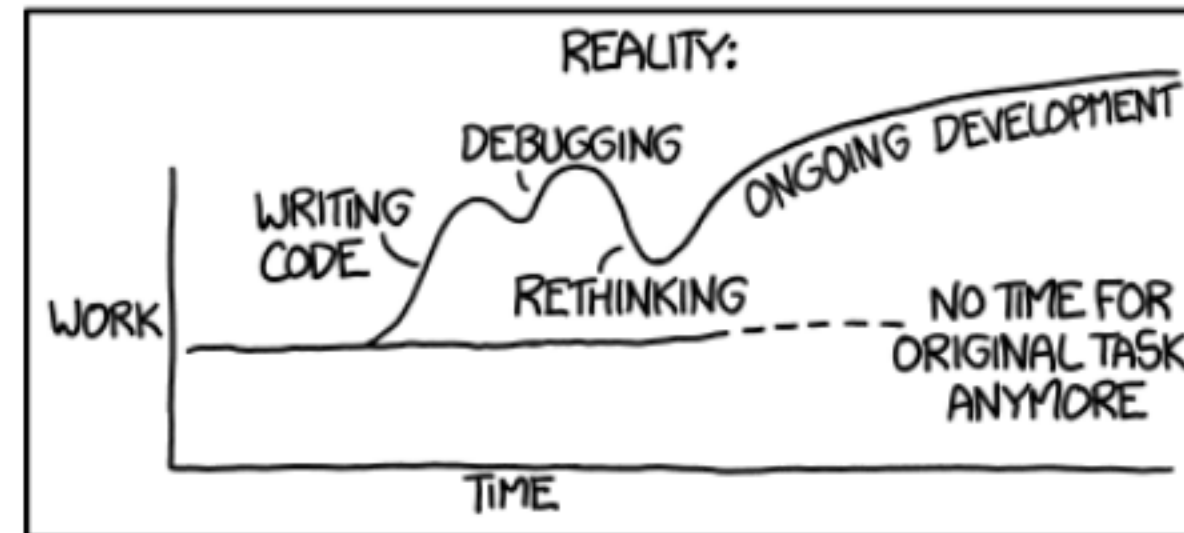
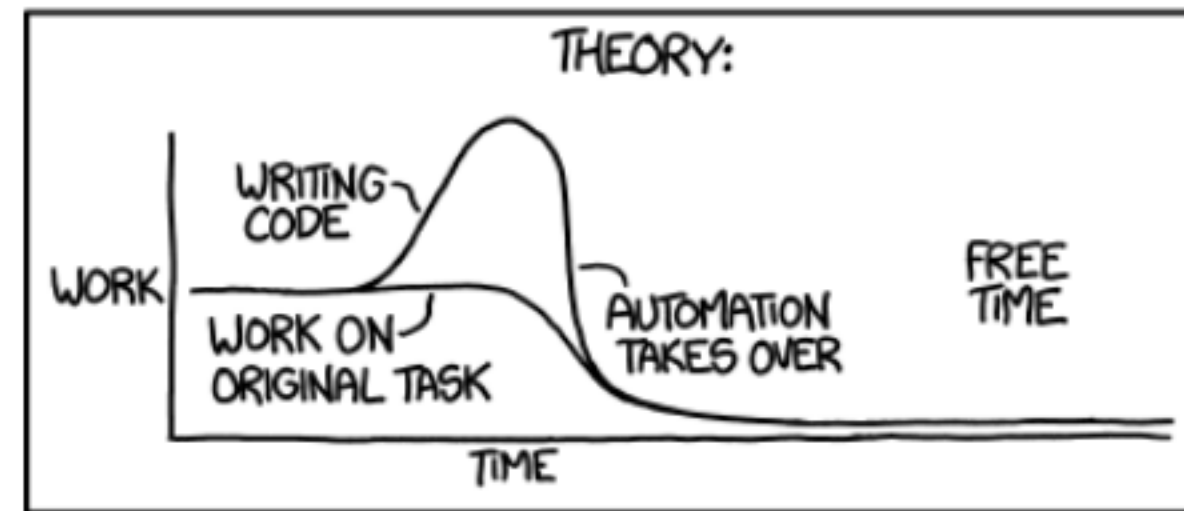
## Doing it with Ansible

```
- name: Clone the ansible repository
  git:
    repo: https://github.com/ansible/ansible
    dest: "{{ '~/src/ansible' | expanduser }}"

- name: Build a distribution package
  command: python3 setup.py sdist
  args:
    chdir: "{{ '~/src/ansible' | expanduser }}"
    creates: "{{ '~/src/ansible' | expanduser }}/dist/ansible-core-2.15.0.dev0.tar.gz"
```

# Why ?

"I SPEND A LOT OF TIME ON THIS TASK.  
I SHOULD WRITE A PROGRAM AUTOMATING IT!"



<https://xkcd.com/1319/>

# Building a python source distribution package

## Doing it manually

```
$ git clone https://github.com/ansible/ansible
fatal: destination path 'ansible' already exists and is not an empty directory.
```

## Doing it with Ansible

```
TASK [Clone the ansible repository] *****
ok: [localhost]

TASK [Build a distribution package] *****
ok: [localhost]

PLAY RECAP *****
localhost           : ok=2    changed=0    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
```

# What about the ansible package ?

```
$ wget https://files.pythonhosted.org/packages/05/cd/d5c46caa5d8c6c11ebad76accd2cec355a10ba80c71780ecdf0bc6748a62/ansible-7.1.0.tar.gz
$ tar -xzf ansible-7.1.0.tar.gz
$ tree -L 1 ansible-7.1.0
ansible-7.1.0
├── ansible_collections # included collections ("batteries included")
├── ansible.egg-info
├── build-ansible.sh # intended to rebuild the package
├── CHANGELOG-v7.rst # aggregated changelog from every collection
├── COPYING
├── debian
├── MANIFEST.in
├── PKG-INFO
├── porting_guide_7.rst # aggregated porting guide from every collection
├── README.rst
├── setup.cfg
└── setup.py

3 directories, 9 files
```

# Inside ansible\_collections

```
$ tree -L 2 ansible-7.1.0/ansible_collections/  
ansible-7.1.0/ansible_collections/  
├── amazon  
│   └── aws  
├── ansible  
│   ├── netcommon  
│   ├── posix  
│   ├── utils  
│   └── windows  
├── ansible_community.py  
├── ansible_release.py  
├── arista  
│   └── eos  
├── awx  
│   └── awx  
├── azure  
│   └── azcollection  
├── check_point  
│   └── mgmt  
├── chocolatey  
│   └── chocolatey  
├── cisco  
│   ├── aci  
│   ├── asa  
│   ├── dnac  
│   └── intersight
```

# Inside a collection: `community.general`

```
$ tree -L 3 ansible-7.1.0/ansible_collections/community/general
ansible-7.1.0/ansible_collections/community/general/
├── CHANGELOG.rst
├── CHANGELOG.rst.license
├── changelogs
│   ├── changelog.yaml
│   ├── changelog.yaml.license
│   ├── config.yaml
│   └── fragments
├── commit-rights.md
├── CONTRIBUTING.md
├── COPYING
├── docs
│   └── docsite
│       ├── extra-docs.yml
│       ├── helper
│       ├── links.yml
│       └── rst
├── FILES.json
├── LICENSES
│   ├── BSD-2-Clause.txt
│   ├── GPL-3.0-or-later.txt
│   ├── MIT.txt
│   └── PSF-2.0.txt
├── MANIFEST.json
└── meta
```

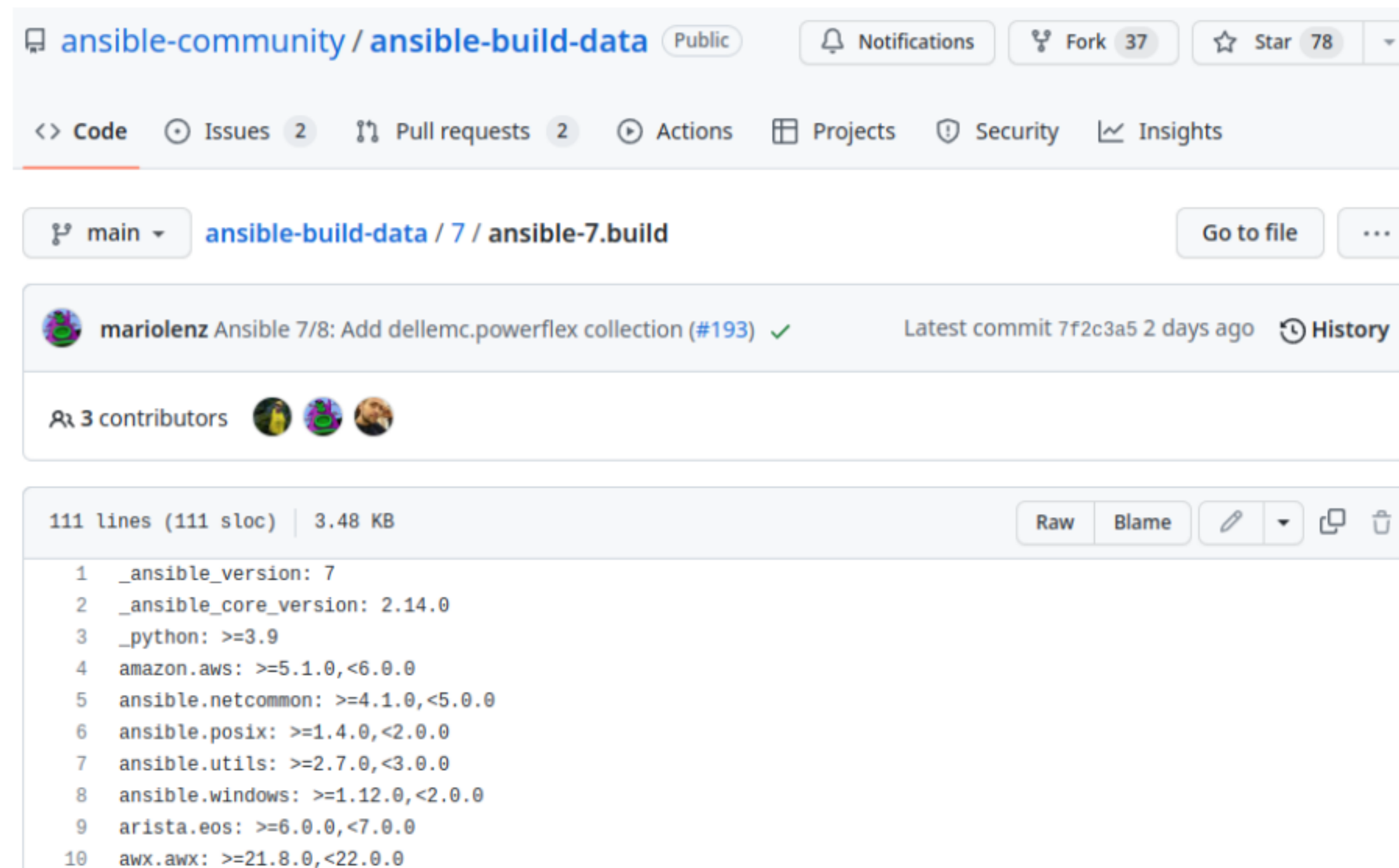
# What we need to do

1. Find out the latest version of a list of collections (*within a defined range of versions*)
2. Download them from Ansible galaxy
3. Create (or update) build and version files
4. Aggregate release notes and porting guides with upgrade notes about breaking changes
5. Supply necessary and miscellaneous python and distribution packaging files
6. Build the package
7. Test it
8. Maybe other things, too

**... and record Ansible doing that.**



# Finding versions of included collections

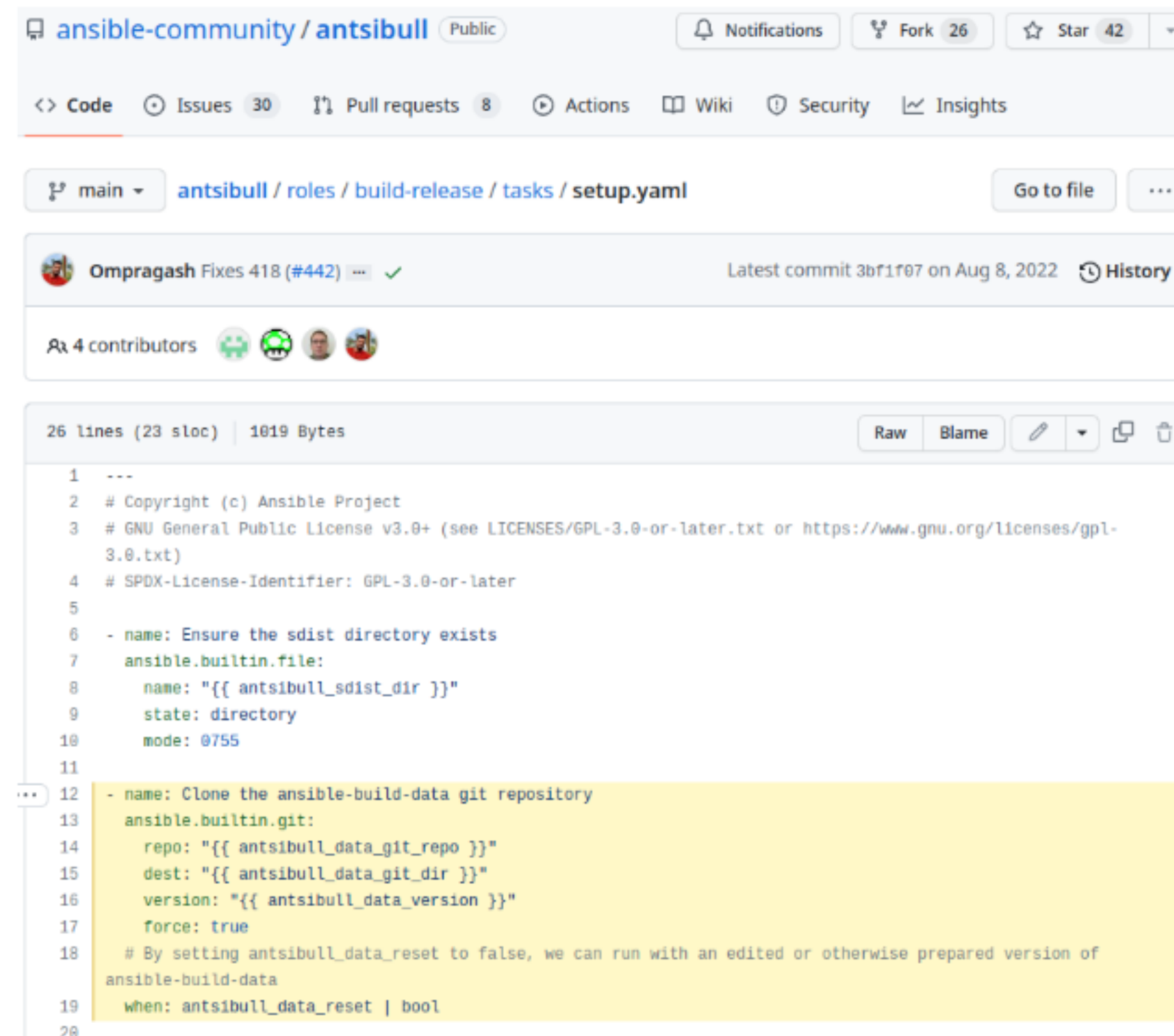


The screenshot shows the GitHub interface for the repository `ansible-community / ansible-build-data`. The file `ansible-7.build` is selected, showing its content. The file is 111 lines long (111 sloc) and 3.48 KB. The content lists various Ansible collections and their required versions.

```
1 _ansible_version: 7
2 _ansible_core_version: 2.14.0
3 _python: >=3.9
4 amazon.aws: >=5.1.0,<6.0.0
5 ansible.netcommon: >=4.1.0,<5.0.0
6 ansible.posix: >=1.4.0,<2.0.0
7 ansible.utils: >=2.7.0,<3.0.0
8 ansible.windows: >=1.12.0,<2.0.0
9 arista.eos: >=6.0.0,<7.0.0
10 awx.awx: >=21.8.0,<22.0.0
```

<https://github.com/ansible-community/ansible-build-data/blob/main/7/ansible-7.build>

# Finding versions of included collections




```
1 ---
2 # Copyright (c) Ansible Project
3 # GNU General Public License v3.0+ (see LICENSES/GPL-3.0-or-later.txt or https://www.gnu.org/licenses/gpl-3.0.txt)
4 # SPDX-License-Identifier: GPL-3.0-or-later
5
6 - name: Ensure the sdist directory exists
7   ansible.builtin.file:
8     name: "{{ antsibull_sdist_dir }}"
9     state: directory
10    mode: 0755
11
12 - name: Clone the ansible-build-data git repository
13   ansible.builtin.git:
14     repo: "{{ antsibull_data_git_repo }}"
15     dest: "{{ antsibull_data_git_dir }}"
16     version: "{{ antsibull_data_version }}"
17     force: true
18   # By setting antsibull_data_reset to false, we can run with an edited or otherwise prepared version of
19   # ansible-build-data
19   when: antsibull_data_reset | bool
20
```

<https://github.com/ansible-community/antsibull/blob/main/roles/build-release/tasks/setup.yaml>

# Finding the latest versions

Community Authors > community > general

 **general**

[Details](#) [Read Me](#) [Content](#)

**Info**


**Installation** `$ ansible-galaxy collection install community.general` [🔗](#)

**NOTE:** Installing collections with ansible-galaxy is only supported in ansible 2.9+  
[Download tarball](#)

**Install Version**

**Tags**

**Community General**

 Azure Pipelines succeeded

This repository contains the community general collection package and includes many more specialized community collections. You can find [documentation for the community general collection](#).

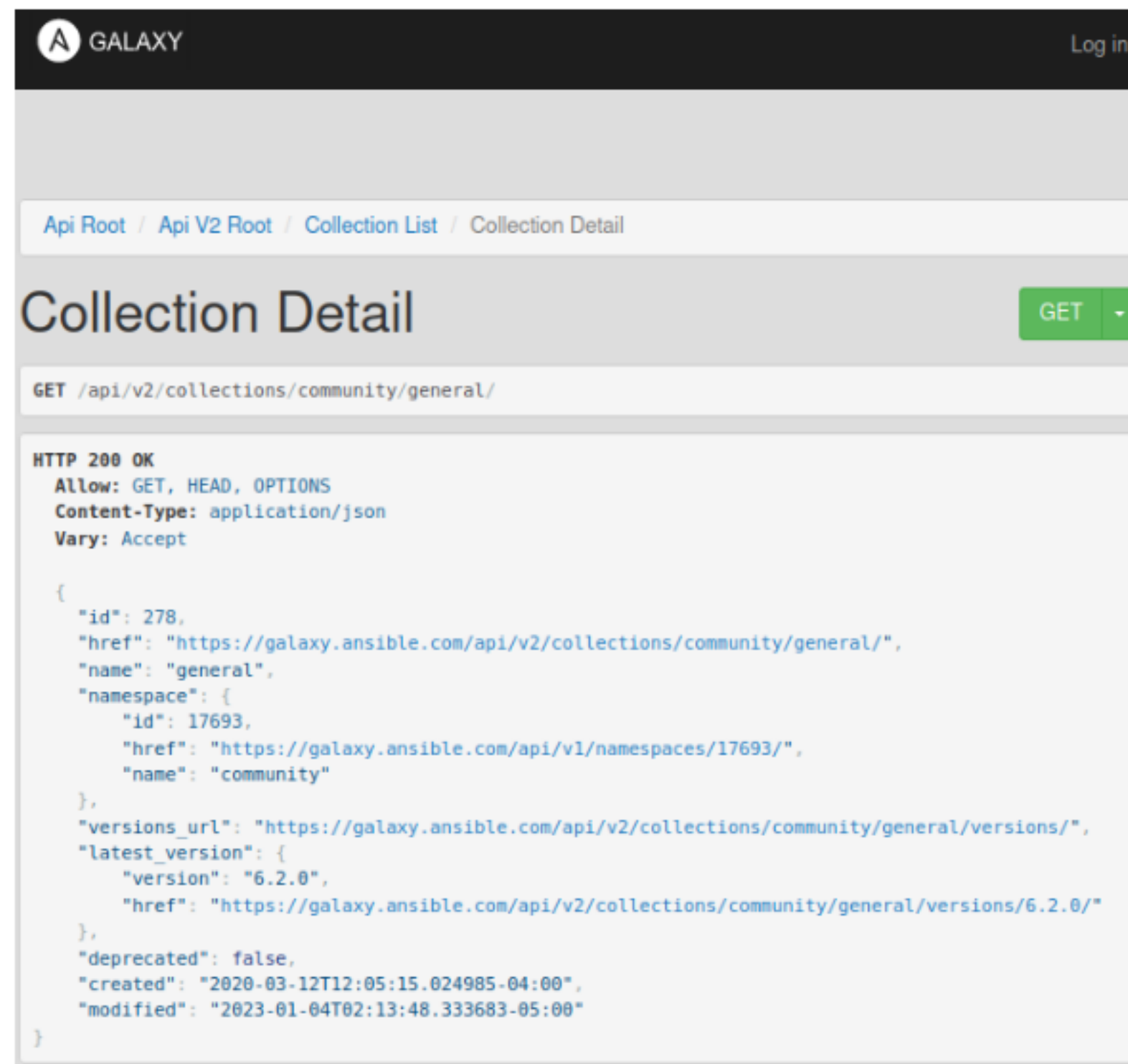
Please note that this collection may not be included in this release if they do so.

**Code of Conduct**  
[Load full Read Me](#)

- 6.2.0 released 5 days ago (latest)
- 3.8.9 released 5 months ago
- 4.8.6 released 5 months ago
- 5.5.0 released 5 months ago
- 6.1.0 released a month ago
- 5.6.0 released 4 months ago
- 4.8.7 released 3 months ago
- 5.7.0 released 3 months ago
- 5.8.3 released a month ago
- 4.8.8 released 2 months ago
- 5.8.0 released 2 months ago
- 6.0.0-a1 released 2 months ago
- 3.8.10 released 2 months ago
- 4.8.9 released 2 months ago
- 6.0.0 released 2 months ago

<https://galaxy.ansible.com/community/general>

# Finding the latest versions



The screenshot shows the Ansible Galaxy API interface. At the top, there is a navigation bar with the 'GALAXY' logo and a 'Log in' link. Below the navigation bar, there is a breadcrumb trail: 'Api Root / Api V2 Root / Collection List / Collection Detail'. The main heading is 'Collection Detail' with a 'GET' button to its right. Below the heading, the API endpoint is shown: 'GET /api/v2/collections/community/general/'. The response is displayed in a code block, showing the HTTP status 'HTTP 200 OK', the allowed methods 'Allow: GET, HEAD, OPTIONS', the content type 'Content-Type: application/json', and the vary header 'Vary: Accept'. The JSON response body is as follows:

```
{
  "id": 278,
  "href": "https://galaxy.ansible.com/api/v2/collections/community/general/",
  "name": "general",
  "namespace": {
    "id": 17693,
    "href": "https://galaxy.ansible.com/api/v1/namespaces/17693/",
    "name": "community"
  },
  "versions_url": "https://galaxy.ansible.com/api/v2/collections/community/general/versions/",
  "latest_version": {
    "version": "6.2.0",
    "href": "https://galaxy.ansible.com/api/v2/collections/community/general/versions/6.2.0/"
  },
  "deprecated": false,
  "created": "2020-03-12T12:05:15.024985-04:00",
  "modified": "2023-01-04T02:13:48.333683-05:00"
}
```

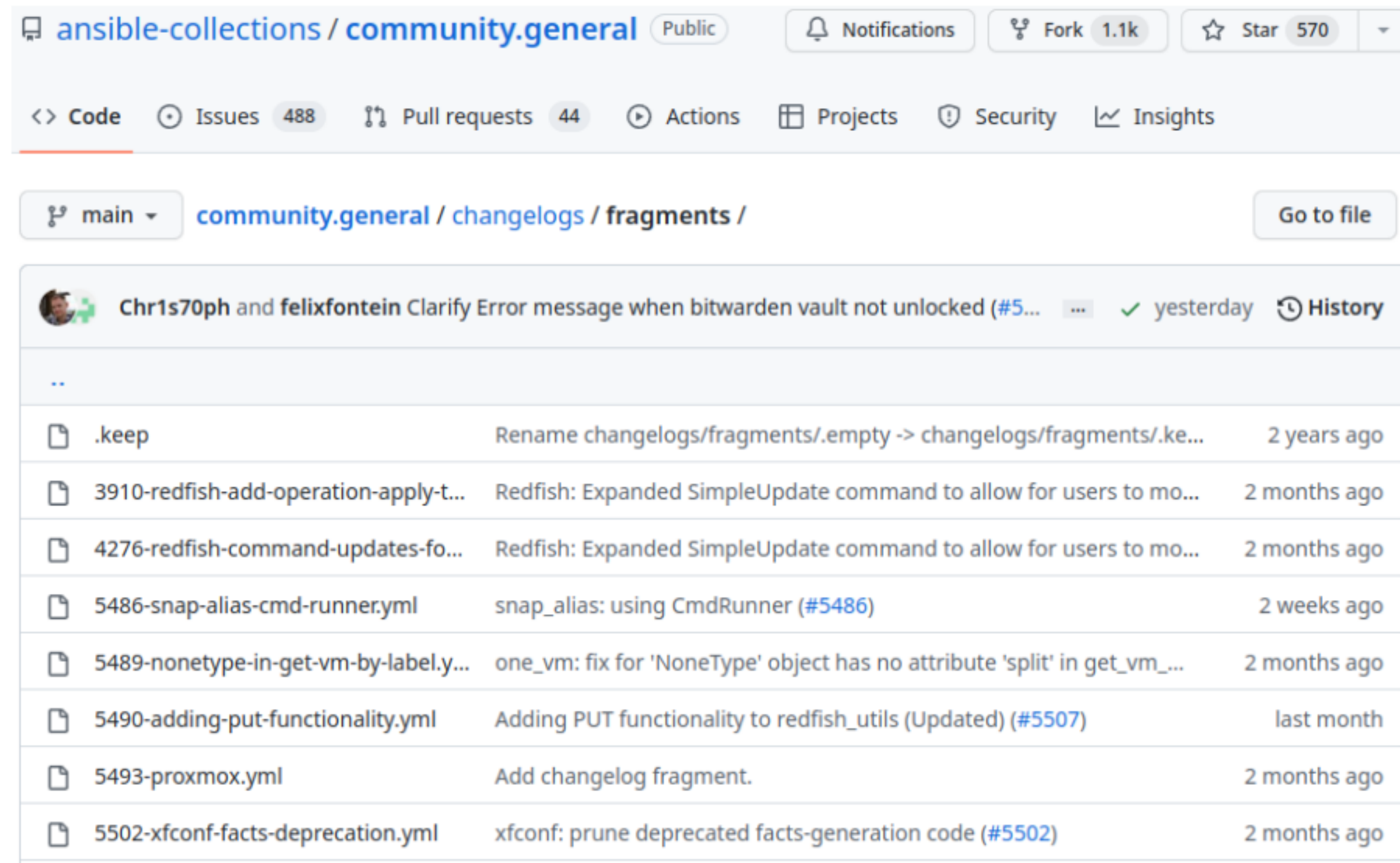
<https://galaxy.ansible.com/api/v2/collections/community/general/>

## ... and downloading them

```
122 async def get_collection_versions(deps: Mapping[str, str],
123                                   galaxy_url: str,
124                                   ) -> dict[str, SemVer]:
125     """
126     Retrieve the latest version of each collection.
127
128     :arg deps: Mapping of collection name to a version specification.
129     :arg galaxy_url: The url for the galaxy server to use.
130     :returns: Dict mapping collection name to latest version.
131     """
132     return (await get_collection_and_core_versions(deps, None, galaxy_url))[0]
133
134
135 async def download_collections(versions: Mapping[str, SemVer],
136                               galaxy_url: str,
137                               download_dir: str,
138                               collection_cache: str | None = None,
139                               ) -> None:
140     requestors = {}
141     async with aiohttp.ClientSession() as aio_session:
142         lib_ctx = app_context.lib_ctx.get()
143         async with asyncio_pool.AioPool(size=lib_ctx.thread_max) as pool:
144             downloader = CollectionDownloader(aio_session, download_dir,
145                                             collection_cache=collection_cache,
146                                             galaxy_server=galaxy_url)
147             for collection_name, version in versions.items():
148                 requestors[collection_name] = await pool.spawn(
149                     downloader.download(collection_name, version))
150
151     await asyncio.gather(*requestors.values())
```

[https://github.com/ansible-community/antsibull/blob/main/src/antsibull/build\\_ansible\\_commands.py](https://github.com/ansible-community/antsibull/blob/main/src/antsibull/build_ansible_commands.py)

# Aggregating changelog fragments

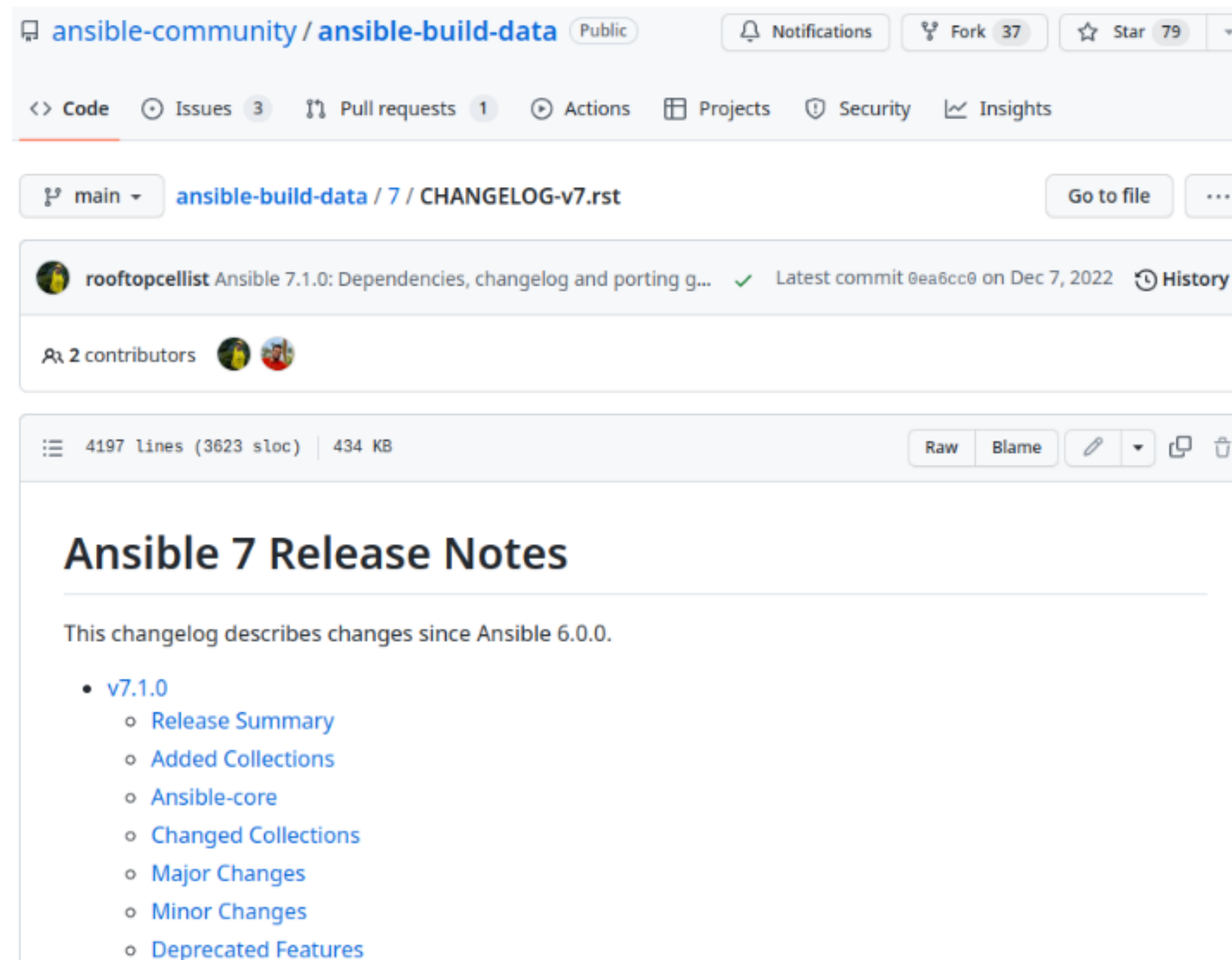


The screenshot shows the GitHub interface for the repository `ansible-collections / community.general`. The repository is public, has 1.1k forks, and 570 stars. The navigation bar includes links for Code, Issues (488), Pull requests (44), Actions, Projects, Security, and Insights. The current view is the `main` branch, specifically the `community.general / changelogs / fragments /` directory. A commit by `Chr1s70ph` and `felixfontein` is highlighted, titled "Clarify Error message when bitwarden vault not unlocked (#5486)", which was merged yesterday. Below the commit information, a list of files in the `changelogs/fragments` directory is shown, including `.keep`, `3910-redfish-add-operation-apply-t...`, `4276-redfish-command-updates-fo...`, `5486-snap-alias-cmd-runner.yml`, `5489-nonetype-in-get-vm-by-label.y...`, `5490-adding-put-functionality.yml`, `5493-proxmox.yml`, and `5502-xfconf-facts-deprecation.yml`. Each file entry includes a brief description of the change and the time it was last updated.

File Name	Description	Last Updated
<code>.keep</code>	Rename changelogs/fragments/.empty -> changelogs/fragments/.ke...	2 years ago
<code>3910-redfish-add-operation-apply-t...</code>	Redfish: Expanded SimpleUpdate command to allow for users to mo...	2 months ago
<code>4276-redfish-command-updates-fo...</code>	Redfish: Expanded SimpleUpdate command to allow for users to mo...	2 months ago
<code>5486-snap-alias-cmd-runner.yml</code>	snap_alias: using CmdRunner (#5486)	2 weeks ago
<code>5489-nonetype-in-get-vm-by-label.y...</code>	one_vm: fix for 'NoneType' object has no attribute 'split' in get_vm_...	2 months ago
<code>5490-adding-put-functionality.yml</code>	Adding PUT functionality to redfish_utils (Updated) (#5507)	last month
<code>5493-proxmox.yml</code>	Add changelog fragment.	2 months ago
<code>5502-xfconf-facts-deprecation.yml</code>	xfconf: prune deprecated facts-generation code (#5502)	2 months ago

<https://github.com/ansible-collections/community.general/tree/main/changelogs/fragments>

# Aggregating changelog fragments



The screenshot shows a GitHub repository page for `ansible-community/ansible-build-data`. The repository is public and has 37 forks and 79 stars. The current branch is `main`, and the file being viewed is `ansible-build-data / 7 / CHANGELOG-v7.rst`. The commit is by `rooftopcellist` with the message "Ansible 7.1.0: Dependencies, changelog and porting g..." and the latest commit hash is `0ea6cc0` on Dec 7, 2022. There are 2 contributors. The file size is 434 KB and it contains 4197 lines (3623 sloc). The file content is titled "Ansible 7 Release Notes" and includes a summary of changes since Ansible 6.0.0. The changelog for v7.1.0 includes sections for Release Summary, Added Collections, Ansible-core, Changed Collections, Major Changes, Minor Changes, and Deprecated Features.

ansible-community / ansible-build-data Public

Notifications Fork 37 Star 79

Code Issues 3 Pull requests 1 Actions Projects Security Insights

main ansible-build-data / 7 / CHANGELOG-v7.rst Go to file

rooftopcellist Ansible 7.1.0: Dependencies, changelog and porting g... ✓ Latest commit 0ea6cc0 on Dec 7, 2022 History

2 contributors

4197 lines (3623 sloc) | 434 KB Raw Blame

## Ansible 7 Release Notes

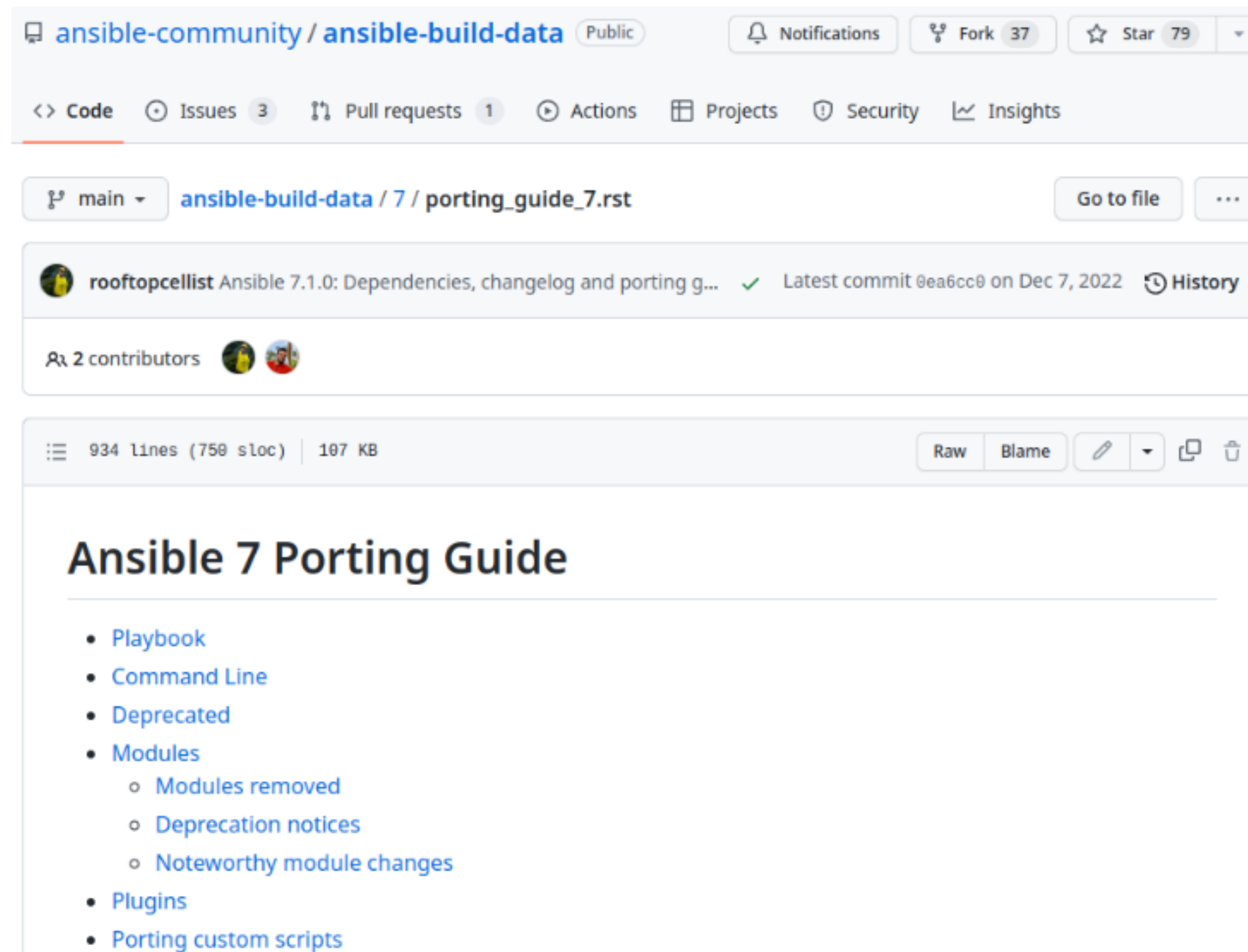
This changelog describes changes since Ansible 6.0.0.

- v7.1.0
  - Release Summary
  - Added Collections
  - Ansible-core
  - Changed Collections
  - Major Changes
  - Minor Changes
  - Deprecated Features

<https://github.com/ansible-community/ansible-build-data/blob/main/7/CHANGELOG-v7.rst>

# Aggregating changelog fragments

(Major or breaking changes, deprecations)



The screenshot shows a GitHub repository page for `ansible-community / ansible-build-data`. The repository is public and has 37 forks and 79 stars. The current branch is `main`, and the file being viewed is `ansible-build-data / 7 / porting_guide_7.rst`. The file is owned by `rooftopcellist` and was last committed on Dec 7, 2022. It has 2 contributors. The file size is 107 KB and contains 934 lines (750 sloc). The content of the file is a porting guide for Ansible 7, listing various sections such as Playbook, Command Line, Deprecated, Modules, Plugins, and Porting custom scripts.

934 lines (750 sloc) | 107 KB

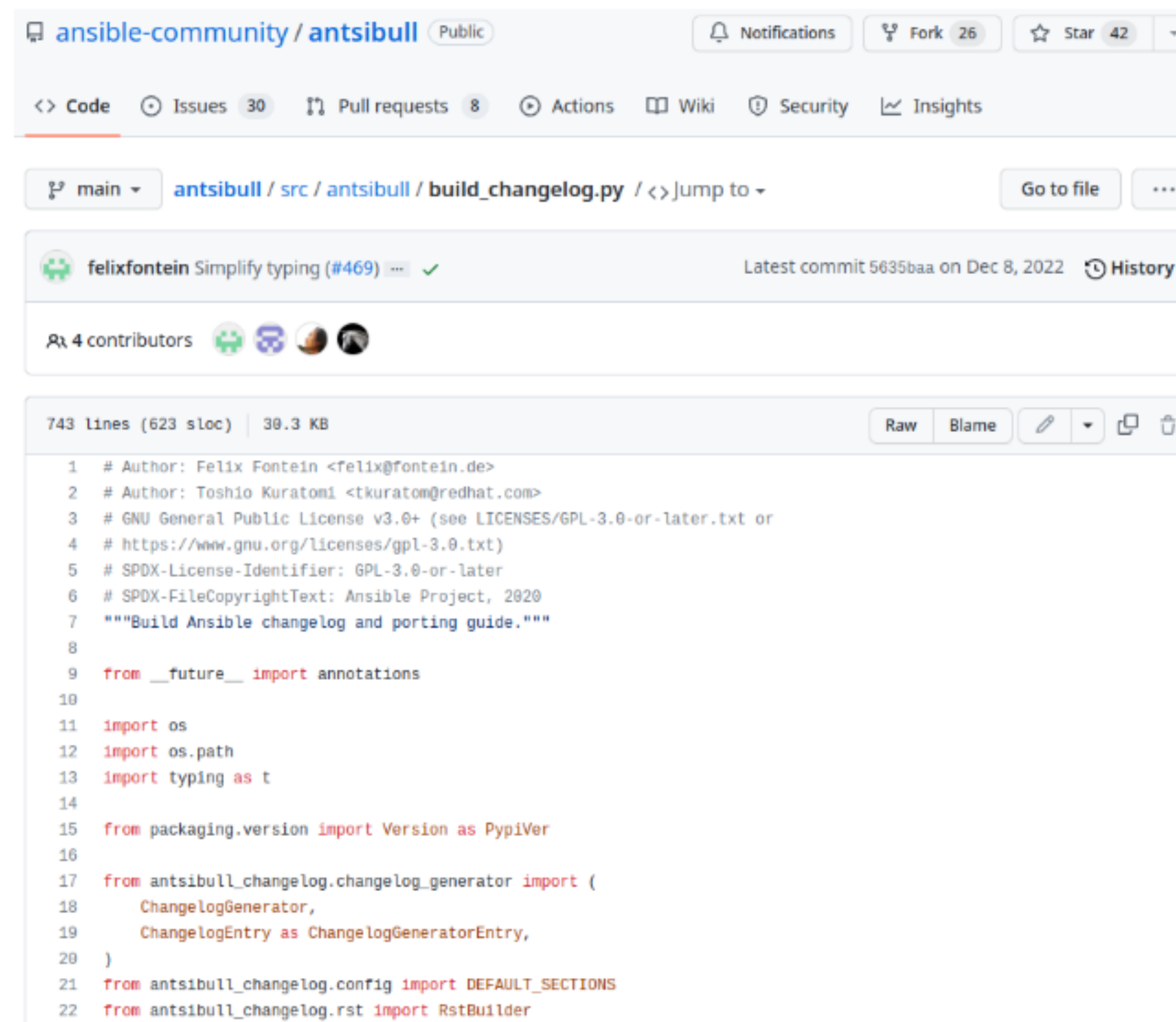
## Ansible 7 Porting Guide

- [Playbook](#)
- [Command Line](#)
- [Deprecated](#)
- [Modules](#)
  - [Modules removed](#)
  - [Deprecation notices](#)
  - [Noteworthy module changes](#)
- [Plugins](#)
- [Porting custom scripts](#)

[https://github.com/ansible-community/ansible-build-data/blob/main/7/porting\\_guide\\_7.rst](https://github.com/ansible-community/ansible-build-data/blob/main/7/porting_guide_7.rst)



# Aggregating changelog fragments



ansible-community / antsibull Public

Notifications Fork 26 Star 42

Code Issues 30 Pull requests 8 Actions Wiki Security Insights

main antsibull / src / antsibull / build\_changelog.py / Jump to

Go to file

felixfontein Simplify typing (#469) Latest commit 5635baa on Dec 8, 2022 History

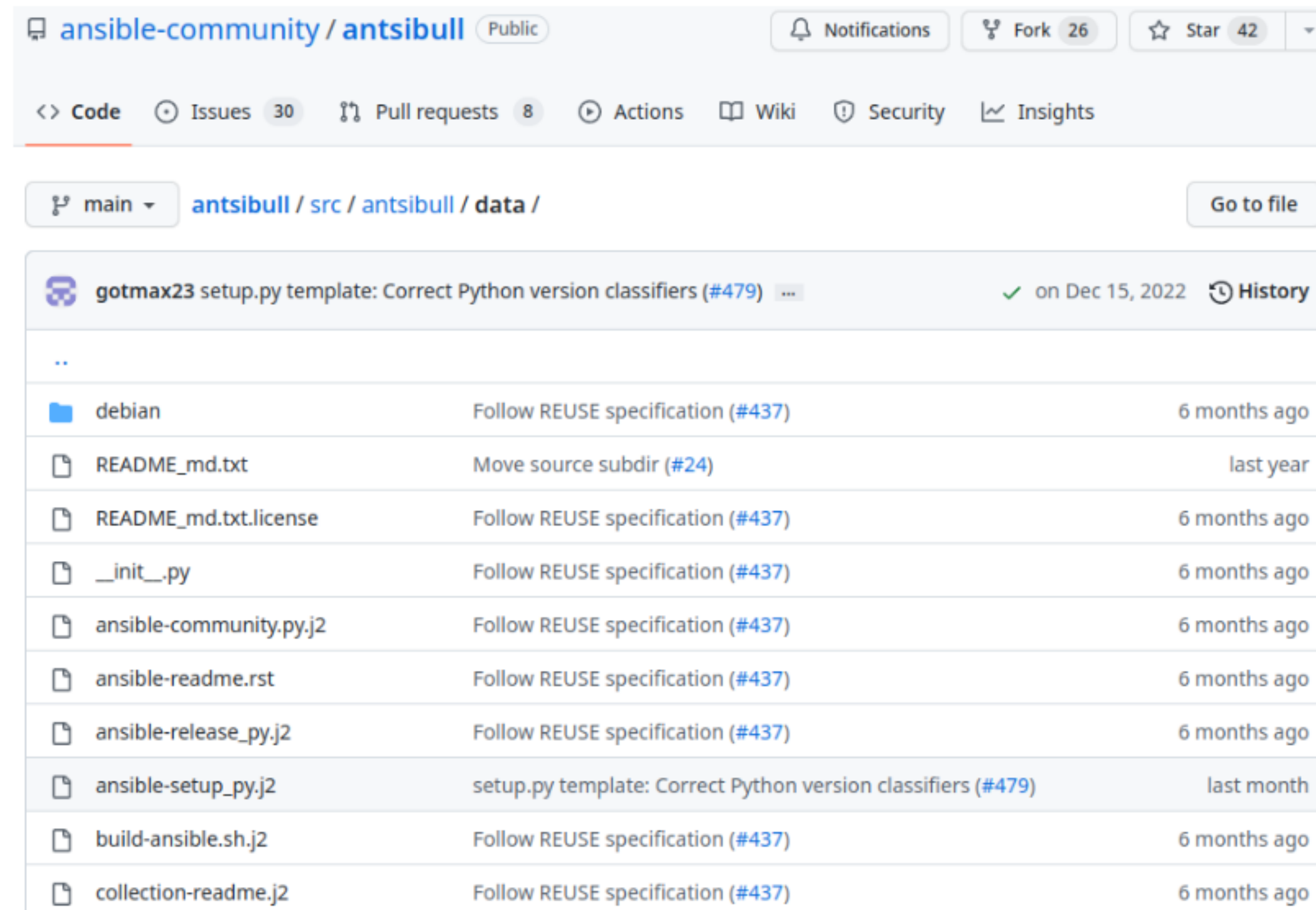
4 contributors

743 lines (623 sloc) 30.3 KB

```
1 # Author: Felix Fontein <felix@fontein.de>
2 # Author: Toshio Kuratomi <tkuratomi@redhat.com>
3 # GNU General Public License v3.0+ (see LICENSES/GPL-3.0-or-later.txt or
4 # https://www.gnu.org/licenses/gpl-3.0.txt)
5 # SPDX-License-Identifier: GPL-3.0-or-later
6 # SPDX-FileCopyrightText: Ansible Project, 2020
7 """Build Ansible changelog and porting guide."""
8
9 from __future__ import annotations
10
11 import os
12 import os.path
13 import typing as t
14
15 from packaging.version import Version as PypiVer
16
17 from antsibull_changelog.changelog_generator import (
18     ChangelogGenerator,
19     ChangelogEntry as ChangelogGeneratorEntry,
20 )
21 from antsibull_changelog.config import DEFAULT_SECTIONS
22 from antsibull_changelog.rst import RstBuilder
```

[https://github.com/ansible-community/antsibull/blob/main/src/antsibull/build\\_changelog.py](https://github.com/ansible-community/antsibull/blob/main/src/antsibull/build_changelog.py)

# Python packaging files



The screenshot shows the GitHub interface for the repository `ansible-community/antsibull`. The repository is public and has 26 forks and 42 stars. The navigation bar includes links for Code, Issues (30), Pull requests (8), Actions, Wiki, Security, and Insights. The current view is the file tree for the `main` branch, specifically the `antsibull/src/antsibull/data` directory. A recent commit by `gotmax23` is highlighted, titled "setup.py template: Correct Python version classifiers (#479)", dated Dec 15, 2022. The file tree lists the following files and folders:

File/Folder	Commit	Time
..		
debian	Follow REUSE specification (#437)	6 months ago
README_md.txt	Move source subdir (#24)	last year
README_md.txt.license	Follow REUSE specification (#437)	6 months ago
__init__.py	Follow REUSE specification (#437)	6 months ago
ansible-community.py.j2	Follow REUSE specification (#437)	6 months ago
ansible-readme.rst	Follow REUSE specification (#437)	6 months ago
ansible-release_py.j2	Follow REUSE specification (#437)	6 months ago
ansible-setup_py.j2	setup.py template: Correct Python version classifiers (#479)	last month
build-ansible.sh.j2	Follow REUSE specification (#437)	6 months ago
collection-readme.j2	Follow REUSE specification (#437)	6 months ago

<https://github.com/ansible-community/antsibull/tree/main/src/antsibull/data>

# Building the ansible package

```
307 def make_dist(ansible_dir: str, dest_dir: str) -> None:
308     show_warnings(
309         # pyre-ignore[16], pylint:disable-next=no-member
310         sh.python('setup.py', 'sdist', _cwd=ansible_dir),
311         func='make_dist',
312     )
313     dist_dir = os.path.join(ansible_dir, 'dist')
314     files = os.listdir(dist_dir)
315     if len(files) != 1:
316         raise Exception('python setup.py sdist should only have created one file')
317
318     shutil.move(os.path.join(dist_dir, files[0]), dest_dir)
```

[https://github.com/ansible-community/antsibull/blob/main/src/antsibull/build\\_ansible\\_commands.py](https://github.com/ansible-community/antsibull/blob/main/src/antsibull/build_ansible_commands.py)

# Building the ansible package wheel

```
321 def make_dist_with_wheels(ansible_dir: str, dest_dir: str) -> None:
322     show_warnings(
323         # pyre-ignore[16], pylint:disable-next=no-member
324         sh.python('setup.py', 'sdist', 'bdist_wheel', _cwd=ansible_dir),
325         func='make_dist_with_wheels',
326     )
327     dist_dir = os.path.join(ansible_dir, 'dist')
328     files = os.listdir(dist_dir)
329     tarball_count = 0
330     wheel_count = 0
331     for file in files:
332         if file.endswith('.tar') or file.endswith('.tar.gz'):
333             tarball_count += 1
334         elif file.endswith('.whl'):
335             wheel_count += 1
336         else:
337             tarball_count = 2 # the number is wrong, but this triggers an error
338             break
339     if tarball_count != 1 or wheel_count == 0:
340         raise Exception(
341             "python setup.py sdist bdist_wheel should have created exactly one tarball and at"
342             f" least one wheel (got {files})")
343
344     for file in files:
345         shutil.move(os.path.join(dist_dir, file), dest_dir)
```

[https://github.com/ansible-community/antsibull/blob/main/src/antsibull/build\\_ansible\\_commands.py](https://github.com/ansible-community/antsibull/blob/main/src/antsibull/build_ansible_commands.py)

# Pulling it all together (with Ansible)

```
30 - name: Update version ranges in the build file for alpha and beta releases
31   ansible.builtin.command: >-
32     {{ antsibull_build_command }} new-ansible {{ antsibull_ansible_version }}
33     --data-dir {{ antsibull_data_dir }}
34     {{ _allow_prereleases | default('') }}
35   when: >-
36     (antsibull_ansible_version is regex("^\d+\.\d+\.\d+(a|b1)$") and antsibull_data_reset)
37     or not _antsibull_build_file_stat.stat.exists
38
39 - name: Set up feature freeze for b2 through rc1
40   ansible.builtin.set_fact:
41     _feature_freeze: "--feature-frozen"
42   when: antsibull_ansible_version is regex("^\d+\.\d+\.\d+(b2|b3|rc1)$")
43
44 - name: Prepare a release with new dependencies
45   ansible.builtin.command: >-
46     {{ antsibull_build_command }} prepare {{ antsibull_ansible_version }}
47     --data-dir {{ antsibull_data_dir }}
48     {{ _feature_freeze | default('') }}
49     {{ _tags_file }}
50   # Minimal failure tolerance to galaxy collection download errors
51   retries: 3
52   delay: 5
53   register: _build
54   until: _build.rc == 0
55   args:
56     chdir: "{{ playbook_dir | dirname }}"
57     creates: "{{ antsibull_data_dir }}/{{ _deps_file }}"
```

<https://github.com/ansible-community/antsibull/blob/main/roles/build-release/tasks/build.yaml>

# Pulling it all together (with Ansible)

```
59 - name: Remove existing release tarball and wheel if they exist
60   ansible.builtin.file:
61     path: "{{ item }}"
62     state: absent
63   when: antsibull_force_rebuild | bool
64   loop:
65     - "{{ _release_archive }}"
66     - "{{ _release_wheel }}"
67
68 # If the release archive is already there it won't be re-built if we run again
69 - name: Build a release with existing deps
70   ansible.builtin.command: >-
71     {{ antsibull_build_command }} rebuild-single {{ antsibull_ansible_version }}
72     --data-dir {{ antsibull_data_dir }}
73     --sdist-dir {{ antsibull_sdist_dir }}
74     --build-file {{ antsibull_build_file }}
75     --deps-file {{ _deps_file }}
76     --debian
77     {{ _tags_file }}
78 # Minimal failure tolerance to galaxy collection download errors
79   retries: 3
80   delay: 5
81   register: _rebuild
82   until: _rebuild.rc == 0
83   args:
84     chdir: "{{ playbook_dir | dirname }}"
85     creates: "{{ _release_archive }}"
```

<https://github.com/ansible-community/antsibull/blob/main/roles/build-release/tasks/build.yaml>

# Installing ansible with Ansible 🤖

```
20 - name: Install the release tarball in a virtualenv so we can test it
21   ansible.builtin.pip:
22     name: "file://{{ _release_archive }}"
23     state: present
24     virtualenv: "{{ antsibull_venv }}"
25     virtualenv_command: "{{ ansible_python.executable }}" -m venv
26
27 # Note: the version of ansible-core doesn't necessarily match the deps file since the version requirement is >=
28 - block:
29   - name: Load deps_file
30     ansible.builtin.set_fact:
31       _deps: >-
32         {{ lookup('file', antsibull_data_dir ~ '/' ~ _deps_file) | _antsibull_parse_deps }}
33
34   - name: Query installed pip packages
35     community.general.pip_package_info:
36       clients: "{{ antsibull_venv_pip_bin }}"
37       register: _pip_pkgs
38
39   - name: Validate the version of ansible-core
40     ansible.builtin.assert:
41       that:
42         - antsibull_venv_pip_ansi_core_version is _antsibull_packaging_version(antsibull_expected_ansi_core,
43           success_msg: "ansible-core {{ antsibull_venv_pip_ansi_core_version }} matches (or exceeds) {{ _deps_file
44           fail_msg: "ansible-core {{ antsibull_venv_pip_ansi_core_version }} does not match {{ _deps_file }}"
45
```

<https://github.com/ansible-community/antsibull/blob/main/roles/build-release/tasks/tests.yaml>

# Testing what gets installed

```
79 - name: Retrieve installed collections
80   environment:
81     # In case we happen to be testing with devel, don't print a warning about it
82     ANSIBLE_DEVEL_WARNING: false
83     # Until https://github.com/ansible/ansible/pull/70173 is backported and released
84     ANSIBLE_COLLECTIONS_PATH: "{{ antsibull_collections_path }}"
85     # List collections, remove empty lines, headers, file paths and format the results in the same way as the de
86   ansible.builtin.command:
87     cmd: "{{ antsibull_venv }}/bin/ansible-galaxy collection list --format json"
88   changed_when: false
89   register: _installed_collections_json
90
91 - name: Validate that the installed collections are the expected ones
92   ansible.builtin.assert:
93     that:
94       - item['value']['version'] == _deps[item['key']]
95     success_msg: "{{ item }}" matches {{ _deps_file }}"
96     fail_msg: "{{ item }}" does not match {{ _deps_file }}"
97     loop: "{{ antsibull_installed_collections | dict2items }}"
98
99 - name: Validate that included collections are packaged
100  ansible.builtin.assert:
101    that:
102      - item in antsibull_installed_collections
103    success_msg: "{{ item }}" is in ansible.in and inside the package"
104    fail_msg: "{{ item }}" is in ansible.in but not inside the package. Maybe run 'antsibull-build new-ansible
105    loop: "{{ _included_collections.stdout_lines }}"
```

<https://github.com/ansible-community/antsibull/blob/main/roles/build-release/tasks/tests.yaml>



**We must go deeper**

# Testing ansible with ansible-playbook 🤔

```
107 - name: Run nested tests
108 vars:
109   ansible_collections_path: "{{ antsibull_sdist_dir }}/ansible_collections"
110 environment:
111   ANSIBLE_COLLECTIONS_PATH: "{{ ansible_collections_path }}"
112 block:
113   - name: Create a temporary COLLECTIONS_PATH
114     ansible.builtin.file:
115       path: "{{ ansible_collections_path }}"
116       state: directory
117
118   - name: Install community.general for tests using 'a_module' and 'collection_version'
119     ansible.builtin.command: >-
120       {{ antsibull_ansible_venv }}/bin/ansible-galaxy collection install community.general
121
122   - name: Run nested Ansible tests with the Ansible we just built
123     ansible.builtin.command: >-
124       {{ antsibull_ansible_venv }}/bin/ansible-playbook -i 'localhost,' --connection=local
125       -e antsibull_sdist_dir="{{ antsibull_sdist_dir }}"
126       -e antsibull_ansible_venv="{{ antsibull_ansible_venv }}"
127       -e antsibull_ansible_git_dir="{{ antsibull_ansible_git_dir }}"
128       -e antsibull_ansible_git_version="{{ antsibull_ansible_git_version }}"
129       -e _python_version="{{ _python_version }}"
130       {{ playbook_dir }}/nested-ansible-tests.yaml
```

<https://github.com/ansible-community/antsibull/blob/main/roles/build-release/tasks/tests.yaml>

# Testing module and collection availability

```
18   - name: Parse installed ansible_builtin_runtime
19     parse_ansible_runtime:
20       runtime_file: "{{ antsibull_venv }}/lib/{{ _python_version }}/site-packages/ansible/config
21       register: _parsed_runtime
22
23   - name: Validate collection availability
24     ansible.builtin.assert:
25       that:
26         - query("community.general.collection_version", item) != [none]
27       success_msg: "{{ item }}: available"
28       fail_msg: "{{ item }}: not available"
29     loop: "{{ _parsed_runtime.collections }}"
30     ignore_errors: true
31     register: _collection_availability
32
33   - name: Validate module availability
34     ansible.builtin.assert:
35       that:
36         - item is community.general.a_module
37       success_msg: "{{ item }}: found"
38       fail_msg: "{{ item }}: not found"
39     loop: "{{ _parsed_runtime.modules }}"
40     ignore_errors: true
41     register: _module_availability
```

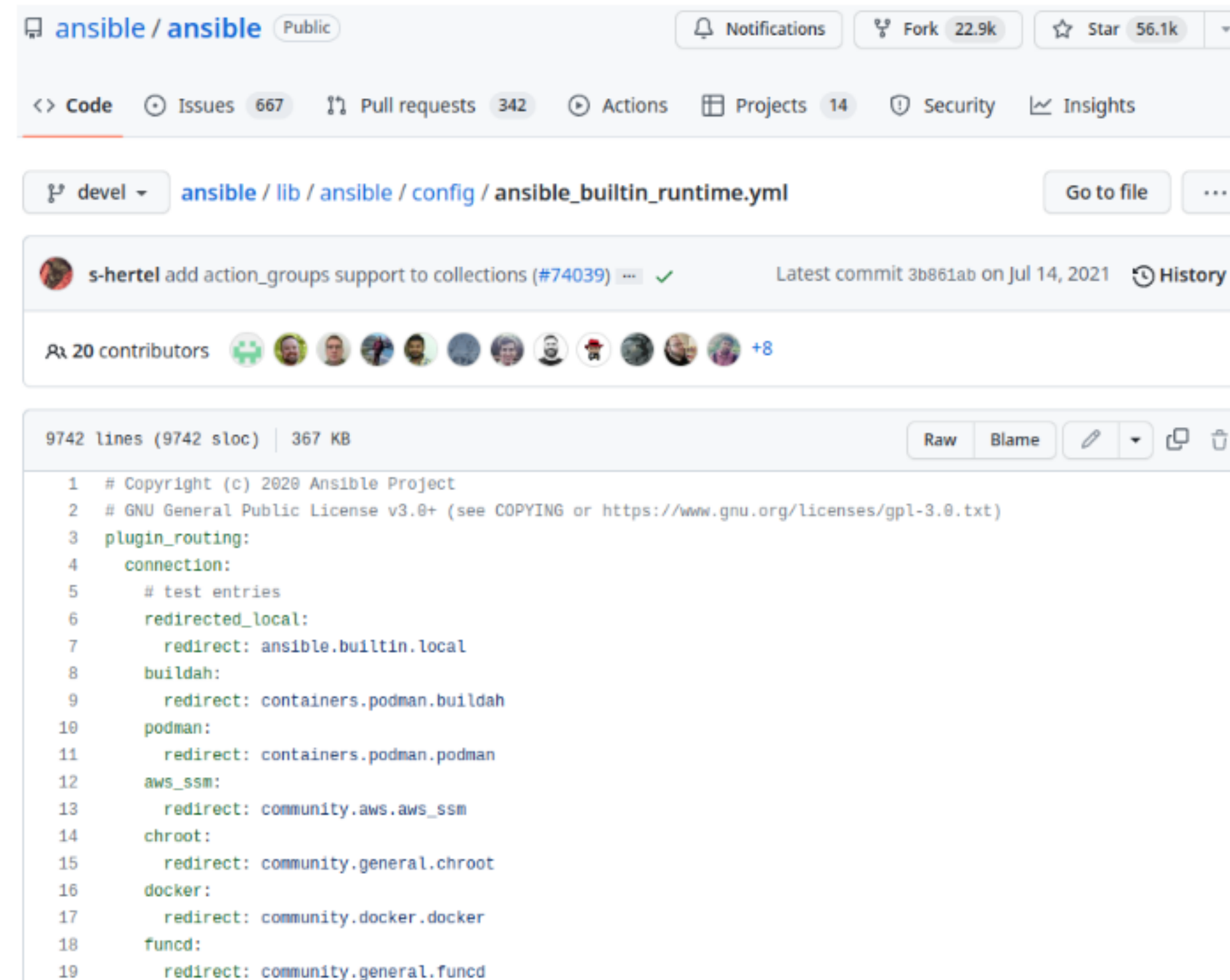
<https://github.com/ansible-community/antsibull/blob/main/playbooks/nested-ansible-tests.yaml>

# Testing module and collection availability

```
43     - name: Retrieve unavailable collections and modules
44       ansible.builtin.set_fact:
45         _unavailable_collections: "{{{_collection_availability.results | selectattr('failed', 'eq', true) |
46         _unavailable_modules: "{{{_module_availability.results | selectattr('failed', 'eq', true) | selecta
47
48     - name: Print unavailable collections
49       ansible.builtin.debug:
50         msg: "The following collections are not available: {{_unavailable_collections | map(attribute='ite
51
52     - name: Print unavailable modules
53       ansible.builtin.debug:
54         msg: "The following modules are not available: {{_unavailable_modules | map(attribute='item') | jo
```

<https://github.com/ansible-community/antsibull/blob/main/playbooks/nested-ansible-tests.yaml>

## By the way: `ansible_builtin_runtime.yml`



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devel ansible / lib / ansible / config / ansible\_builtin\_runtime.yml Go to file

s-hertel add action\_groups support to collections (#74039) Latest commit 3b861ab on Jul 14, 2021 History

20 contributors +8

9742 lines (9742 sloc) | 367 KB Raw Blame

```
1 # Copyright (c) 2020 Ansible Project
2 # GNU General Public License v3.0+ (see COPYING or https://www.gnu.org/licenses/gpl-3.0.txt)
3 plugin_routing:
4   connection:
5     # test entries
6     redirected_local:
7       redirect: ansible.builtin.local
8     buildah:
9       redirect: containers.podman.buildah
10    podman:
11      redirect: containers.podman.podman
12    aws_ssm:
13      redirect: community.aws.aws_ssm
14    chroot:
15      redirect: community.general.chroot
16    docker:
17      redirect: community.docker.docker
18    funcd:
19      redirect: community.general.funcd
```

[https://github.com/ansible/ansible/blob/devel/lib/ansible/config/ansible\\_builtin\\_runtime.yml](https://github.com/ansible/ansible/blob/devel/lib/ansible/config/ansible_builtin_runtime.yml)

# Testing ansible with ansible-playbook running ansible with the ansible repository



```
56   - name: Clone the ansible git repository
57     ansible.builtin.git:
58       repo: "https://github.com/ansible/ansible"
59       dest: "{{ antsibull_ansible_git_dir }}"
60       version: "{{ antsibull_ansible_git_version }}"
61       depth: 1
62
63   - name: Run a simple ad-hoc integration test
64     environment:
65       ANSIBLE_ROLES_PATH: "{{ antsibull_ansible_git_dir }}/test/integration/targets"
66     # Note: this didn't work prior to ansible-base 2.10.4: https://github.com/ansible/ansible/pull/71824
67     ansible.builtin.command: >-
68       {{ antsibull_ansible_venv }}/bin/ansible -vv localhost -m include_role -a "name=include_vars"
69     changed_when: false
```

<https://github.com/ansible-community/antsibull/blob/main/playbooks/nested-ansible-tests.yaml>

**... and then record all that with a parrot**



<https://ara.recordsansible.org>

## Is this cheating ?

It's not: Ansible is a great **abstraction layer** for automating workflows and integrating tools together.



## ARA Records Ansible

---

ARA Records Ansible and makes it easier to understand and troubleshoot.



It's another recursive acronym and features `simplicity` as a core principle.

### About ara

---

ara provides Ansible reporting by recording `ansible` and `ansible-playbook` commands wherever and however they are run:

- from a terminal, by hand or from a script
- from a laptop, desktop, server, VM or container
- for development, CI or production
- from most Linux distributions and even on Mac OS (as long as `python >= 3.6` is available)
- from tools that run playbooks such as AWX & Automation Controller (Tower), ansible-(pull|test|runner|navigator) and Molecule
- from CI/CD platforms such as Jenkins, GitHub Actions, GitLab CI, Rundeck and Zuul

<https://github.com/ansible-community/ara>

# It records playbooks

The screenshot shows the ara web interface. At the top, there are navigation links for Playbooks, Hosts, Tasks, and API. On the right, there are links for Documentation and About. A search and filter overlay is active, showing the following fields:

- Path: build-single-release.yml
- Ansible version: ex: 2.10.5 (or) 2.10
- Ansible controller: ex: host.domain.tld (or) host
- User: ex: ara-user
- Name: ex: install server
- Label: ex: check:False

Below the search fields, there are status filters: expired, running, completed, and failed. A Submit button and a Reset button are also present. A pagination bar shows 'First < 1-85 of 85 > Last'. Below the search overlay is a table of recorded playbook runs.

Report	Status	CLI	Date	Duration	Name (or path)	Ansible	Controller	User	Hosts	Tasks	Results	Labels
			16 Jan 2023 18:08:43 +0000	None	...antsibull/playbooks/build-single-release.yml	2.14.1	fedora.local	dmsimard	1	17	16	<a href="#">check:False</a> <a href="#">tags:all</a>
			27 May 2022 16:15:30 +0000	00:04:16.75	...antsibull/playbooks/build-single-release.yml	2.12.5	fedora		1	37	37	<a href="#">check:False</a> <a href="#">tags:all</a>
			27 May 2022 13:04:51 +0000	00:07:27.13	...antsibull/playbooks/build-single-release.yml	2.12.5	fedora		1	37	37	<a href="#">check:False</a> <a href="#">tags:all</a>
			25 May 2022 19:52:45 +0000	00:03:38.51	...antsibull/playbooks/build-single-release.yml	2.12.5	fedora		1	37	37	<a href="#">check:False</a> <a href="#">tags:all</a>
			25 May 2022 19:28:43 +0000	00:06:35.83	...antsibull/playbooks/build-single-release.yml	2.12.5	fedora		1	13	13	<a href="#">check:False</a> <a href="#">tags:all</a>
			25 May 2022 19:22:36 +0000	00:04:39.52	...antsibull/playbooks/build-single-release.yml	2.12.5	fedora		1	37	37	<a href="#">check:False</a> <a href="#">tags:all</a>
			18 May 2022 16:15:41 +0000	00:03:44.95	...antsibull/playbooks/build-single-release.yml	2.12.5	fedora		1	37	37	<a href="#">check:False</a> <a href="#">tags:all</a>
			18 May 2022 16:05:37 +0000	00:07:33.22	...antsibull/playbooks/build-single-release.yml	2.12.5	fedora		1	37	37	<a href="#">check:False</a> <a href="#">tags:all</a>

<https://demo.recordsansible.org/?path=build-single-release.yml>

# It records hosts, tasks, results and files

(and a bunch of other things, too)

## Demo !

The screenshot displays the ara web interface for a specific playbook execution. At the top, the 'ara' logo is visible along with navigation links for Playbooks, Hosts, Tasks, and API. The current page shows details for 'Playbook #3519' located at '/home/dmsimard/dev/git/ansible-community/antsibull/playbooks/build-single-release.yaml'. A summary table provides an overview of the execution, including the date (27 May 2022 16:15:30 +0000), duration (00:04:16.75), controller (fedora), and user (n/a). It also lists the versions used: Ansible 2.12.5, ara n/a (client), 1.5.9.dev56 (server), and Python n/a. A secondary table shows 1 host, 1 play, 37 tasks, 37 results, 5 files, and 0 records. Below this, there are three main sections: 'Hosts' showing one host 'localhost' with 33 OK, 8 CHANGED, and 3 FAILED results; 'Files' listing several files related to the playbook and tasks; and 'Records' which currently shows no saved records. The 'Task results' section at the bottom features a search bar and a table of individual task outcomes. The table includes columns for Report, Status, Date, Duration, Host, Action, Task, and Tags. The first few rows show tasks with 'OK' or 'CHANGED' status, such as 'debug' for 'Release instructions' and 'command' for 'Run nested Ansible tests with the Ansible we just built'.

Report	Status	CLI	Date	Duration	Controller	User	Versions	Hosts	Plays	Tasks	Results	Files	Records
			27 May 2022 16:15:30 +0000	00:04:16.75	fedora	n/a	Ansible 2.12.5 ara n/a (client), 1.5.9.dev56 (server) Python n/a	1	1	37	37	5	0

Report	Status	Hostname
	33 OK, 8 CHANGED, 3 FAILED	localhost

Report	Status	Date	Duration	Host	Action	Task	Tags
	OK	27 May 2022 16:19:47 +0000	00:00:00.03	localhost	debug	build-release : Release instructions	0
	CHANGED	27 May 2022 16:19:18 +0000	00:00:27.09	localhost	command	build-release : Run nested Ansible tests with the Ansible we just built	0
	CHANGED	27 May 2022 16:19:17 +0000	00:00:00.64	localhost	command	build-release : Install community.general for tests using 'a_module' and 'collection_version'	0
	OK	27 May 2022 16:19:17 +0000	00:00:00.20	localhost	file	build-release : Create a temporary COLLECTIONS_PATH	0
	OK	27 May 2022 16:19:15 +0000	00:00:00.76	localhost	ansible.builtin.assert	build-release : Validate that included collections are packaged	0
	OK	27 May 2022 16:19:13 +0000	00:00:01.14	localhost	ansible.builtin.assert	build-release : Validate that the installed collections are the expected ones	0

<https://demo.recordsansible.org/playbooks/3519.html>

# Getting started

```
# Install ansible (or ansible-core) with ara (including API server dependencies)
python3 -m pip install --user ansible "ara[server]"

# Configure Ansible to use the ara callback plugin
export ANSIBLE_CALLBACK_PLUGINS="$(python3 -m ara.setup.callback_plugins)"

# Run an Ansible playbook as usual
ansible-playbook hello-world.yml

# Use the CLI to see recorded playbooks
ara playbook list

# Start the development server at http://127.0.0.1:8000
# to query the API or browse recorded results
ara-manage runserver
```

# Getting started (with a server)

```
# Create a directory for a volume to store settings and a sqlite database
```

```
mkdir -p ~/.ara/server
```

```
# Start an API server with docker from the image on DockerHub:
```

```
docker run --name api-server --detach --tty \  
  --volume ~/.ara/server:/opt/ara -p 8000:8000 \  
  docker.io/recordsansible/ara-api:latest
```

```
# or with podman from the image on quay.io:
```

```
podman run --name api-server --detach --tty \  
  --volume ~/.ara/server:/opt/ara -p 8000:8000 \  
  quay.io/recordsansible/ara-api:latest
```

# Getting started (with a server)

```
# Install ansible (or ansible-core) with ara (excluding API server dependencies)
python3 -m pip install --user ansible ara

# Configure Ansible to use the ara callback plugin
export ANSIBLE_CALLBACK_PLUGINS="$(python3 -m ara.setup.callback_plugins)"

# Set up the ara callback to know where the API server is located
export ARA_API_CLIENT="http"
export ARA_API_SERVER="http://127.0.0.1:8000"

# Run an Ansible playbook as usual
ansible-playbook playbook.yaml

# Use the CLI to see recorded playbooks
ara playbook list

# Browse http://127.0.0.1:8000 (running from the container)
# to view the reporting interface
```

## Want to know more ?

- 2023-02-07, 14:00–14:50, B.1.017: How ARA Records Ansible playbooks and makes them easier to understand and troubleshoot
- 2023-02-08, 09:00–18:00, B.1.017: Ansible Contributor Summit
- FOSDEM 2022: Simple (but useful) Ansible reporting with ara

# Thank You!

## Any questions?

### Come chat with the community:

- <https://docs.ansible.com/ansible/latest/community/communication.html>
  - [#ansible-community](#) (libera.chat) bridged to [#community:ansible.com](#) (Matrix)
  - [#ansible-packaging](#) (libera.chat) bridged to [#packaging:ansible.com](#) (Matrix)
- <https://ara.recordsansible.org/community/>
  - [#ara](#) (libera.chat) bridged to [#ara:libera.chat](#) (Matrix)

### Reach out:

- David Moreau-Simard
- Matrix: [dmsimard:matrix.org](https://matrix.org/#/dmsimard:matrix.org)
- Mastodon: [fosstodon.org/@rfc2549](https://fosstodon.org/@rfc2549)