Simple (but useful) Ansible reporting with ara

FOSDEM 2022

- David Moreau-Simard (@dmsimard)

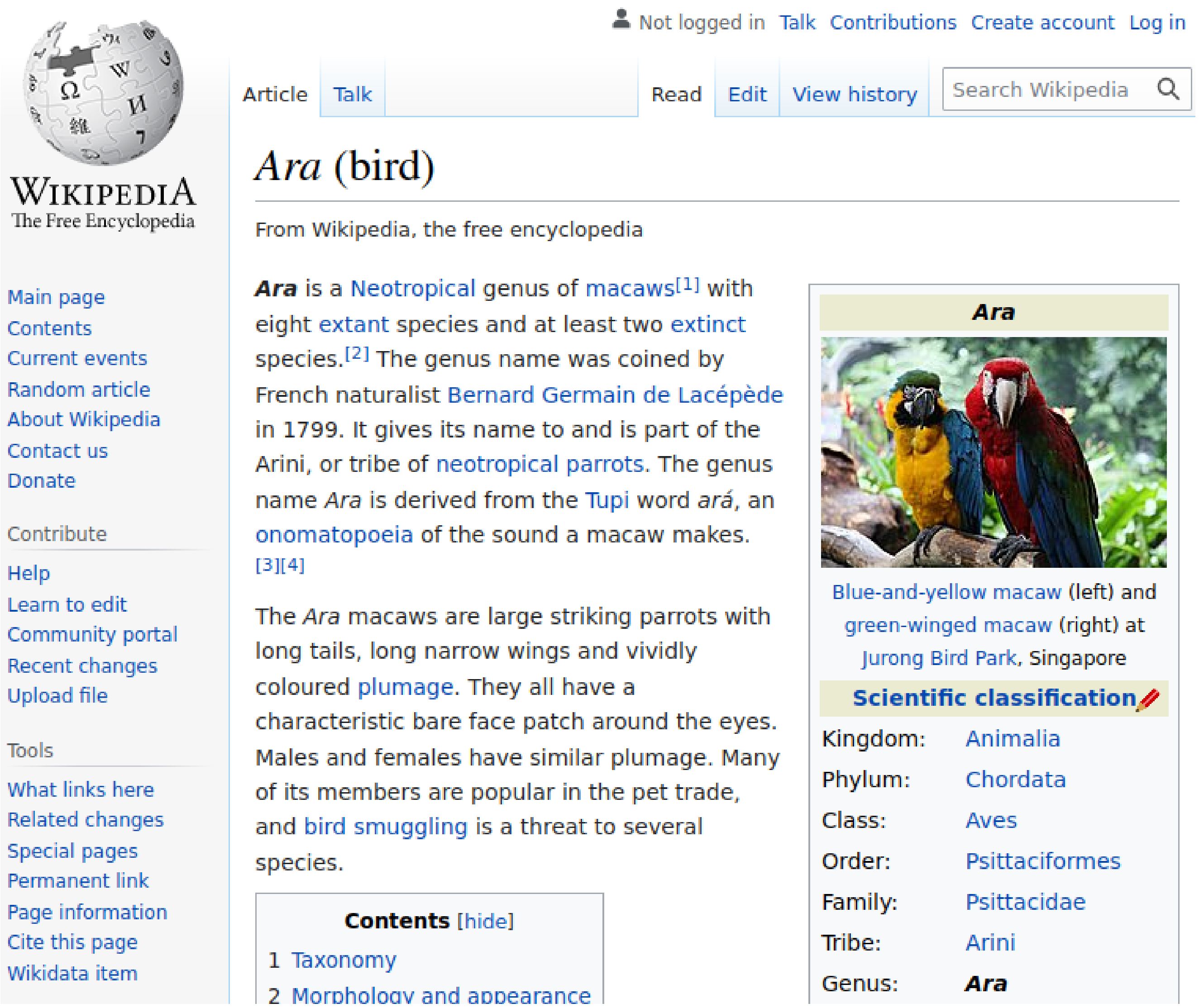
Parrots are smart dinosaurs

ara

ARA Records Ansible
@RecordsAnsible

Did you know that ara had an unofficial mascot ? His name is Yoshi :)

6:23 PM · Jan 29, 2021 · Twitter Web App



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Ara (bird)

From Wikipedia, the free encyclopedia

Ara is a Neotropical genus of macaws[1] with eight extant species and at least two extinct species.[2] The genus name was coined by French naturalist Bernard Germain de Lacépède in 1799. It gives its name to and is part of the Arini, or tribe of neotropical parrots. The genus name *Ara* is derived from the Tupi word *ará*, an onomatopoeia of the sound a macaw makes.[3][4]

The *Ara* macaws are large striking parrots with long tails, long narrow wings and vividly coloured plumage. They all have a characteristic bare face patch around the eyes. Males and females have similar plumage. Many of its members are popular in the pet trade, and bird smuggling is a threat to several species.

Contents [hide]

Ara

Blue-and-yellow macaw (left) and green-winged macaw (right) at Jurong Bird Park, Singapore

Scientific classification

Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Psittaciformes
Family:	Psittacidae
Tribe:	Arini
Genus:	***Ara***

ara

$ whoami

```yaml
---
- name: David Moreau-Simard
  hosts:
    - dmsimard:matrix.org
    - twitter.com/dmsimard
  vars:
    location: Montreal, Canada
    profile: sysadmin, dev/ops, CI/CD, SRE
  roles:
    - Principal Software Engineer in the Ansible community team @ Red Hat
    - Ansible user and contributor since version 1.8 or so (2014?)
    - Release the 'ansible' package in collaboration with the community working group
    - Improve tooling, workflows and processes for users, contributors and maintainers alike
```

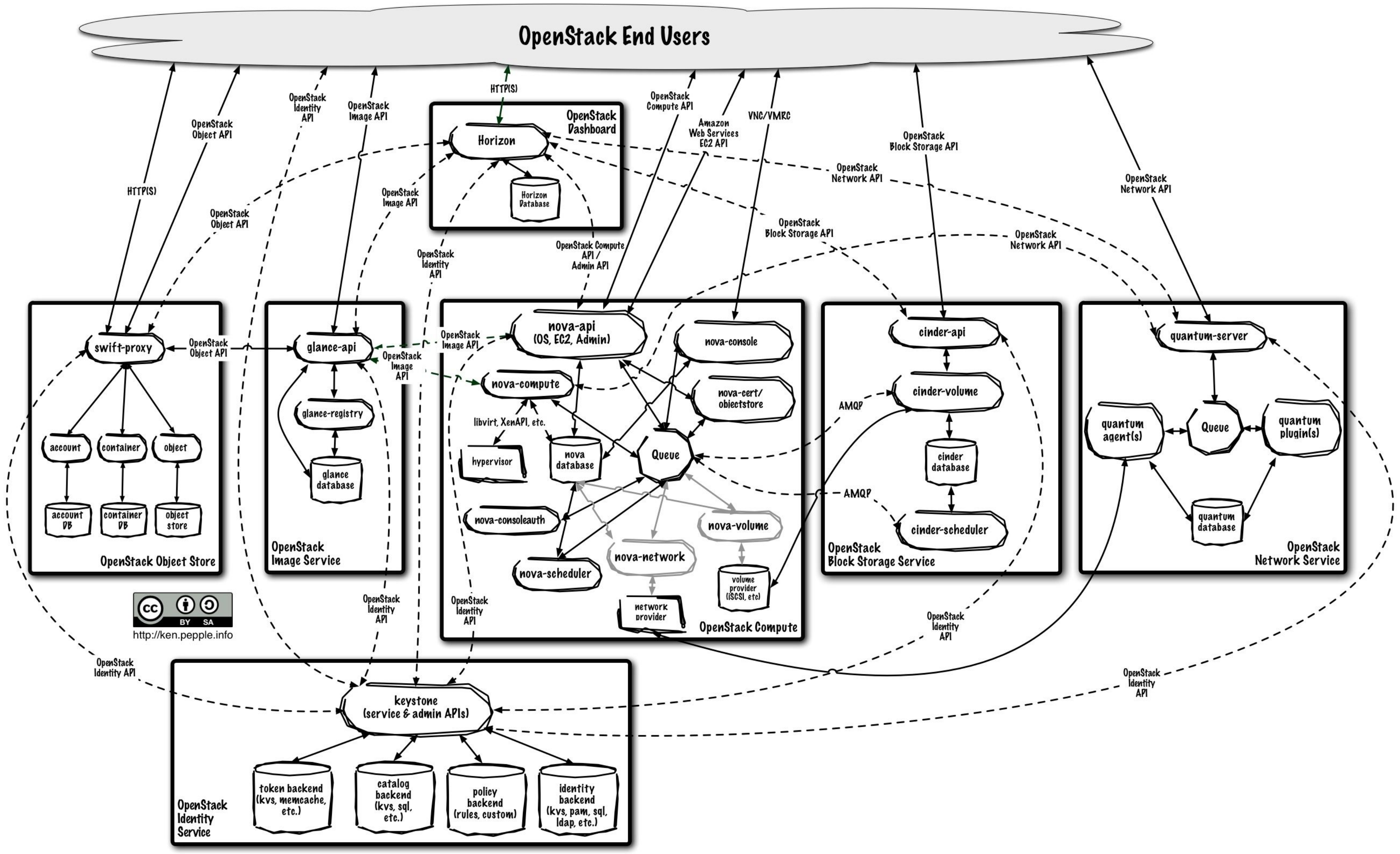
Once upon a time...

TESTING OPENSTACK IS HARD

A TALE ABOUT THE CI INVOLVED IN MAKING RDO HAPPEN

DAVID MOREAU SIMARD

February 2016 @ OpenStack Montreal


OpenStack End Users
HTTP(S)
OpenStack Object API
OpenStack Identity API
OpenStack Image API
HTTP(S)
OpenStack Dashboard
Horizon
Horizon Database
OpenStack Compute API
Amazon Web Services EC2 API
VNC/VMRC
OpenStack Block Storage API
OpenStack Network API
OpenStack Network API
OpenStack Block Storage API
OpenStack Network API
OpenStack Network API
OpenStack Object API
OpenStack Image API
OpenStack Identity API
OpenStack Compute API / Admin API
swift-proxy
OpenStack Object API
account
container
object
account DB
container DB
object store
OpenStack Object Store
glance-api
glance-registry
glance database
OpenStack Image Service
OpenStack Image API
OpenStack Image API
nova-api (OS, EC2, Admin)
nova-console
nova-compute
nova-cert/ objectstore
libvirt, XenAPI, etc.
hypervisor
nova database
Queue
nova-consoleauth
nova-scheduler
nova-network
nova-volume
network provider
volume provider (iSCSI, etc)
OpenStack Compute
cinder-api
cinder-volume
AMQP
cinder database
AMQP
cinder-scheduler
OpenStack Block Storage Service
quantum-server
quantum agent(s)
Queue
quantum plugin(s)
quantum database
OpenStack Network Service
OpenStack Identity API
OpenStack Identity API
OpenStack Identity API
OpenStack Identity API
OpenStack Identity API
BY SA
http://ken.pepple.info
keystone (service & admin APIs)
token backend (kvs, memcache, etc.)
catalog backend (kvs, sql, etc.)
policy backend (rules, custom)
identity backend (kvs, pam, sql, ldap, etc.)
OpenStack Identity Service

ara

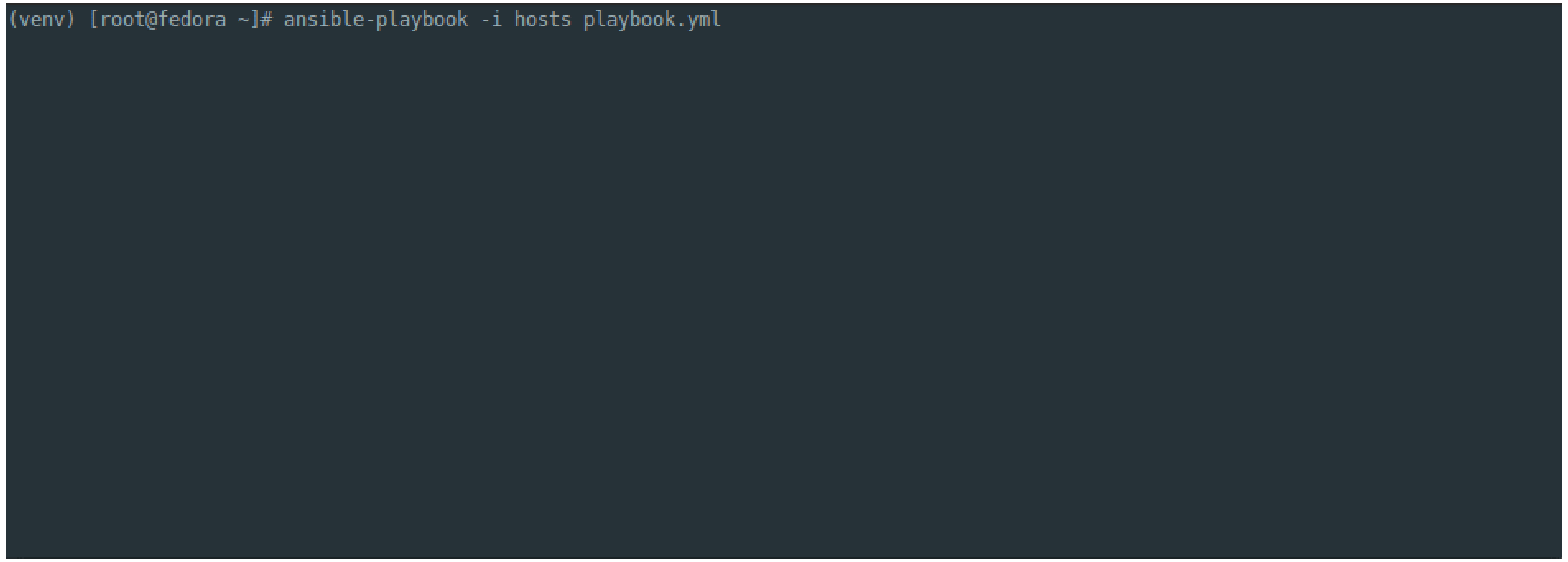
What was challenging

- Thousands of CI jobs across hundreds of projects
- Spread across multiple instances of jenkins and Zuul
- Searching through thousands of lines of console
- What's the problem ? Is it related to my patch ?
- Sharing specific tasks with others
- Onboarding new contributors

What we tried

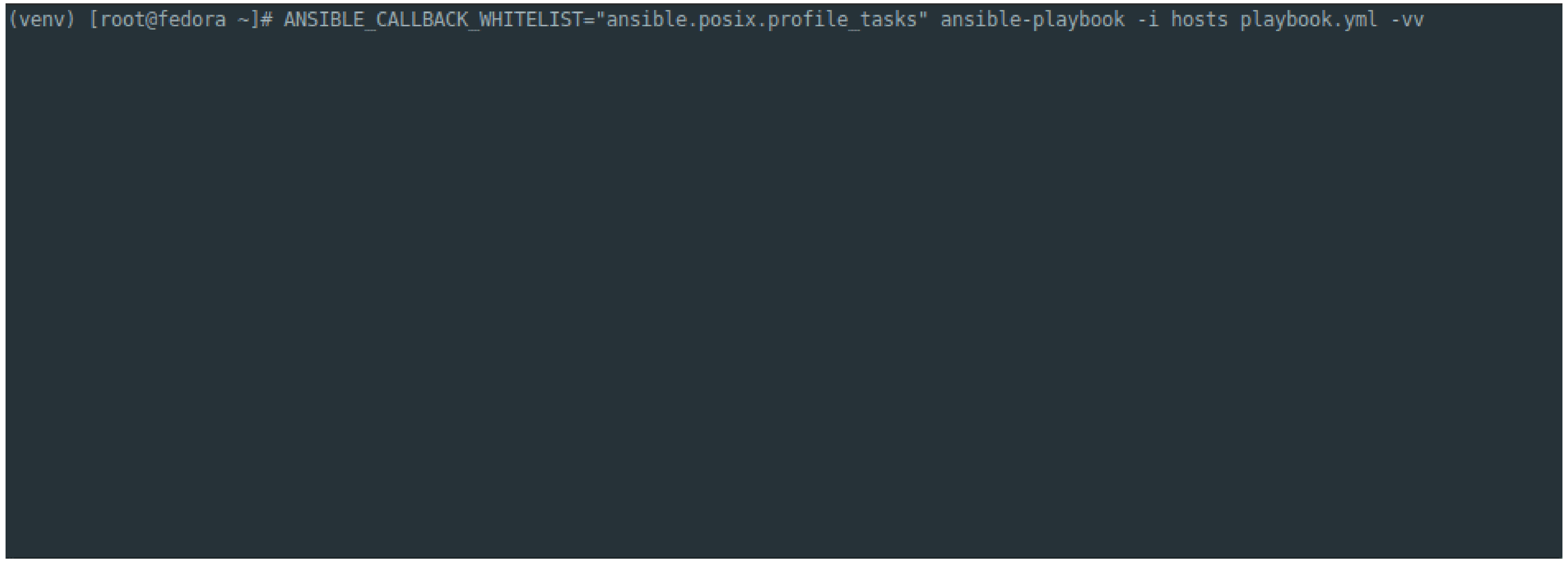
- Increasing verbosity (`ansible-playbook -vvv`)
- Enabling the profile_tasks callback
- Adding the human_log callback (pretty printing JSON)
- A callback that wrote results in HTML tables

Ansible console output



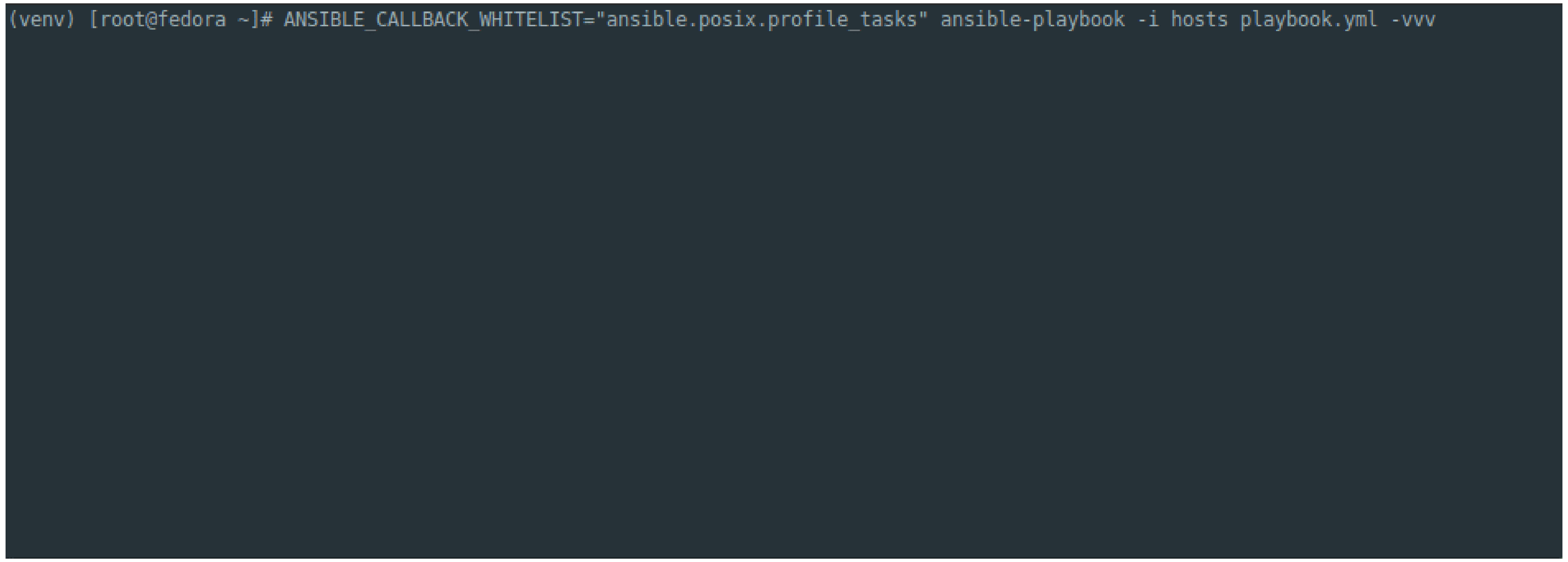
```
(venv) [root@fedora ~]# ansible-playbook -i hosts playbook.yml
```

Ansible console output (verbose)



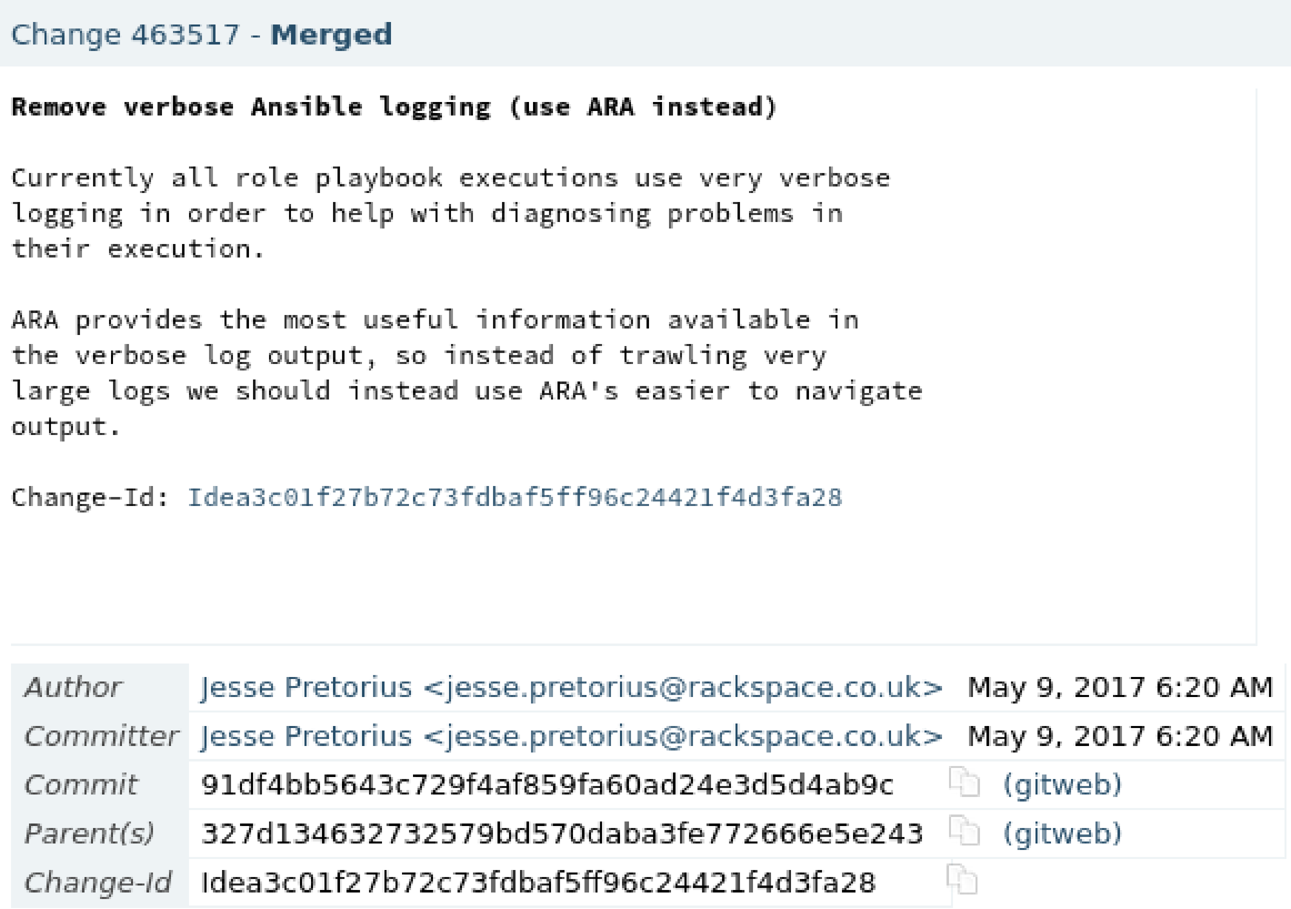
```
(venv) [root@fedora ~]# ANSIBLE_CALLBACK_WHITELIST="ansible.posix.profile_tasks" ansible-playbook -i hosts playbook.yml -vv
```

Ansible console output (very verbose)



```
(venv) [root@fedora ~]# ANSIBLE_CALLBACK_WHITELIST="ansible.posix.profile_tasks" ansible-playbook -i hosts playbook.yml -vvv
```

Spoiler

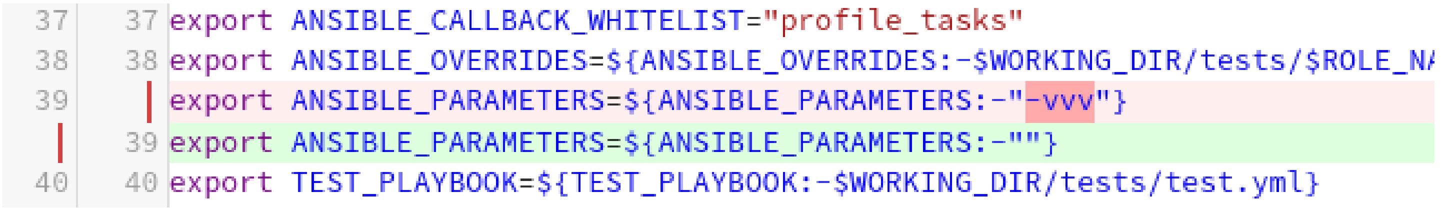


Change 463517 - **Merged**

```
Remove verbose Ansible logging (use ARA instead)

Currently all role playbook executions use very verbose
logging in order to help with diagnosing problems in
their execution.

ARA provides the most useful information available in
the verbose log output, so instead of trawling very
large logs we should instead use ARA's easier to navigate
output.

Change-Id: Idea3c01f27b72c73fdbaf5ff96c24421f4d3fa28
```

Author	Jesse Pretorius <jesse.pretorius@rackspace.co.uk>	May 9, 2017 6:20 AM
Committer	Jesse Pretorius <jesse.pretorius@rackspace.co.uk>	May 9, 2017 6:20 AM
Commit	91df4bb5643c729f4af859fa60ad24e3d5d4ab9c	(gitweb)
Parent(s)	327d134632732579bd570daba3fe772666e5e243	(gitweb)
Change-Id	Idea3c01f27b72c73fdbaf5ff96c24421f4d3fa28	

A bit less verbose



```
export ANSIBLE_CALLBACK_WHITELIST="profile_tasks"
export ANSIBLE_OVERRIDES=${ANSIBLE_OVERRIDES:-$WORKING_DIR/tests/$ROLE_N
export ANSIBLE_PARAMETERS=${ANSIBLE_PARAMETERS:-"-vvv"}
export ANSIBLE_PARAMETERS=${ANSIBLE_PARAMETERS:-""}
export TEST_PLAYBOOK=${TEST_PLAYBOOK:-$WORKING_DIR/tests/test.yml}
```

Before:

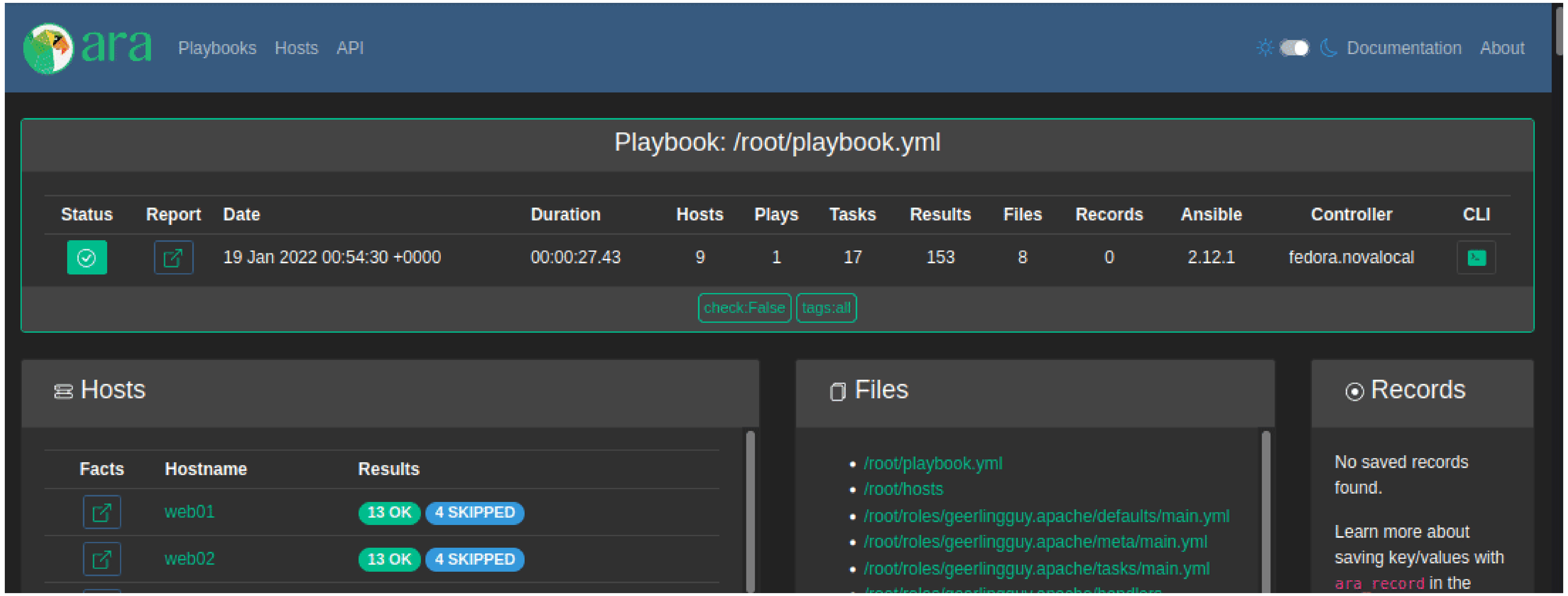
```
$ curl http://logs.openstack.org/81/462581/3/check/gate-openstack-ansible-tests-ansible-func-centos-7/66c86a4/console.html.gz |wc -l
7307k
56421
```

After:

```
$ curl http://logs.openstack.org/17/463517/1/check/gate-openstack-ansible-tests-ansible-func-centos-7/78db57a/console.html |wc -l
392k
4255
```

ARA Records Ansible playbooks and makes them easier to understand and troubleshoot.

It's another recursive acronym.



Playbook: /root/playbook.yml

Status	Report	Date	Duration	Hosts	Plays	Tasks	Results	Files	Records	Ansible	Controller	CLI
✓		19 Jan 2022 00:54:30 +0000	00:00:27.43	9	1	17	153	8	0	2.12.1	fedora.novalocal	

check:False tags:all

Hosts

Facts	Hostname	Results
	web01	13 OK 4 SKIPPED
	web02	13 OK 4 SKIPPED

Files

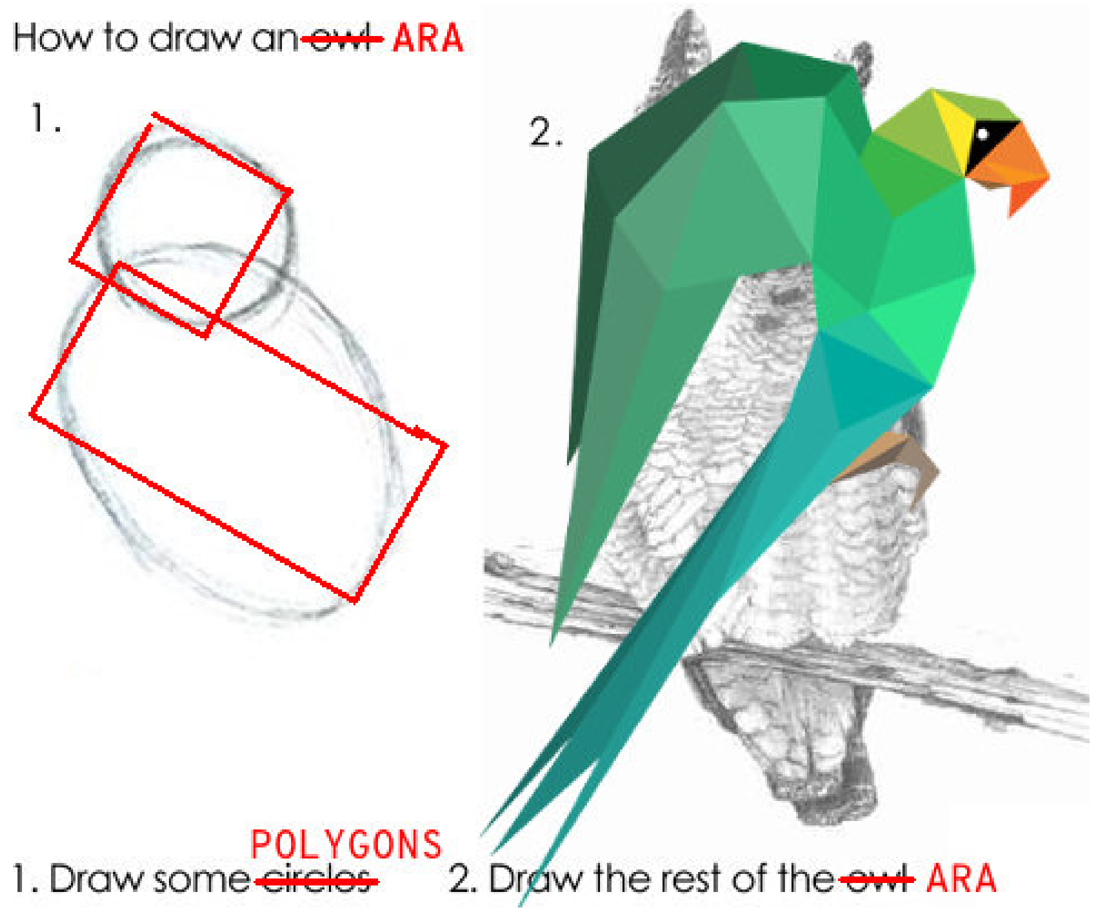
- /root/playbook.yml
- /root/hosts
- /root/roles/geerlingguy.apache/defaults/main.yml
- /root/roles/geerlingguy.apache/meta/main.yml
- /root/roles/geerlingguy.apache/tasks/main.yml
- /root/roles/geerlingguy.apache/handlers

Records

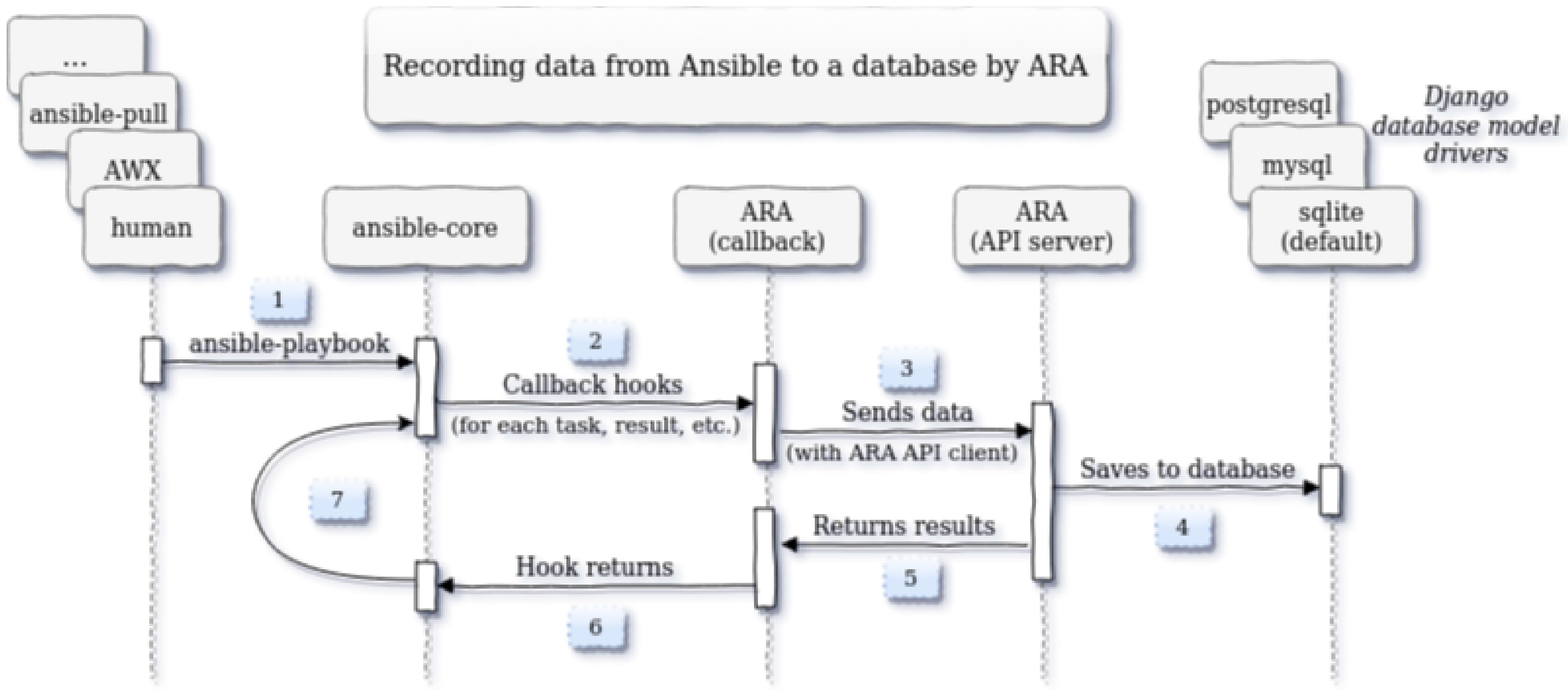
No saved records found.

Learn more about saving key/values with `ara_record` in the

How does it work ?


How to draw an ~~owl~~ ARA
1.
2.
POLYGONS
1. Draw some ~~circles~~
2. Draw the rest of the ~~owl~~ ARA

Recording workflow

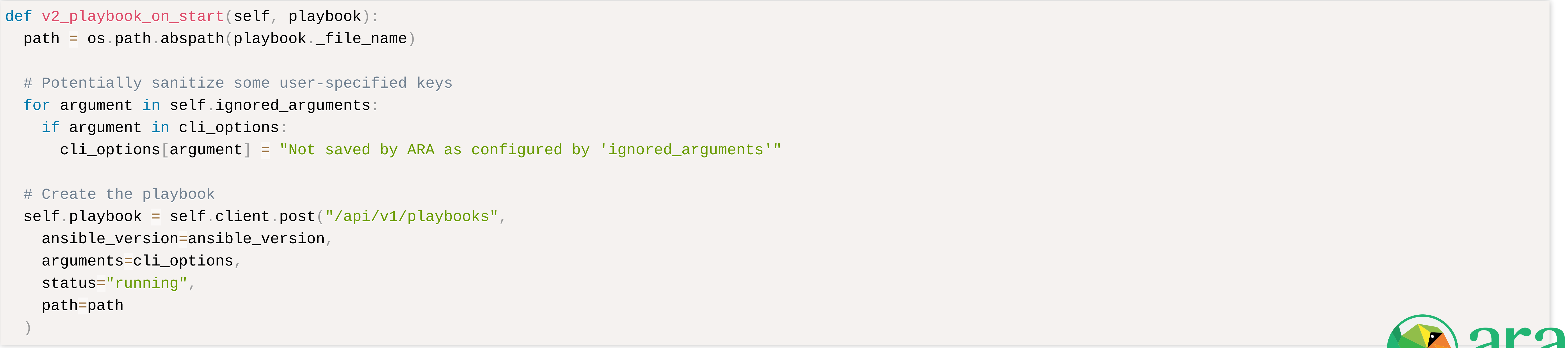


ara

Ansible callback plugins

```
# https://github.com/ansible/ansible/blob/devel/lib/ansible/plugins/callback

def v2_on_any(self, *args, **kwargs):
def v2_runner_on_failed(self, result, ignore_errors=False):
def v2_runner_on_ok(self, result):
def v2_runner_on_skipped(self, result):
def v2_runner_on_unreachable(self, result):
def v2_playbook_on_start(self, playbook):
def v2_playbook_on_task_start(self, task, is_conditional):
def v2_playbook_on_handler_task_start(self, task):
def v2_playbook_on_play_start(self, play):
def v2_playbook_on_stats(self, stats):
def v2_playbook_on_include(self, included_file):

# [...]
```

Ansible callback plugins



```python
def v2_playbook_on_start(self, playbook):
  path = os.path.abspath(playbook._file_name)

  # Potentially sanitize some user-specified keys
  for argument in self.ignored_arguments:
    if argument in cli_options:
      cli_options[argument] = "Not saved by ARA as configured by 'ignored_arguments'"

  # Create the playbook
  self.playbook = self.client.post("/api/v1/playbooks",
    ansible_version=ansible_version,
    arguments=cli_options,
    status="running",
    path=path
  )
```

Getting started

Offline with the default sqlite backend

```
# Install Ansible and ARA (with API server dependencies) for the current user
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
ansible-playbook playbook.yaml

# Use the CLI to see recorded playbooks
ara playbook list

# Start the built-in development server to browse recorded results
ara-manage runserver
```

Getting started

With a containerized API server

```
# Create a directory for a volume to store settings and a sqlite database
mkdir -p ~/.ara/server

# Start an API server with podman from the image on Quay.io:
podman run --detach --tty --name ara \
    --volume ~/.ara/server:/opt/ara:z \
    -p 8000:8000 \
    quay.io/recordsansible/ara-api:latest

# or with Docker and Docker Hub:
docker run --detach --tty --name ara \
    --volume ~/.ara/server:/opt/ara:z \
    -p 8000:8000 \
    docker.io/recordsansible/ara-api:latest
```

Getting started

Configuring the callback to send data to our server

```
# Install Ansible and ARA (without API server dependencies) for the current user
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
ansible-playbook playbook.yaml

# Browse http://127.0.0.1:8000 to view the reporting interface
```

Live demo

Recording an Ansible playbook from AWX

1. Deploy a kubernetes node with k3s-ansible
2. Run an ara server to receive results from AWX
3. Deploy AWX with awx-operator
4. Configure AWX to record results with ara
5. Run a playbook with AWX and see if it works

More reading

- Recording Ansible playbooks from AWX with ara

Another live demo

demo.recordsansible.org

Deployed with the ara Ansible collection with gunicorn, nginx and mariadb

The project could use your help

- https://github.com/ansible-community/ara
- https://github.com/ansible-community/ara-collection
- https://github.com/ansible-community/ara-infra
- https://github.com/ansible-community/ara-web (broken)
- https://ara.readthedocs.org

Thank You!

Any questions?

Stay up to date and come chat with us:

- https://ara.recordsansible.org
- @RecordsAnsible on Twitter
- https://matrix.to/#/#ara:libera.chat
- #ara on libera.chat IRC network

Link to these slides (and more): https://ansible.github.io/community/decks/