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OpenAFS development and testing with Ansible Molecule

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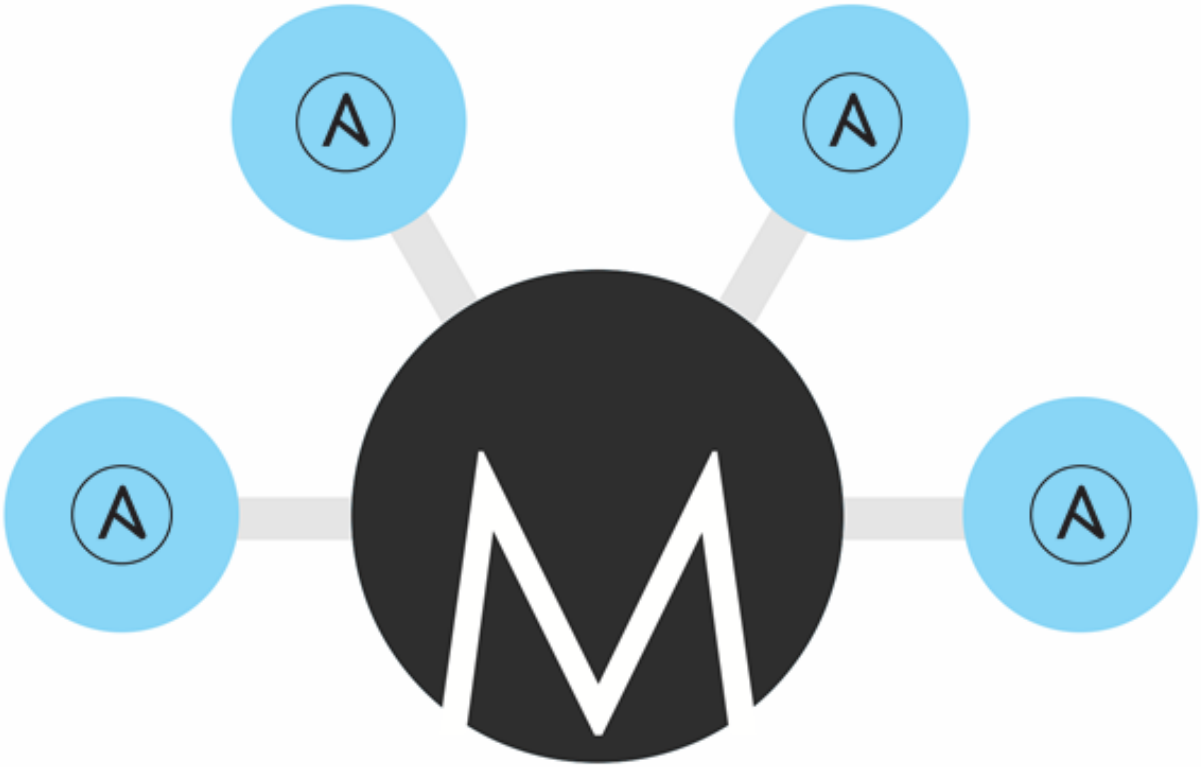
Molecule

Ansible Molecule

- Ansible is an open source IT automation engine that automates provisioning, configuration management
- Molecule is the standard framework for testing Ansible roles and playbooks
- Easily spinup local “infrastructures” for testing roles and playbooks
- How can we make it easier for people to get OpenAFS up and running by leveraging Ansible and Molecule?

Molecule Scenario

- Key concept in molecule
- Defines the number and type of platforms and how to create them
- Defines the Ansible inventory (groups and variables)
- Specifies the Ansible playbook to setup the instances
- Defines the verification method

Scenario configuration

- Each scenario consists of a `molecule.yml` file and a set of playbooks
- The `molecule.yml` specifies everything needed to create the infrastructure and to verify
- Instances are created/destroyed by driver plugins or by custom playbooks
- Verification is performed by verifier plugins or a custom playbook

Molecule Test Cycle

- Create one or more instances (containers or virtual machines)
- Run an Ansible playbook to create an infrastructure
- Verify
- Cleanup and destroy instances

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Drivers

Verification plugins

Molecule commands

```
test          Run full create/verify/destroy cycle.

list          List status of instances.
create        Start the instances.
converge      Configure instances
login         Log in to one instance with ssh.
verify        Run automated tests against instances.
destroy       Destroy the instances.
```

See molecule –help for the complete list.

OpenAFS Ansible Collection

A set of Ansible Roles and Modules to deploy OpenAFS.

- MIT Kerberos KDC and workstation Roles
- OpenAFS Client and Server Roles
- OpenAFS Modules (tasks)
- Example Playbooks
- Distributed via github and Ansible Galaxy
- Automatically installed by molecule

OpenAFS Installation Methods

OpenAFS Ansible Collection supports a variety of installation methods.

- Install with package manager
- Upload prebuilt packages
- Checkout source code, build, and install
  - git checkout
  - gerrit checkout
  - source tarball
- Installed versions and methods my vary by instance

Molecule Converge Playbook

- Import OpenAFS Collection
- Install and configure Kerberos, generate keys
- Install and configure OpenAFS clients, db servers, fileservers
- Create and mount top-level volumes
- Create initial users and groups

Robot Framework Verification

On instances in the test group:

- Install Robot Framework
- Install required test libaries
- Download Robot Framework test cases (robot files)
- Run specified test cases
- Download report and logs

Molecule Challenges

- Molecule documentation is limited.
  - Offset by lots of online material.
- Duplication of yaml in `molecule.yml` files
  - Base configuration files can help
  - Possible to generate files with templates (e.g. Jinja2)
- Driver/Platforms coupling makes it harder to create reuseable scenarios
- login command is currently broken (version 3.6.1)

Getting started

- Install Vagrant and a virtualization provider (e.g., Virtualbox)
- Install Python3, pip3, virtualenv, cookiecutter
- Create a molecule scenario with cookiecutter
- Install molecule and ansible packages with pip3
- Run molecule

Demo

```
$ sudo apt-get install python3 python3-venv python3-pip
$ python3 -m pip install --user cookiecutter
$ cookiecutter \
    --directory cookiecutter/testcell-scenario \
    https://github.com/openafs-contrib/openafs-robotest
scenario_name [Untitled]: my-first-scenario
...
$ cd my-first-scenario
$ python3 -m venv venv
$ . venv/bin/activate
(venv) $ pip3 install -r requirements.txt
(venv) $ molecule test
```

More Info

Ansible Molecule

https://molecule.readthedocs.io/en/latest/

OpenAFS Ansible Collection

https://openafs-ansible-collection.readthedocs.io/en/latest/

OpenAFS RobotTest

https://openafs-robotest.readthedocs.io/en/latest/index.html

Questions?

Thank you