

Collections in Ansible Core



Gonéri Le Boudier
Senior Software Engineer, Ansible Core

COLLECTIONS

- A new means to distribute Ansible content currently in **TECH PREVIOUS**
 - An artifact format for consistent content structure
 - Contains 1-N of roles, modules, plugins and module utilities
 - Enables versioning of external content
 - Enables consistent delivery independent of Ansible distributions
 - Installable as system, user or project resources
- Immediate use of the content found within the artifact
- Namespacing support built into the collection

What problems do collections solve?

- Difficult distribution of non-role content
- Plugin/role name collisions
- Difficult code-sharing for most plugins

Problem 1: Content Distribution

- Multiple roles with deps? Good luck.
- Roles already distribute plugins- done?
 - Requires role to be "entered" (see also `ansible-wtf`)
 - Plugins are not "first-class citizens"
 - Versioning/maintenance issues

Content Distribution with Collections

- Collection may contain 1-N:
 - Roles/Modules/Plugins
 - Playbooks (future/TBD)
- Collection is the unit of distribution and versioning
- Installable:
 - globally
 - per-user
 - content-adjacent (ie per-project)

Installing collections content

- Default paths (searched in this order, configurable)
 - (current playbook)/collections
 - ~/.ansible/collections
 - /usr/share/ansible/collections
- Mazer/ansible-galaxy

Problem 2: Name Collisions

- Ansible has a global(ish) flat plugin namespace
- Role1 and Role2 both distribute `my_module`
 - Which one will get used? (ha!)
 - Can I use them both in the same run? (no)
 - What if core later includes a `my_module`? (screwed)
 - What if the project has in `library/` ?
 - What if the user has in `~/ .ansible/`?
 - What if the system has in `/usr/share/ansible` ?
 - Issue exists for roles and all modules/plugins

Namespacing with Collections

- Collections have a namespace and name
 - For distribution, namespace == Galaxy user/org
- Content in collections is accessed by namespace
 - mynamespace.mycollection.my_module
 - f5.bigip.provisioning_role
- Built-in collections
 - ansible.builtin
 - ansible.legacy

Sample playbook

- hosts: somehosts
- tasks:
 - myns.mycollection.athing:
 - ansible.builtin.ping: # use only the ping packaged in core
 - ansible.legacy.ping: # use core or library(etc)/ping.py
when: thing | myns.mycollection.filter == 42
 - ping: # still works, == ansible.legacy.ping:

That's awfully verbose...

Enter the collections keyword

- hosts: somehosts
- collections:
 - ansible.builtin
 - myns.mycollection
 - otherns.othercollection
- tasks:
 - mymodule: # first found in the list of collections
 - otherns.othercollection.mymodule: # fully-qualified is fine

Problem 3: Code sharing

- `module_utils` only works for modules
 - unless you're "in the box"
 - perverse incentives
- eg, Azure/AWS want to share utility code between
 - `modules/actions/inventory/lookup` plugins
- Just use pip! 🙄

Code sharing in Collections

- Entire collection is a Python namespace package
- All installed collection content is accessible
 - even across collections!
 - `ansible_collections` root Python namespace
 - `ansible_collections.mynamespace.mycollection`
- PEP302 loader magic
 - collection is the smallest unit of distributed namespace

Demo

Demo

- VirtLightning: a solution to deploy VM
- Python code base, no Ansible module (yet!)
- Does not fit in the \$role/library model
 - The module should be usable everywhere
 - The Inventory plugin won't work
- Not ready for a core inclusion
 - Not mature yet
- **Good candidate for a collection!**

Demo

Recording

<https://asciinema.org/a/241619>

Repository

<https://github.com/virt-lightning/ansible-collection-virt-lightning>

Collections-in-core project status

- Experimental in 2.8
- <https://github.com/ansible/ansible/pull/52194>
- Basics are working (see PR for docs/known issues)
- Playbooks-in-collections not implemented in 2.8
- Galaxy/Mazer/Tower support?
- Molecule, etc?

Feedback wanted

- IRC #ansible and #ansible-devel
- Mailing list: Ansible-Project
- <https://www.ansible.com/community>

Questions?