Introduction to Ansible Collections

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Agenda

● What’s a Collection?
● Why Collections?
● Deep dive with Collections
● Collection demo
● Ansible galaxy for Collections
● Reference for Collection
Who am I

Ganesh Nalawade

* Principal Software Engineer at Ansible by Red Hat

* Work primarily as upstream developer in Ansible Networking

* Worked extensively on Network management plane developing software for on/box automation and programmability infra.

* Co Organiser for Ansible meetup group in Pune
What’s a Collections?

- Bundle of Ansible content
  - Any kind of plugins
  - modules
  - module_utils
  - roles
  - playbooks (TBD)
- With a namespace + name
Why Collections?

- Difficult distribution of non-role content
- Plugin/role name collisions
- Difficult to do code-sharing for most plugins
Example Role structure

- ansible-network.network-engine
Problem 1: Content Distribution

- Multiple roles with dependencies
  - Maintain version dependencies across roles and Ansible version
- Roles already distribute plugins but the problem is
  - Requires role to be added in playbooks “entered” to use plugin content
  - Plugins are not “first-class citizens”
  - Versioning/maintenance issues
Content Distribution with Collections

- Collection may contain 1-N:
  - Roles/Modules/Plugins
  - Playbooks (TBD)
- Collection is the unit of distribution and versioning
- Installable:
  - globally
  - per-user
  - content-adjacent (i.e., per-project)
Installing collections content

- Default paths (searched in this order)
  - (current playbooks)/collections
  - ~/.ansible/collections
  - /usr/share/ansible/collections

- ansible-galaxy can be used to create/install/distribute collections
  - From Ansible 2.9 onwards (tech preview)
Sample collections layout

- Sample collection layout:
  - ansible-security.ibm_qradar
  - ansible-network.arista.eos
Problem 2: Name Collisions

- Ansible has a flat plugins namespace
- Role1 and Role2 both distribute my_module
  - Which one will get used?
  - Can’t use both of them in same run?
  - If ansible core later includes a my_module?
  - What if project has in library/?
  - What if the system has ib /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 is collections is accessed by namespace
  - mynamespace.mycollection.my_module
  - f5.bigip.provisioning_role
- Built-in collections
  - ansible.builtin
  - ansible.legacy
Namespacing with Collections

- Collections have a namespace and name
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- Built-in collections
  - ansible.builtin (stuff shipped with ansible)
  - ansible.legacy (mimics old lookup behaviour)
- **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:
collections keyword

- Ordered list of collections for unqualified name
- ansible.legacy auto-appended
  - if ansible.builtin or ansible.legacy isn’t explicitly listed
  - eases adding collection search to existing plays
- settable on plays/blocks/tasks
Problem 3: Code sharing

- module_utils in roles only works for modules
  - inventory plugins can’t use module_utils code
  - unless you’re using ansible shipped code
Code sharing in collections

● Entire collection is a Python namespace package
● All installed collection content is accessible
  ○ even across collections!
  ○ ansible_collections root Python namespaces
  ○ ansible_collections.mynamespace.mycollection
DEMO
Collections with ansible-galaxy

- Collection support with ansible-galaxy (2.9)
Contributing to Ansible

- Community groups
- IRC channels
- Google Groups:
  https://groups.google.com/forum/#!forum/ansible-project
  https://groups.google.com/forum/#!forum/ansible-devel
- Ansible galaxy
Thank You

Github/IRC: @ganeshrn