



Ansible Inventory Driven Dynamic Provisioning

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AGENDA

Introduction - Three Ansible Design Rules

Chris's really awesome playbook

Groups, Vars, Roles Overview & Questions

Play Time!

The Problem(s)

Feedback & Questions

Novel Solution Teaser

Introduction - Me me me me meeeee

You...

1. ...will need a Fedora 24 + box or VM.
2. ...git, ansible 2.3, ansible-lint, and python2-virtualenv installed.
3. ...lacking a playground, should ask me for one.

Introduction - Three Ansible Design Rules

Three simple Ansible design rules:

1. Overt is always better than covert; Assert early and assert often.
2. Hosts should be grouped by desired behaviors/capabilities.
3. Role/include/tasks should be conditional only on variables/facts and tags.

Groups, Vars, Roles Overview & Questions

A recipe for (some) playbook sanity

Runtime Groups
(add_host / group_by)
&
Static groups
(inventory/<group>.ini)

Runtime Variables*
&
Static Variables*
&
Oh my!**

```
roles:  
- role: <phoo>  
  when: <varr>
```

*Flavors: Implicit (magic), explicit (written), overrides (vars & vars_files)

** KISS: Favor group_vars, host_vars, role-defaults, and set_facts

The Problem(s): Change is the constant

Ansible dynamic inventory scripts:

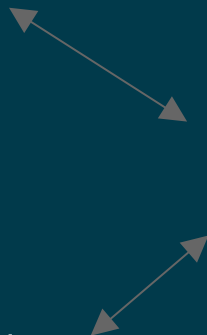
- Force hosts, groups, and variables.
- Dependencies
- Lock-in (compatibility/capability)

Ansible cloud modules:

- Bugs / Constant Change
- Dependencies
- Lock-in (roles)

Cloud-provisioning scripts (in general):

- Three “better” ones released yesterday
- Dependencies
- Lock-in (input/output)



Novel Solution Teaser

Ansible is really good at abstracting operational details.:

- All code is crap (unless it's yours)
- Command-lines out...
- ...YAML in

Chris's really awesome playbook: C.R.A.P.

```
File Edit View Search Terminal Help
[cevich@cevich ~]$ sudo dnf install -y python2-virtualenv gcc openssl-devel redhat-rpm-config libsel
inux-python rsync docker docker-selinux ansible ansible-lint &> /dev/null; echo $?
0
[cevich@cevich ~]$ sudo groupadd docker
[cevich@cevich ~]$ sudo gpasswd -a cevich docker
Adding user cevich to group docker
[cevich@cevich ~]$ sudo systemctl restart docker
[cevich@cevich ~]$ git clone https://github.com/cevich/crap.git &> /dev/null; echo $?
0
[cevich@cevich ~]$ cd crap
[cevich@cevich crap]$ ansible-lint main.yml
[cevich@cevich crap]$ ansible-playbook --check main.yml &> /dev/null; echo $?
0
[cevich@cevich crap]$
```


C.R.A.P.: Logout (all the way) then back in.

```
File Edit View Search Terminal Help
[cevich@cevich ~]$ cd crap
[cevich@cevich crap]$ docker ps -aq &> /dev/null; echo $?
0
[cevich@cevich crap]$ ansible-playbook setup.yml &> /dev/null; echo $?
0
[cevich@cevich crap]$ docker ps
CONTAINER ID        IMAGE                                     COMMAND                  CREATED
STATUS            PORTS              NAMES
0ecf800f074c      registry.fedoraproject.org/fedora:26   "/bin/sh -c 'while sl"  4 minutes ago
Up 4 minutes      fedora26_15ee27c27a2
8b878fa3b63f      registry.fedoraproject.org/fedora:25   "/bin/sh -c 'while sl"  4 minutes ago
Up 4 minutes      fedora25_15ee27c27a2
[cevich@cevich crap]$ docker exec -it fedora26_15ee27c27a2 bash
[root@0ecf800f074c /]# cat .touchstone
# BEGIN ANSIBLE MANAGED BLOCK
Touched by cevich
Machine_id 82cc94f0f52249e3adf318054a196744
# END ANSIBLE MANAGED BLOCK
[root@0ecf800f074c /]# exit
[cevich@cevich crap]$ ansible-playbook main.yml &> /dev/null; echo $?
0
[cevich@cevich crap]$ docker ps -aq
[cevich@cevich crap]$
```

C.R.A.P.: JFM de-mystified - Incantation One

```
File Edit View Search Terminal Help
[cevich@cevich crap]$ cat inventory/host_vars/fedora26.yml
---

join_groups:
  - "{{ hostvars.localhost.cloud_group | mandatory }}"
  - fedora
  - tested
[cevich@cevich crap]$ cat roles/common/defaults/main.yml
---

# If cloud_group is not set, use this as the default
default_cloud_group: "docker"
[cevich@cevich crap]$ ls inventory/group_vars/docker
creation_destruction.yml  subject_fqins.yml
[cevich@cevich crap]$ █
```

C.R.A.P.: JFM de-mystified - Incantation Two

```
File Edit View Search Terminal Help
creation_destruction.yml  subject_fqins.yml
[cevich@cevich crap]$ cat inventory/group_vars/docker/creation_destruction.yml
---

creation_destruction_asserts:
  - 'uuid | default("", True) | trim | length'
  - 'docker_fqin | default("", True) | trim | length'
  - '"{{ playbook_dir }}/bin/docker_create.sh" | is_file'
  - '"{{ playbook_dir }}/bin/docker_destroy.sh" | is_file'

creation_command:
  command: >
    bin/docker_create.sh
    {{ docker_fqin }}
    {{ inventory_hostname }}_{{ uuid }}
    {{ docker_extra if docker_extra | default('', True) | trim | length else '' }}
  chdir: "{{ playbook_dir }}"

destruction_command:
  command: >
    bin/docker_destroy.sh
    {{ docker_cid if docker_cid | default("", True) |
      trim | length else inventory_hostname ~ "_" ~ uuid  }}
```

Reference C.R.A.P.:

<https://github.com/cevich/crap.git>

crap/ # Entry points: main - setup + run + cleanup

├─ bin/ # Creation/Destruction Scripts

New Cloud

├─ inventory/

│ └─ group_vars/ # Each group has a subdirectory...

│ └─ docker/

│ └─ foo.yml # ...with vars in named files

│ └─ openstack/

│ ...

New Group

│ └─ host_vars/ # Each host has named file of vars.

│ └─ hostname.yml

└─ roles/ # Each role has a subdirectory.

New role

│ └─ role_name/

│ └─ defaults/

│ └─ files/

│ └─ tasks/

│ └─ templates # Tasks required, others are optional

│ ...

WORKSHOP

Play time! Try one of the following, from easy (left) to harder (right)

New role

Add a role that takes at least one variable, and passes both `ansible-lint` and `--check` mode.

New Group + Role

Add a group for some hosts to behave differently using one or more new roles.

New Cloud

Wrap or Write a creation/destruction script for your favorite tool which accepts at least an inventory name as input.

Interactive Workshop: Can't fit on slide



Thank you!