Ansible modules for oVirt

Bridging the gap between declarative and imperative worlds

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oVirt

- Large scale, open source centralized management for server and desktop virtualization
- Built on KVM hypervisor
- Support for various storage types (NFS, iSCSI, Cinder, Glance, Gluster, ...)
- Live migration of VMs
- Web UI, REST API, SDKs (Python, Ruby, Java), Ansible modules
oVirt API / SDKs

- SDK for Java, Python and Ruby
- Automatically generated from API specification (Java code)

```python
conn = sdk.Connection(...)
sys_service = conn.system_service()
vms_service = sys_service.vms_service()

# Add new virtual machine
vm = vms_service.add(
    types.Vm(name='myvm', memory='4GiB'))

# Start virtual machine
vm_service.start()

# Update virtual machine's name
vm_service.update(
    types.Vm(name='mynewvm'))

# Remove virtual machine
vm_service.remove()
```

```
# Add new virtual machine
POST /ovirt-engine/api/vms
    <vm>
        <name>myvm</name>
        <memory>4GiB</memory>
    </vm>

# Start virtual machine
POST /ovirt-engine/api/vms/123/start
    <action/>

# Update virtual machine's name
PUT /ovirt-engine/api/vms/123
    <vm><name>mynewvm</name></vm>

# Remove virtual machine
DELETE /ovirt-engine/api/vms/123
```
Ansible

- Configuration management/Orchestration tool
- Simple - low learning curve for anyone
- Control node -> Managed nodes
- Agentless tool, 'push' model
- Playbooks - DSL (YAML), infrastructure as data
- Inventory, Tasks, Modules (Python)

https://asciinema.org/a/100658
Ansible modules

- Written mostly in Python by sysadmins
- Idempotent
- Declarative
- Usually handle specific resource (Virtual Machine, cluster, ..)
- Multiple modules(tasks) -> roles
The task

- Cover the REST API by Ansible modules
- Many resources/subresources
- Many entities
- Many attributes of the entities
The solution #1

- Automatically generated, like our SDKs

**Pros:**
- Easy maintain
- Easy to write

**Cons:**
- Unacceptable to upstream
- No real advantage comparing to Python SDK

```
tasks:
  ovirt_vms:
    auth: "{{ ovirt_auth }}"
    action: add
    parameters:
      name: apache
      template:
        name: rhel7_x64
      cluster:
        name: west01
      memory: 2147483648

  ovirt_vms:
    auth: "{{ ovirt_auth }}"
    action: list
    parameters:
      search: name=apache
    register: apache_vm
    until: apache_vm.vm.status == 'down'
    retries: 5
    delay: 10
```
The solution #2

- Implement manually in a declarative way

Pros
- Acceptable to upstream
- Same as other modules

Cons
- Harder to maintain than #1
- Lots of code to write

```yaml
tasks:
  ovirt_vms:
    auth: "{{ ovirt_auth }}"
    state: present
    name: apache
    cluster: west01
    template: rhel7_x64
    memory: 2GiB
    wait: yes
```
Imperative -> Declarative

- Action + wait operation
- Long running tasks *should* return link to queue, but what if not ...

```bash
$ curl -u user:pass -X POST --data '<action/>' https://$URL/api/vms/123/start
  <action>
    <job href="/ovirt-engine/api/jobs/123" id="123"/>
    ...
  </action>

$ curl -u user:pass -X POST --data '<disk>...</disk>' https://$URL/api/disks
  <disk href="/ovirt-engine/api/disks/123" id="123">
    <name>mydisk</name>
    <status>locked</status>
  </disk>
```
Imperative -> Declarative

- Idempotence - don't do it if not needed

```python
if state == 'present':
    if resource is None:
        resource = service.create_resource(
            attr1=module.params('attr1'),
            attr2=module.params('attr2')
        )
        wait()
        changed = True
    else:
        if needs_update(module.params, resource):
            resource = service.update_resource(
                attr1=module.params('attr1'),
                attr2=module.params('attr2')
            )
            changed = True
        else:
            changed = False
    module.exit_json(changed=changed)
elif state == 'absent':
    if resource is None:
        changed = False
    else:
        service.delete_resource(resource.id)
        changed = True
    module.exit_json(changed=changed)
```
Ansible modules - demo
Links

- https://www.ovirt.org/
- https://www.ansible.com/
- http://docs.ansible.com/ansible/list_of_cloud_modules.html#ovirt
- https://github.com/ansible/ansible/tree/devel/lib/ansible/modules/cloud/ovirt
- https://github.com/ovirt/ovirt-ansible