Test environment configuration with Ansible.

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Outline

Introduction

- Do you need to listen this presentation?
- Test environment description.

About Ansible

- Inventory file.
- Tasks file.
- Modules.

If you need additional functions

- Additional language constructions.
- Add new functions for network configuration.

How often do you configure system?

- User

How often do you configure system?

- User
- Administrator

How often do you configure system?

- User
- Administrator
- Developer

How often do you configure system?

- User
- Administrator
- Developer
- Project manager

How often do you configure system?

- User
- Administrator
- Developer
- Project manager
- Tester

Cluster File Systems Testing.

- 6 hosts per environment.
- 5 environments. Can be more.

How often do we reinstall?

- New builds or releases
- Multiple OS and different hardware (IB, 40GigE)
- Defects verification often requires new installation.

What to do?

Automate with

- Python, Bash, Perl
- Insert you favourite here.

or use special tools

- Chef
- Puppet
- SaltStack
- Ansible

What do you need to install?

- On controller.
  - Python 2.6+
  - Paramiko
  - PyYAML
  - Jinja2
- On clients.
  - Only SSH and Python. (Usually it is already installed.)
- Push model.

Inventory.

- INI file with hosts description
- only host, group, combine group, filters

```
[10K]
10K-1 ansible_ssh_host=10.10.10.28 ansible_ssh_pass=mypass
10K-2 ansible_ssh_host=10.10.10.25
...
10K-6 ansible_ssh_host=10.10.10.14 ansible_ssh_user=root
[10Kservers]
10K-[1:4]
[10Kclients]
10K-5
10K-6
```

Playbooks.

- YAML file describes actions on hosts

```yaml
- hosts: 10Kservers

  tasks:

    - name: Shutdown GPFS node
      command: mmshutdown

    - name: Stop multipathd
      service: name=multipathd state=stopped
```

Module authorized_key

- Adds or removes an SSH authorized key

```
- name: Setup SSH auth key user file
  authorized_key: user=root key="{{ lookup(’file’,
      ’/root/.ssh/id_rsa.pub’) }}"
```

Module copy

- Copies files to remote locations

```
- name: Setup SSH private key
  copy: src={{ ssh_path }}/id_rsa dest=/root/.ssh/id_rsa
      owner=root group=root mode=0600

- name: Setup SSH config file
  copy: src={{ ssh_path }}/config dest=/root/.ssh/config
```

Module service

- Manage services.

```
- name: Stop multipathd
  service: name=multipathd state=stopped
```

```
- name: Start ddn-ibsrp
  service: name=ddn-ibsrp state=restarted
```

Module lineinfile

- Ensure a particular line is in a file, or replace an existing line using a back-referenced regular expression.

```
- name: configure /etc/ddn/ddn-ibsrp.conf
  lineinfile: dest=/etc/ddn/ddn-ibsrp.conf state=present
      line=’SRP_DEVICES="mlx4_1:1 mlx4_1:2"’
  notify:
    - restart IBSRP

handlers:
  - name: restart IBSRP
    service: name=ddn-ibsrp state=restarted
```

Multiple ways to add new functionality.

- Python API
- Developing Dynamic Inventory Sources
- Developing Modules
- Developing Plugins

Task: Network interface configuration

- Scripts.
- Templates engine.
- Module (not implemented)

Module script.

script - Runs a local script on a remote node after transferring it.

```
---
- hosts: 10K-2
  tasks:
  - name: Assign IP to Eth interfaces
    script: /root/src/configure_ifcfg.sh eth4 172.30.30.151

- hosts: 10K-3
  tasks:
  - name: Assign IP to Eth interfaces
    script: /root/src/configure_ifcfg.sh eth4 172.30.30.152
```

It is usually preferable to write Ansible modules than pushing scripts.

Loops and variables.

```
# host_vars/10K-1
eth4: 172.30.12.104
ib2: 172.40.12.104
prefix: 24
interfaces:
  - eth4
  - ib2
```

```
# setup_lan.yaml
- name: Ifdown network interface
  command: ifdown {{item}}
  with_items: interfaces
```

Module templates.

```
# host_vars/10K-1
eth4: 172.30.12.104
ib2: 172.40.12.104
prefix: 24
interfaces:
  - eth4
  - ib2
```

```
- name: Assign IP address settings
  template: src=ifcfg.j2
      dest=/etc/sysconfig/network-scripts/ifcfg-{{item}}
  with_items: interfaces
```

```
# ifcfg.j2
DEVICE={{ item }}
IPADDR={{ hostvars[inventory_hostname][item] }}
PREFIX={{ prefix }}
```

Summary

- Easy to install, use, extend.
- More time for other activities.
- I hope you will try Ansible.

```
 ______________________
< TASK: Say Thank You! >
 ----------------------
        \   ^__^
         \  (oo)\_______
            (__)\       )\/\
                ||----w |
                ||     ||
```

For Further Reading

- Ansible project
  `http://www.ansible.com/`
- Documentation
  `http://docs.ansible.com/`
- Source code
  `https://github.com/ansible/ansible`
- Presentation with listings
  `https://github.com/nixuser/codesamples/tree/master/lvee_2014_presentation`