Test environment configuration with Ansible.

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Linux Vacation / Eastern Europe, 2014

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.

Three ways of network configuration.

User

- User
- Administrator

- User
- Administrator
- Developer

- User
- Administrator
- Developer
- Project manager

- 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 discribes actions on hosts

```
- 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

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
```

Multipe ways to add new functionality.

- Scripts.
- Templates engine.
- Module in any language (return JSON), Python API

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
```

Loops and variables.

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

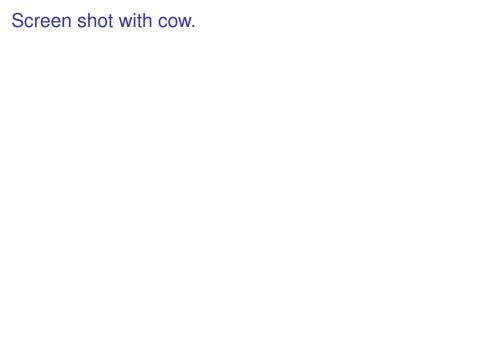
```
# setup_lan.yaml
- name: Ifdown network interface
command: ifdown {{item}}
with_items: interfaces
```

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.

- Outlook
 - Conditional delays.
 - Testing with Ansible.

For Further Reading I



Handbook of Everything.

Some Press, 1990.



On this and that.

Journal of This and That, 2(1):50–100, 2000.