

# 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.
- Three ways of network configuration.

# How often do you configure system?

- ▶ User

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- ▶ Administrator

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- ▶ 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 your favourite here.

or use special tools

- ▶ Chef
- ▶ Puppet
- ▶ SaltStack
- ▶ Ansible



**CHEF**<sup>™</sup>



**SALTSTACK**



# 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

```
- 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](https://github.com/nixuser/codesamples/tree/master/lvee_2014_presentation)