# Red Hat Ansible Workshop

Lai Kok Foong, Kelvin

Objective

- What is Ansible?

- Ansible Architecture

- Installing Ansible

- Ansible configuration file

- Creating Inventory

- Running Ad Hoc Commands

- Creating a Simple Playbook

- Rolling update of load balanced cluster (demo)

What is Ansible?

- Ansible is an *open source* configuration management, automation and orchestration utility.

- Originally written by Michael DeHaan.

- Built on Python.

- Features:

  - Agentless (there's no software to install on the systems to be managed).

  - Uses SSH as network transport.

  - Push based.

  - Idempotent.

  - Supported by DevOps tools, such as Vagrant and Jenkins.

Ansible Architecture
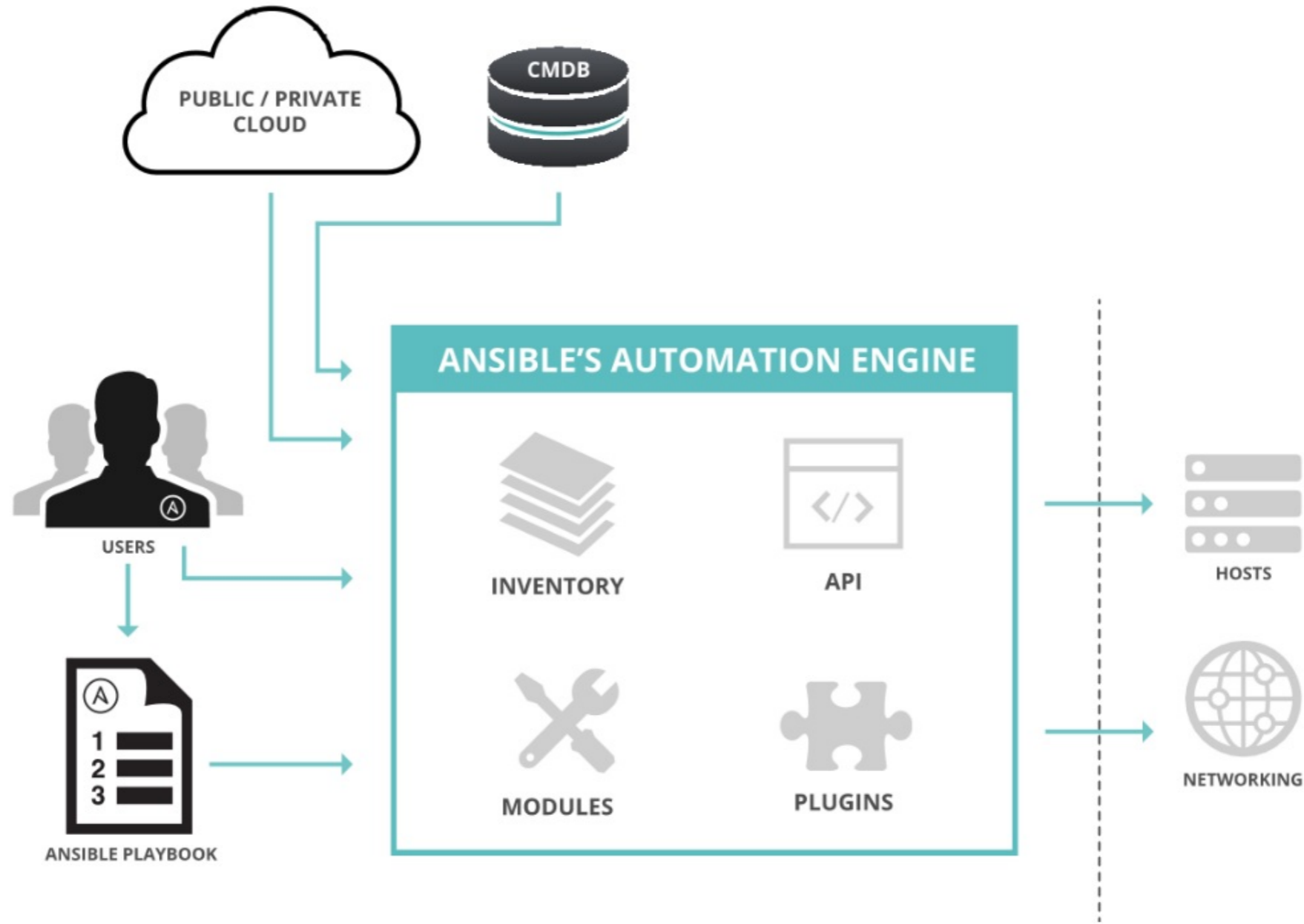
Installing Ansible

Control Nodes:

- Linux or UNIX systems only. Window not currently supported.

- Software requirements:

  - Ansible (https://www.ansible.com/get-started)

  - Python 2 (2.6 or later)

  - python2-winrm (0.2.2 or later) - provides pywinrm Python package.

Managed Hosts:

- Linux

  - Python 2 (2.4 or later)

  - python-simplejson (if Python version earlier then 2.5 installed - RHEL5)

  - libselinux-python (if SELinux is enabled)

- Windows

  - PowerShell (3.0 or higher)

  - PowerShell remoting enabled

  - more info at https://docs.ansible.com/ansible/intro_windows.html and https://docs.ansible.com/ansible/list_of_windows_modules.html

Installing Ansible - cont.

- http://docs.ansible.com/ansible/latest/intro_installation.html

Configure EPEL repo: http://fedoraproject.org/wiki/EPEL

sudo yum install -y python ansible

- Generate and copy users public key to all managed nodes.

  - Optionally, configure sudo access for remote_user on those managed hosts.

Control Node:

[student@ctrlnode ~]$ ssh-keygen

[student@ctrlnode ~]$ ssh-copy-id devops@managed.node

Managed Hosts:

[root@managed.node ~]# echo "devops   ALL=(ALL) NOPASSWD: ALL" > /etc/sudoers.d/devops

Configuring Ansible

- Configuration file location and precedence:

  1. $ANSIBLE_CONFIG

  2. ./ansible.cfg

  3. ~/.ansible.cfg

  4. /etc/ansible/ansible.cfg

- Sample:

```
[defaults]
inventory = ./inventory
remote_user = someuser
ask_pass = false

[privilege_escalation]
become = true
become_method = sudo
become_user = root
become_ask_pass = false
```

Ansible Inventory

- 2 types:

  - static inventory - manually created or generated

  - dynamic inventory - generated by outside providers

    - accepts two options --list and --host

- *inventory* directive declared in *ansible.cfg* can refer to a **file** or **directory**

  - File name is important when using inventory directory

- Sample:

```
[webservers]
servera.lab.example.com
192.168.[0:5].[1:254]


[db-servers]
serverc.lab.example.com
serverd.lab.example.com
```

```
[rhco:children]
webservers
db-servers
```

Running Ad Hoc Commands

Syntax:

ansible -h

ansible *host-pattern* [-i *inventory*] [-v] [--list-hosts]

ansible *host-pattern* [-m *module*] [-a '*module arguments*'] [-i *inventory*] [-v] [-e *extra_vars*] [-b] [-u *remote_user*] [-K] [--become-user *become_user*] [--become-method *become_method*]

Ansible Modules

- configured in ansible.cfg under defaults section:
  library = /usr/share/my_modules

- 3 types:

  - Core Modules

  - Extras Modules

  - Custom Modules

- Over 400 modules available

- In RHEL7, modules are installed in
  /usr/lib/python2.7/site-packages/ansible/modules

- Module documentation can be accessed using:
  ansible-doc -l|*module*

Implementing Ansible Playbook

- Playbooks are files which describe the desired configurations or procedural steps to implement on managed hosts.

- Most modules are idempotent.

- Uses YAML format.

  - Start with ---, end with ... (optional)

  - a *list*- begin with dash followed by space

  - attribute definition
    attribute1: value1
    attribute2: value2

  - Comments are preceded by #

  - Warning: DO NOT use TAB!

  - Multiple Lines:
    address: |
        1, Jalan 2,
        Taman Testing,
        89892 Abc, My.
    my_note: >
        This is a single
        line of text.

- Execute playbook:

  ansible-playbook *playbook.yml* [-i *inventory*] [-v] [-e *extra_vars*]