Ansible

Ansible is an automation language that can describe IT application infrastructure in Ansible Playbooks. The Ansible engine then runs playbooks, generating the describes infastructure on selected hosts via ssh.

Pros of Ansible:

* Simple - human readable
* Powerful - completely define app deployment
* Agentless - uses openssh and winrm, no agent required on host

Conponents

* Inventories - lists of hosts
* API - how to access hosts
* Modules - perform actions on host

## Playbooks

YAML files which describe the desired state of something.

### Plays

Playbooks contain plays, with each defining the state for a machine type (allow for multi-machine deployments ie webserver and db). Each play then contains tasks to setup a machine.

Plays have at minimum:

* the managed nodes to target (using a pattern)
* at lest one task to execute

### Tasks

Each task calls a module.In a playbook tasks run sequentially. Handlers can be triggered by tasks which are run at the end of plays, these will only run if the task has been run on the machine. Handlers are defined at the end of a play, using the following syntax:

handlers:

- name: Restart apache

ansible.builtin.service:

name: httpd

state: restarted

They are triggered in tasks with a notify key, such as:

- name: Write the apache config file

ansible.builtin.template:

src: /srv/httpd.j2

dest: /etc/httpd.conf

notify:

- Restart apache

By default handlers run at the end of all tasks, but they can also be flushed to run during using the meta module:

- name: Flush handlers

meta: flush\_handlers

To perform system tasks privilge escalation is often required, use become\_user: root:

<https://docs.ansible.com/ansible/latest/user_guide/become.html#become>

Add a password to ansible by adding the -K flag to the ansible playbook command.

## Variables

Alert and customise how playbooks run.

## Inventories

List of targets on which to operate. Either written as a static file, or can be dynamic lists pulled from cloud providers.

The default inventory is stored in /etc/ansible/hosts and is commonly INI or YAML, hosts can be can be grouped by app:

[webservers]

foo.example.com

bar.example.com

[dbservers]

one.example.com

two.example.com

three.example.com

use the -i <hosts-file> flag to select a specific hosts file

## Best Practices

### Playbooks

* Keep it simple
* Use version control
* Use whitespace to provide easy reading
* Always name tasks
* Always mention state by explictly setting in modules
* Use comments to describe reason for tasks

### Inventories

* Dynamic inventory with cloud providers
* Group inventory by function
* Seperate production and staging inventory
* Keep vaulted variables safely visible, encrypt in ansible vault but keep names accessible

### Execution

* Try in staging first
* Update in batches
* Handle OS and distro differences by grouping hosts, and grouped variable files