

Lecture Notes: *Ansible for DevOps*

Ansible

Playbooks and Tasks

We've already seen playbooks and tasks in Lab 1. They are the simplest form for defining a configuration in Ansible.

Tasks are "the units of action in Ansible."

https://docs.ansible.com/ansible/latest/user_guide/basic_concepts.html#tasks

Playbooks are "ordered lists of tasks, saved so you can run those tasks in that order repeatedly."

https://docs.ansible.com/ansible/latest/user_guide/basic_concepts.html#playbooks

- YAML <https://yaml.org/> format
- Defines the desired state of the system
- Tasks call *modules* or *collections*

A playbook of tasks is parsed by Ansible to enforce the desired state by executing the modules or collections on the target machine.

Modules and Collections

Modules are the "units of code Ansible executes"

https://docs.ansible.com/ansible/latest/user_guide/basic_concepts.html#modules

- A single module can be invoked with a task
- Multiple modules can be invoked in a playbook.
- Starting in Ansible 2.10, modules are grouped in collections*

Collections are "a distribution format for Ansible content that can include playbooks, roles, modules, and plugins." https://docs.ansible.com/ansible/latest/user_guide/basic_concepts.html#collections

Example: `ansible.builtin.apt` – Manages apt-packages

https://docs.ansible.com/ansible/latest/collections/ansible/builtin/apt_module.html

Handlers

Handlers are a way of only running operations when a change *needs* to be made

https://docs.ansible.com/ansible/latest/user_guide/playbooks_handlers.html.

Key Point: handlers are Tasks *not* Playbooks.

`ansible-lint` insistence on using Handlers is a consequence of Ansible's concept of Idempotence.

Managed Nodes and Inventories

Managed nodes are "the network devices (and/or servers) you manage with Ansible."

https://docs.ansible.com/ansible/latest/user_guide/basic_concepts.html#managed-nodes

Note: Ansible is not, or does not have to be, installed on managed nodes.

Running Ansible to manage the configuration of a single managed node is a relatively small virtue.

An Inventory is "a list of managed nodes" which allows management of many machines

https://docs.ansible.com/ansible/latest/user_guide/basic_concepts.html#inventory

An inventory file is also sometimes called a "hostfile". Your inventory can specify information like IP address for each managed node. An inventory can also organise managed nodes, creating and nesting groups for easier scaling.

Formats supported by Ansible for Inventory files are INI or JSON.

Inventory files allow Ansible to manage the configuration of an arbitrarily large number of machines.

Roles

Roles are a way of automatically re-using a related set of variables, files, tasks, handlers, and other Ansible artefacts.

- Roles are based on a defined file structure.
- Show the structure by running `tree`.
- Create by, e.g. `ansible-galaxy init username.php`
- Roles and collections are available from Ansible Galaxy.

Ref. Ch. 4 of AFB2P.

Ansible Galaxy

<https://galaxy.ansible.com/>
