Ansible Playbooks

Lecture 3
Work with Ansible playbooks for orchestration

Ansible Playbooks

Content

- Ansible playbooks
  - What is a playbook?
  - Tasks
  - Modules
  - Templates

Ansible Playbooks

- Concepts for this lecture
  - Playbook
  - Tasks
  - Modules

- Jinja2
- Idempotent
- Dependency tree
- Host (client)
- State
- Versioning
- Template

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Ansible Playbooks

- Ansible Playbooks

  - Collection of commands to be run by ansible against one or more hosts

  - Often used during deployment to install and configure a new host

  - Can also be used to run jobs at recurring intervals, but not specifically intended for that use

Ansible Playbooks

- Ansible Playbooks
  - Uses the Yaml format
  - Run the commands (tasks) serially and abort on error unless otherwise specified
  - The intention is that a task should perform one precise action
  - Can run multiple hosts in parallel via settings
  - Can and should be written so they can be reused

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Ansible Playbooks

- Ansible Playbooks

    - A playbook can include other playbooks to build dependency trees

    - If you collect several playbooks that you want to be run in turn on one or more hosts, you can create a role

    - Should be idempotent, able to be executed several times without difference in results

Ansible Playbooks

- Tasks in playbooks

  - A task is to run a command or a module to accomplish something

  - Can be named to include some form of documentation of what the task does

  - Avoid using ansible to run shell scripts. Use the modules that are available as far as possible

Ansible Playbooks

- Tasks in playbooks
  - Jinja2 templating language is used here for variable substitution
  - Jinja2 has so-called filters to process complex data from variables
  - It is also possible to sort out the data you want via Jinja2 filters and functions

Ansible Playbooks

- Tasks in playbooks

  - There is a "gotcha" with Jinja2. Documented on
    https://docs.ansible.com/ansible/latest/user_guide/playbooks_variables.html#when-to-quote-variables-a-yaml-gotcha

Ansible Playbooks

- Modules

  - Modules are code that is what a task executes

  - Modules are written in Python

  - Ansible Galaxy have modules others have shared

  - Ansible Galaxy Modules come in groupings called Collections

Ansible Playbooks

Modules take in arguments that it receives from the task defined in the playbook.

The module is responsible for being idempotent.

However, not all modules are in reality

Ansible Playbooks

- Templates
  - More specifically a Jinja2 template
  - A text file with variables replaced by ansible
  - Works like a stamp where you "stamp" files from a template

Ansible Playbooks

- Templates

```
motd.j2:
Welcome to {{ ansible_host }} belonging to the {{ team }} team.

Only authorized personnel are allowed on this system. If you are not
authorized please leave now!

Host:   {{ ansible_host }}
OS:     {{ ansible_lsb.description }}
{% set kernel_parts = ansible_kernel.split('-') %}
Kernel: {{ kernel_parts[0] }}
Arch:   {{ ansible_architecture }}
```

Ansible Playbooks

- End of todays lecture! Now over to practical tasks