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# Ansible Summary

## Patterns

- all (or \*)
- hostname: foo.example.com
- groupname: webservers
- or: webservers:dbserver
- exclude: webserver:!phoenix
- intersection: webservers:&staging

~(web|db).\*\ .example\ .com : {{foo}}, wildcards: \*.example.com, :

## Inventory files

'INI-file' structure, blocks define groups. Hosts allowed in more than one group. Non-standard SSH port can follow hostname separated by ':' (but see also `ansible_ssh_port` below).

Hostname ranges: `www[01:50].example.com`, `db-[a:f].example.com`

Per-host variables: `foo.example.com foo=bar baz=wibble`

## Speial sections:

- `[foo:children]`: new group foo containing all members if included groups
- `[foo:vars]`: variable definitions for all members of group foo

## Variable files:

YAML; given inventory file at `.../hosts`:

- `...group_vars/foo`: variable definitions for all members of group foo
- `...host_vars/foo.example.com`: variable definitions for `foo.example.com`

## Behaviorial inventory parameters:

- `ansible_ssh_host`
- `ansible_ssh_port`
- `ansible_ssh_user`
- `ansible_ssh_pass`
- `ansible_sudo_pass`
- `ansible_connection`
- `ansible_ssh_private_key_file`

- ansible\_python\_interpreter
- ansible\\_\*\\_interpreter

## Playbook example structure

Playbooks are a YAML list of one or more plays. Plays look like this - most (all?) keys are optional:

```
---
- include: playbook.yml
- name: example
  hosts: webservers
  gather_facts: no
  vars:
    http_port: 80
  vars_file:
    - "vars.yml"
    - [ "try-first.yml", "try-second-.yml" ]
  vars_prompt:
    - name: "my_password2"
      prompt: "Enter password2"
      default: "secret"
      private: yes
      encrypt: "md5_crypt"
      confirm: yes
      salt_size: 7
  remote_user: root
  sudo: yes
  sudo_user: postgres
  pre_tasks:
    - shell: echo 'pre'
    - <more tasks>
  roles:
    - common
    - { role: foo, dir: '/opt/a', port: 5000, when: "bar == 'Baz'" }
    - <more roles>
  tasks:
    - include: tasks.yml foo=bar baz=wibble
    - include: other-tasks.yml
    - name: example task
      vars:
        foo: bar
        baz:
          - one
          - two
      template: src=template.j2 dest=/etc/foo.conf
      when: ansible_os_family == "Debian"
      register: var
      notify:
```

```
    - restart apache
  remote_user: apache
  sudo: yes
  ignore_errors: True
- <more tasks>
post_tasks:
- shell: echo 'post'
- <more tasks>
handlers:
- include: handlers.yml
- name: restart apache
  service: name=httpd state=restarted
- <more handlers>
- <more plays>
```

## Modules

List all installed modules with

```
ansible-doc --list
```

Document a particular module with

```
ansible-doc <module>
```

Show playbook snippet for specified module

```
ansible-doc -i <module>
```

## Variables

Names: letters, digits, underscores; starting with a letter.

### Substitution examples:

- `var_key1_key2`
- `var`
- `var.key1.key2`
- `list_0`

## Souces:

- Highest priority:
  - -extra-vars on the command line
- General:
  - vars component of a playbook
  - From files referenced by vars\_file in a playbook
  - From included files (incl. roles)
  - Paameters passed to includes
  - Facts (see below)
  - Any /etc/ansible/facts.d/filename.fact on managed machines (sets variables with `ansible\_local.filename. prefix)
  - register: in tasks
- Lower priority:
  - Inventory (set on host or group)
- Lowest priority
  - Role defaults (from defaults/main.yml)

## Built-in:

- hostvars (e.g. hostvars[other.example.com][...])
- group\_names (groups containing current host)
- groups (all groups and hosts in the inventory)
- inventory\_hostname (current host as in inventory)
- inventory\_hostname\_short (first component of inventory\_hostname)
- play\_hosts (hostnames in scope for current play)
- inventory\_dir (location of the inventory)
- inventoty\_file (name of the inventory)

## Facts:

Run `ansible hostname -m setup`, but in particular:

- ansible\_distribution
- ansible\_distribution\_release
- ansible\_distribution\_version
- ansible\_fqdn
- ansible\_hostname
- ansible\_os\_family
- ansible\_pkg\_mgr
- ansible\_default\_ipv4.address
- ansible\_default\_ipv6.address

## Content of 'registered' variables:

- .rc
- .stdout

- `.stdout_lines`
- `.changed`
- `.msg`
- `.results` (when used in a loop)

## Additionally available in templates:

- `ansible_managed`: string containing the information below
- `template_host`: node name of the template's machine
- `template_uid`: the owner
- `template_path`: absolute path of the template
- `template_fullpath`: the absolute path of the template
- `template_run_date`: the date that the template was rendered

## Filters

- `to_nice_json`
  - `to_json`
  - `from_json`
- `to_nice_yaml`
  - `to_yaml`
  - `from_yaml`
    - `failed`
  - `changed`
  - `success`
  - `skipped`
  - `mandatory`
  - `default(5)`
    - `unique`
  - `union(list2)`
  - `intersect(list2)`
  - `difference(list2)`
- `symmetric_difference(list2)`
  - `basename`
  - `dirname`
- `expanduser`
  - `realpath`
- `b64decode`
- `b64encode`
  - `md5`
  - `bool`
  - `int`
  - `quote`
    - `md5`
- `fileglob`
- `match`
- `search`
- `regex`

See also [default jinja2 filters](#). In YAML, values starting { must be quoted.

## Lookups

- lookup\_file\_etc\_foo.txt
- lookup\_password\_tmp\_passwordfile\_chars\_ascii
  - lookup\_env\_home
  - lookup\_pipe\_date
    - 6379\_somekey
  - lookup\_dnstxt\_example.com
- lookup\_template\_.\_some\_template.j2

## Conditions

when:

- var == "Vaue", var >= 5, etc.
- var, where var coreces to boolean (yes, true, True, TRUE)
- var is defined, var is not defined
- <condition1> and <condition2> (also or?)

Combined with `with_items`, the when statement is processed for each item. when can also be applied to includes and roles.

## Loops

### Standard:

```
- user: name={{ item }} state=present groups=wheel
  with_items:
    - testuser1
    - testuser2
  with_items:
    - { name: 'testuser1', groups: 'wheel' }
    - { name: 'testuser2', groups: 'root' }

with_items: somelist
```

### Nested:

```
- mysql_user: name={{ item[0] }} priv={{ item[1] }}.*:ALL
              append_privs=yes password=foo

with_nested:
```



- ```
- [ 'alice', 'bob', 'eve' ]
- [ 'clientdb', 'employeeedb', 'providerdb' ]
```

## Over hashes:

Given

```
---
users:
  alice:
    name: Alice Appleworth
    telephone: 123-456-7890
  bob:
    name: Bob Bananarama
    telephone: 987-654-3210
tasks:
  - name: Print phone records
    debug: msg="User {{ item.key }} is {{ item.value.name }}
             ({{ item.value.telephone }})"
    with_dict: users
```

## Fileglob:

```
- copy: src={{ item }} dest=/etc/fooapp/ owner=root mode=600
  with_fileglob:
    - /playbooks/files/fooapp/*
```

## With content of file:

(see example for `authorized_key` module)

```
- authorized_key: user=deploy key="{{ item }}"
  with_file:
    - public_keys/doe-jane
    - public_keys/doe-john
```

## Parallel stes of data:

Given

```
---
alpha: [ 'a', 'b', 'c', 'd' ]
numbers: [ 1, 2, 3, 4 ]
```

```
- debug: msg="{{ item.0 }}" and "{{ item.1 }}"
  with_together:
    - alpha
    - numbers
```

## Subelements:

Given

```
---
users:
  - name: alice
    authorized:
      - /tmp/alice/onekey.pub
      - /tmp/alice/twokey.pub
  - name: bob
    authorized:
      - /tmp/bob/id_rsa.pub

- authorized_key: "user={{ item.0.name }}
                  key='{{ lookup('file', item.1) }}'"
  with_subelements:
    - users
    - authorized
```

## Integer sequence:

Decimal, hexadecimal (0x3f8) or octal (0600)

```
- user: name={{ item }} state=present groups=evens
  with_sequence: start=0 end=32 format=testuser%02x
  with_sequence: start=4 end=16 stride=2
  with_sequence: count=4
```

## Random choice:

```
- debug: msg={{ item }}
  with_random_choice:
    - "go through the door"
    - "drink from the goblet"
    - "press the red button"
    - "do nothing"
```

## Do-Until:

```
- action: shell /usr/bin/foo
  register: result
  until: result.stdout.find("all systems go") != -1
  retries: 5
  delay: 10
```

## Results of a local program:

```
- name: Example of looping over a command result
  shell: /usr/bin/frobnicate {{ item }}
  with_lines: /usr/bin/frobnications_per_host
              --param {{ inventory_hostname }}
```

## Indexed list:

```
- name: indexed loop demo
  debug: msg="at array position {{ item.0 }} there is
          a value {{ item.1 }}"
  with_indexed_items: some_list
```

## Flattened list:

```
---
# file: roles/foo/vars/main.yml
packages_base:
  - [ 'foo-package', 'bar-package' ]
packages_apps:
  - [ ['one-package', 'two-package' ]
  - [ ['red-package'], ['blue-package']]
- name: flattened loop demo
  yum: name={{ item }} state=installed
  with_flattened:
    - packages_base
    - packages_apps
```

## First found:

```
- name: template a file
```

```
template: src={{ item }} dest=/etc/myapp/foo.conf
with_first_found:
  - files:
```

```
- {{ ansible_distribution }}.conf
- default.conf
paths:
- search_location_one/somedir/
- /opt/other_location/somedir/
```

</code> </WRAP>

## Roles

Directory structure:

```
playbook.yml
roles/
  common/
    tasks/
      main.yml
    handlers/
      main.yml
    vars/
      main.yml
    meta/
      main.yml
    defaults/
      main.yml
    files/
    templates/
```

See documentation for role dependancies.

## Tags

Both plays and tasks support a `tags` attribute.

```
- template: src=templates/src.j2 dest=/etc/foo.conf
tags:
- configuration
```

Tags can be applied to roles and includes (effectively taggaing all included tasks)

```
roles:
- { role: webserver, port: 5000, tags: [ 'web', 'foo' ] }
```

```
- include: foo.yml tags=web,foo
```

To select by tag:

```
ansible-playbook example.yml --tags "configuration,packages"  
ansible-playbook example.yml --skip-tags "notification"
```

## Command lines

### ansible

Usage: ansible <host-pattern> [options]

#### Options:

- a MODULE\_ARGS, --args=MODULE\_ARGS  
module arguments
- k, --ask-pass ask for SSH password
- ask-su-pass ask for su password
- K, --ask-sudo-pass ask for sudo password
- ask-vault-pass ask for vault password
- B SECONDS, --background=SECONDS  
run asynchronously, failing after X seconds  
(default=N/A)
- C, --check don't make any changes; instead, try to predict some  
of the changes that may occur
- c CONNECTION, --connection=CONNECTION  
connection type to use (default=smart)
- f FORKS, --forks=FORKS  
specify number of parallel processes to use  
(default=5)
- h, --help show this help message and exit
- i INVENTORY, --inventory-file=INVENTORY  
specify inventory host file  
(default=/etc/ansible/hosts)
- l SUBSET, --limit=SUBSET  
further limit selected hosts to an additional  
pattern
- list-hosts outputs a list of matching hosts; does not execute  
anything else
- m MODULE\_NAME, --module-name=MODULE\_NAME  
module name to execute (default=command)
- M MODULE\_PATH, --module-path=MODULE\_PATH  
specify path(s) to module library  
(default=/usr/share/ansible)
- o, --one-line condense output
- P POLL\_INTERVAL, --poll=POLL\_INTERVAL  
set the poll interval if using -B (default=15)

```
--private-key=PRIVATE_KEY_FILE
    use this file to authenticate the connection
-S, --su
    run operations with su
-R SU_USER, --su-user=SU_USER
    run operations with su as this user (default=root)
-s, --sudo
    run operations with sudo (nopasswd)
-U SUDO_USER, --sudo-user=SUDO_USER
    desired sudo user (default=root)
-T TIMEOUT, --timeout=TIMEOUT
    override the SSH timeout in seconds (default=10)
-t TREE, --tree=TREE
    log output to this directory
-u REMOTE_USER, --user=REMOTE_USER
    connect as this user (default=jw35)
--vault-password-file=VAULT_PASSWORD_FILE
    vault password file
-v, --verbose
    verbose mode (-vvv for more, -vvvv to enable
    connection debugging)
--version
    show program's version number and exit
```

## ansible-playbook

Usage: ansible-playbook playbook.yml

### Options:

```
-k, --ask-pass
    ask for SSH password
--ask-su-pass
    ask for su password
-K, --ask-sudo-pass
    ask for sudo password
--ask-vault-pass
    ask for vault password
-C, --check
    don't make any changes; instead, try to predict some
    of the changes that may occur
-c CONNECTION, --connection=CONNECTION
    connection type to use (default=smart)
-D, --diff
    when changing (small) files and templates, show the
    differences in those files; works great with --check
-e EXTRA_VARS, --extra-vars=EXTRA_VARS
    set additional variables as key=value or YAML/JSON
-f FORKS, --forks=FORKS
    specify number of parallel processes to use
    (default=5)
-h, --help
    show this help message and exit
-i INVENTORY, --inventory-file=INVENTORY
    specify inventory host file
    (default=/etc/ansible/hosts)
-l SUBSET, --limit=SUBSET
    further limit selected hosts to an additional
pattern
--list-hosts
    outputs a list of matching hosts; does not execute
    anything else
--list-tasks
    list all tasks that would be executed
```

```
-M MODULE_PATH, --module-path=MODULE_PATH
    specify path(s) to module library
    (default=/usr/share/ansible)
--private-key=PRIVATE_KEY_FILE
    use this file to authenticate the connection
--skip-tags=SKIP_TAGS
    only run plays and tasks whose tags do not match
these
    values
--start-at-task=START_AT
    start the playbook at the task matching this name
--step
    one-step-at-a-time: confirm each task before running
-S, --su
    run operations with su
-R SU_USER, --su-user=SU_USER
    run operations with su as this user (default=root)
-s, --sudo
    run operations with sudo (nopasswd)
-U SUDO_USER, --sudo-user=SUDO_USER
    desired sudo user (default=root)
--syntax-check
    perform a syntax check on the playbook, but do not
    execute it
-t TAGS, --tags=TAGS
    only run plays and tasks tagged with these values
-T TIMEOUT, --timeout=TIMEOUT
    override the SSH timeout in seconds (default=10)
-u REMOTE_USER, --user=REMOTE_USER
    connect as this user (default=jw35)
--vault-password-file=VAULT_PASSWORD_FILE
    vault password file
-v, --verbose
    verbose mode (-vvv for more, -vvvv to enable
    connection debugging)
--version
    show program's version number and exit
```

## ansible-vault

```
Usage: ansible-vault [create|decrypt|edit|encrypt|rekey] [--help] [options]
file_name
```

### Options:

```
-h, --help  show this help message and exit
```

See 'ansible-vault <command> --help' for more information on a specific command.

## ansible-doc

```
Usage: ansible-doc [options] [module...]
```

Show Ansible module documentation

Options:

```
--version          show program's version number and exit
-h, --help        show this help message and exit
-M MODULE_PATH, --module-path=MODULE_PATH
                  Ansible modules/ directory
-l, --list        List available modules
-s, --snippet     Show playbook snippet for specified module(s)
-v               Show version number and exit
```

## ansible-galaxy

Usage: ansible-galaxy [init|info|install|list|remove] [--help] [options] ...

Options:

```
-h, --help  show this help message and exit
```

See 'ansible-galaxy <command> --help' for more information on a specific command

## ansible-pull

Usage: ansible-pull [options] [playbook.yml]

ansible-pull: error: URL for repository not specified, use -h for help </code> </WRAP>

- <https://gist.github.com/klen/ff85fe443735afb2410d>

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