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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 of 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`

Behavioral 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 }}`
- `{{ var["key1"]["key2"] }}`
- `{{ 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 templateâx128x153s 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

- `{{ var | to_nice_json }}`
- `{{ var | to_json }}`
- `{{ var | from_json }}`
- `{{ var | to_nice_yaml }}`
- `{{ var | to_yaml }}`
- `{{ var | from_yaml }}`
- `{{ result | failed }}`
- `{{ result | changed }}`
- `{{ result | success }}`
- `{{ result | skipped }}`
- `{{ var | mandatory }}`
- `{{ var | default(5) }}`
- `{{ list1 | unique }}`
- `{{ list1 | union(list2) }}`
- `{{ list1 | intersect(list2) }}`
- `{{ list1 | difference(list2) }}`
- `{{ list1 | symmetric_difference(list2) }}`
- `{{ path | basename }}`
- `{{ path | dirname }}`
- `{{ path | expanduser }}`
- `{{ path | realpath }}`
- `{{ var | b64decode }}`
- `{{ var | b64encode }}`
- `{{ filename | md5 }}`
- `{{ var | bool }}`
- `{{ var | int }}`
- `{{ var | quote }}`
- `{{ var | md5 }}`
- `{{ var | fileglob }}`
- `{{ var | match }}`
- `{{ var | search }}`
- `{{ var | 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') }}
- {{ lookup('redis_kv', 'redis://localhost: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/
```

## 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 dependencies.

## 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 tagging 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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Last update: **2018/09/05 02:25**

