

Ansible Playbook and Roles

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Variables

Ansible can work with metadata from various sources and manage their context in the form of variables.

- Command line parameters
- Plays and tasks
- Files
- Inventory
- Discovered facts
- Roles

Variable Precedence

The order in which the same variable from different sources will override each other.

1. extra vars
2. task vars (only for the task)
3. block vars (only for tasks in block)
4. role and include vars
5. play vars_files
6. play vars_prompt
7. play vars
8. set_facts
9. registered vars
10. host facts
11. playbook host_vars
12. playbook group_vars
13. **Inventory host_vars**
14. **inventory group_vars**
15. inventory vars
16. role defaults

Tasks

Tasks are the application of a module to perform a specific unit of work.

- **file:** A directory should exist
- **yum:** A package should be installed
- **service:** A service should be running
- **template:** Render a configuration file from a template
- **get_url:** Fetch an archive file from a URL
- **git:** Clone a source code repository

Example Tasks in a Play

```
tasks:
- name: httpd package is present
  yum:
    name: httpd
    state: latest

- name: latest index.html file is present
  copy:
    src: files/index.html
    dest: /var/www/html/

- name: restart httpd
  service:
    name: httpd
    state: restarted
```

Handler Tasks

Handlers are special tasks that run at the end of a play if notified by another task when a change occurs.

If a package gets installed or updated, notify a service restart task that it needs to run.

Example Handler Task in a Play

```
tasks:
- name: httpd package is present
  yum:
    name: httpd
    state: latest
    notify: restart httpd

- name: latest index.html file is present
  copy:
    src: files/index.html
    dest: /var/www/html/

handlers:
- name: restart httpd
  service:
    name: httpd

    state: restarted
```

Plays & Playbooks

Plays are ordered sets of tasks to execute against host selections from your inventory. A playbook is a file containing one or more plays.

Playbook Example

```
---
- name: install and start apache
  hosts: web
  become: yes
  vars:
    http_port: 80

  tasks:
    - name: httpd package is present
      yum:
        name: httpd
        state: latest

    - name: latest index.html file is present
      copy:
        src: files/index.html
        dest: /var/www/html/

    - name: httpd is started
      service:
        name: httpd
        state: started
```

Human-Meaningful Naming

```
---  
- name: install and start apache  
  hosts: web  
  become: yes  
  vars:  
    http_port: 80  
  
  tasks:  
    - name: httpd package is present  
      yum:  
        name: httpd  
        state: latest  
  
    - name: latest index.html file is present  
      copy:  
        src: files/index.html  
        dest: /var/www/html/  
  
    - name: httpd is started  
      service:  
        name: httpd  
        state: started
```

Host Selector

```
---
- name: install and start apache
  hosts: web
  become: yes
  vars:
    http_port: 80

  tasks:
    - name: httpd package is present
      yum:
        name: httpd
        state: latest

    - name: latest index.html file is present
      copy:
        src: files/index.html
        dest: /var/www/html/

    - name: httpd is started
      service:
        name: httpd
        state: started
```

Privilege Escalation

```
---
- name: install and start apache
  hosts: web
  become: yes
  vars:
    http_port: 80

  tasks:
    - name: httpd package is present
      yum:
        name: httpd
        state: latest

    - name: latest index.html file is present
      copy:
        src: files/index.html
        dest: /var/www/html/

    - name: httpd is started
      service:
        name: httpd
        state: started
```

Play Variables

```
---
- name: install and start apache
  hosts: web
  become: yes
  vars:
    http_port: 80

  tasks:
    - name: httpd package is present
      yum:
        name: httpd
        state: latest

    - name: latest index.html file is present
      copy:
        src: files/index.html
        dest: /var/www/html/

    - name: httpd is started
      service:
        name: httpd
        state: started
```

Tasks

```
---
- name: install and start apache
  hosts: web
  become: yes
  vars:
    http_port: 80

  tasks:
    - name: httpd package is present
      yum:
        name: httpd
        state: latest

    - name: latest index.html file is present
      copy:
        src: files/index.html
        dest: /var/www/html/

    - name: httpd is started
      service:
        name: httpd
        state: started
```

Roles

Roles are a packages of closely related Ansible content that can be shared more easily than plays alone.

- Improves readability and maintainability of complex plays
- Eases sharing, reuse and standardization of automation processes
- Enables Ansible content to exist independently of playbooks, projects -- even organizations
- Provides functional conveniences such as file path resolution and default values

Project with Embedded Roles Example

```
site.yml
roles/
  common/
    files/
    templates/
    tasks/
    handlers/
    vars/
    defaults/
    meta/
  apache/
    files/
    templates/
    tasks/
    handlers/
    vars/
    defaults/
    meta/
```


Project with Embedded Roles Example

```
# site.yml
---
- hosts: web
  roles:
    - common
    - apache
```

Q&A

Thank You!