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Lab: Creating Roles



In this review, you will convert the `ansible-vsftpd.yml` playbook into a role, and then use that role in a new playbook that will also run some additional tasks.

Outcomes

You should be able to:

Create a role to configure the `vsftpd` service using tasks from an existing playbook.

Include a role in a playbook, and execute the playbook.

IMPORTANT

You may find it useful to debug your role by testing it in a playbook that does not contain the extra tasks or playbook variables listed above, but instead contains a play that only targets hosts in the group `ftpservers` and applies the role.

After confirming that a simplified playbook using only the role works just like the original `ansible-vsftpd.yml` playbook, you can build the complete `vsftpd-configure.yml` playbook by adding the additional variables and tasks specified above.

IMPORTANT

If you are having trouble with your `site.yml` playbook, make sure that both `vsftpd-configure.yml` and `ftpclients.yml` use consistent indentation.

Log in to workstation as student using student as the password.

On workstation, run the `lab review-roles start` command. This script ensures that the remote hosts are reachable on the network. The script also checks that Ansible is installed on workstation, creates a directory structure for the lab environment, and installs required lab files.

```
[student@workstation ~]$ lab review-roles start
```

Procedure 10.3. Instructions

Change to the `review-roles` working directory. Configure the Ansible project to use the static inventory file `inventory`. Verify the inventory configuration using the `ansible-inventory` command.

- 1.1. Change to the `review-roles` working directory.

```
[student@workstation ~]$ cd ~/review-roles
[student@workstation review-roles]$
```

- 1.2. Edit the `ansible.cfg` file, add the inventory directive in the `[defaults]` section, and set it to `./inventory`.

The `[defaults]` section of the `ansible.cfg` file looks like this:

```
[defaults]
remote_user=devops
inventory=./inventory
```

- 1.3. Use the `ansible-inventory` command to verify the project inventory configuration:

```
[student@workstation review-roles]$ ansible-inventory --list all
{
  "_meta": {
    "hostvars": {}
  },
  "all": {
    "children": [
      "ftpclients",
      "ftpservers",
      "ungrouped"
    ]
  },
  "ftpclients": {
    "hosts": [
      "servera.lab.example.com",
      "serverc.lab.example.com"
    ]
  },
  "ftpservers": {
    "hosts": [
      "serverb.lab.example.com",
      "serverd.lab.example.com"
    ]
  }
}
```

HIDE SOLUTION

Convert the ansible-vsftpd.yml playbook to the role ansible-vsftpd.

2.1. Create the roles subdirectory.

```
[student@workstation review-roles]$ mkdir -v roles
mkdir: created directory 'roles'
```

2.2. Using ansible-galaxy, create the directory structure for the new ansible-vsftpd role in the roles subdirectory.

```
[student@workstation review-roles]$ cd roles
[student@workstation roles]$ ansible-galaxy init ansible-vsftpd
- Role ansible-vsftpd was created successfully
[student@workstation roles]$ cd ..
[student@workstation review-roles]$
```

2.3. Using tree, verify the directory structure created for the new role.

```
[student@workstation review-roles]$ tree roles
roles
├── ansible-vsftpd
│   ├── defaults
│   │   └── main.yml
│   ├── files
│   ├── handlers
│   │   └── main.yml
│   ├── meta
│   │   └── main.yml
│   ├── README.md
│   ├── tasks
│   │   └── main.yml
│   ├── templates
│   ├── tests
│   │   ├── inventory
│   │   └── test.yml
│   └── vars
│       └── main.yml
9 directories, 8 files
```

2.4. Replace the roles/ansible-vsftpd/defaults/main.yml file with the variable definitions in the defaults-template.yml file.

```
[student@workstation review-roles]$ mv -v defaults-template.yml \
> roles/ansible-vsftpd/defaults/main.yml
renamed 'defaults-template.yml' -> 'roles/ansible-vsftpd/defaults/main.yml'
```

2.5. Replace the roles/ansible-vsftpd/vars/main.yml file with the variable definitions in the vars.yml file.

```
[student@workstation review-roles]$ mv -v vars.yml \
> roles/ansible-vsftpd/vars/main.yml
renamed 'vars.yml' -> 'roles/ansible-vsftpd/vars/main.yml'
```

2.6. Use the templates/vsftpd.conf.j2 file as a template for the ansible-vsftpd role.

```
[student@workstation review-roles]$ mv -v vsftpd.conf.j2 \  
> roles/ansible-vsftpd/templates/  
renamed 'vsftpd.conf.j2' -> 'roles/ansible-vsftpd/templates/vsftpd.conf.j2'
```

2.7. Copy tasks from the ansible-vsftpd.yml playbook to the roles/ansible-vsftpd/tasks/main.yml file. The value of the src keyword in the template module task no longer needs to reference the templates subdirectory. The roles/ansible-vsftpd/tasks/main.yml file should contain the following when you finish.

```
---  
# tasks file for ansible-vsftpd  
- name: Packages are installed  
  yum:  
    name: '{{ vsftpd_package }}'  
    state: present  
  
- name: Ensure service is started  
  service:  
    name: '{{ vsftpd_service }}'  
    state: started  
    enabled: true  
  
- name: Configuration file is installed  
  template:  
    src: vsftpd.conf.j2  
    dest: '{{ vsftpd_config_file }}'  
    owner: root  
    group: root  
    mode: '0600'  
    setype: etc_t  
    notify: restart vsftpd  
  
- name: firewalld is installed  
  yum:  
    name: firewalld  
    state: present  
  
- name: firewalld is started and enabled  
  service:  
    name: firewalld  
    state: started  
    enabled: yes  
  
- name: FTP port is open  
  firewalld:  
    service: ftp  
    permanent: true  
    state: enabled  
    immediate: yes  
  
- name: Passive FTP data ports allowed through the firewall  
  firewalld:  
    port: 21000-21020/tcp  
    permanent: yes  
    state: enabled  
    immediate: yes
```

2.8. Copy the handlers from the ansible-vsftpd.yml playbook to the roles/ansible-vsftpd/handlers/main.yml file. The roles/ansible-vsftpd/handlers/main.yml file should contain the following when you finish.

```
---  
# handlers file for ansible-vsftpd  
- name: restart vsftpd  
  service:  
    name: "{{ vsftpd_service }}"  
    state: restarted
```

HIDE SOLUTION

Update the contents of the roles/ansible-vsftpd/meta/main.yml file.

Variable	Value
author	Red Hat Training
description	example role for RH294
company	Red Hat
license	BSD

3.1. Change the value of the author entry to Red Hat Training.

author: Red Hat Training

3.2. Change the value of the description entry to example role for RH294.

description: example role for RH294

3.3. Change the value of the company entry to Red Hat.

company: Red Hat

3.4. Change the value of the license: entry to BSD.

license: BSD

HIDE SOLUTION

Modify the contents of the roles/ansible-vsftpd/README.md file so that it provides pertinent information regarding the role. After modification, the file should contain the following.

```
ansible-vsftpd
=====
Example ansible-vsftpd role from Red Hat's "Linux Automation" (RH294)
course.

Role Variables
-----

* defaults/main.yml contains variables used to configure the vsftpd.conf template
* vars/main.yml contains the name of the vsftpd service, the name of the RPM
package, and the location of the service's configuration file

Dependencies
-----

None.

Example Playbook
-----

- hosts: servers
  roles:
    - ansible-vsftpd

License
-----

BSD

Author Information
-----

Red Hat (training@redhat.com)
```

Remove the unused directories from the new role.

```
[student@workstation review-roles]$ rm -rvf roles/ansible-vsftpd/tests
removed 'roles/ansible-vsftpd/tests/inventory'
removed 'roles/ansible-vsftpd/tests/test.yml'
removed directory: 'roles/ansible-vsftpd/tests'
```

HIDE SOLUTION

Create the new playbook vsftpd-configure.yml. It should contain the following.

```

---
- name: Install and configure vsftpd
  hosts: ftpservers
  vars:
    vsftpd_anon_root: /mnt/share/
    vsftpd_local_root: /mnt/share/

  roles:
    - ansible-vsftpd

  tasks:
    - name: /dev/vdb1 is partitioned
      parted:
        device: /dev/vdb
        number: 1
        label: gpt
        part_start: 1MiB
        part_end: 100%
        state: present

    - name: XFS file system exists on /dev/vdb1
      filesystem:
        dev: /dev/vdb1
        fstype: xfs
        force: yes

    - name: anon_root mount point exists
      file:
        path: '{{ vsftpd_anon_root }}'
        state: directory

    - name: /dev/vdb1 is mounted on anon_root
      mount:
        path: '{{ vsftpd_anon_root }}'
        src: /dev/vdb1
        fstype: xfs
        state: mounted
        dump: '1'
        passno: '2'
        notify: restart vsftpd

    - name: Make sure permissions on mounted fs are correct
      file:
        path: '{{ vsftpd_anon_root }}'
        owner: root
        group: root
        mode: '0755'
        setype: "{{ vsftpd_setype }}"
        state: directory

    - name: Copy README to the ftp anon_root
      copy:
        dest: '{{ vsftpd_anon_root }}/README'
        content: "Welcome to the FTP server at {{ ansible_fqdn }}\n"
        setype: '{{ vsftpd_setype }}'

```

Change the `site.yml` playbook to use the newly created `vsftpd-configure.yml` playbook instead of the `ansible-vsftpd.yml` playbook.

```

---
# FTP Servers playbook
- import_playbook: vsftpd-configure.yml

# FTP Clients playbook
- import_playbook: ftpclients.yml

```

HIDE SOLUTION

Verify that the `site.yml` playbook works as intended by executing it with `ansible-playbook`.

```
[student@workstation review-roles]$ ansible-playbook site.yml
```

HIDE SOLUTION

Evaluation

From workstation, run the `lab review-roles grade` command to confirm success on this exercise. Correct any reported failures and rerun the script until successful.

```
[student@workstation ~]$ lab review-roles grade
```

Finish

Run the `lab review-roles finish` command to clean up the lab tasks on `servera` and `serverb`.

```
[student@workstation ~]$ lab review-roles finish
```

This concludes the lab.

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