

# Linux RedHat Certified Engineer (RHCE - EX294)

**Simplify Playbooks  
with Roles**

# Roles



- Roles simplifies long playbooks by grouping tasks into smaller playbooks
- OR
- The role are the way of breaking a playbook into multiple playbook files. This simplifies writing complex playbooks, and it makes them easier to reuse
  - Writing ansible code to manage the same service for multiple environments creates more complexity and it becomes difficult to manage everything in one ansible playbook. Also sharing code among other teams become difficult. That is where Ansible Role helps solve these problems
  - Roles are like templates that are most of the time static and can be called by the playbooks
  - Roles allow the entire configuration to be grouped in:
    - Tasks
    - Modules
    - Variables
    - Handlers

Task list for  
east-webservers

```
---
- name: Setup httpd webserver
  hosts: east-webservers
  tasks:
  1 - name: Install httpd packages
    yum:
      name: httpd
      state: present
  2 - name: Start httpd
    service:
      name: httpd
      state: started
  3 - name: Open port http on firewall
    firewallld:
      service: http
      permanent: true
      state: enabled
  4 - name: Restart firewallld
    service:
      name: firewallld
      state: reloaded
```

Task list for  
west-webservers

```
---
- name: Setup httpd webserver
  hosts: west-webservers
  tasks:
  1 - name: Install httpd packages
    yum:
      name: httpd
      state: present
  2 - name: Start httpd
    service:
      name: httpd
      state: started
```

## Combined tasks

```
---
- name: Setup httpd webserver
  hosts: east-webservers
  tasks:
  1 - name: Install httpd packages
    yum:
      name: httpd
      state: present
  2 - name: Start httpd
    service:
      name: httpd
      state: started
  3 - name: Open port http on firewall
    firewallld:
      service: http
      permanent: true
      state: enabled
  4 - name: Restart firewallld
    service:
      name: firewallld
      state: restarted

  hosts: west-webservers
  tasks:
  5 - name: Install httpd packages
    yum:
      name: httpd
      state: present
  6 - name: Start httpd
    service:
      name: httpd
      state: started
```

# vim byrole.yml

# Roles



```
---
- name: Setup httpd webserver
  hosts: east-webservers
  tasks:
  1 - name: Install httpd packages
    yum:
      name: httpd
      state: present
  2 - name: Start httpd
    service:
      name: httpd
      state: started
  3 - name: Open port http on firewall
    firewallld:
      service: http
      permanent: true
      state: enabled
  4 - name: Restart firewallld
    service:
      name: firewallld
      state: restarted

  hosts: west-webservers
  tasks:
  5 - name: Install httpd packages
    yum:
      name: httpd
      state: present
  6 - name: Start httpd
    service:
      name: httpd
      state: started
```

```
---
- name: Setup full httpd webserver
  tasks:
  - name: Install httpd packages
    yum:
      name: httpd
      state: present

  - name: Start httpd
    service:
      name: httpd
      state: started

  - name: Open port 80 for http access
    firewallld:
      service: http
      permanent: true
      state: enabled

  - name: Restart firewallld
    service:
      name: firewallld
      state: restarted
```

**Roles Playbook:  
fullinstall**

```
---
- name: Setup basic httpd webserver
  tasks:
  - name: Install httpd packages
    yum:
      name: httpd
      state: present

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

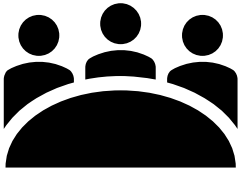
**Roles Playbook:  
basicinstall**

```
---
- name: Full install
  hosts: east-webservers
  roles:
  - fullinstall

- name: Basic install
  hosts: west-webservers
  roles:
  - basicinstall
```

Very simplified version  
of playbook

# Roles



- Please note roles can be grouped by type of servers, type of applications or organizational requirement

- To create roles

```
# Go to ControlNode  
# cd /etc/ansible/roles
```

Make directory for each role

```
# e.g mkdir [rolenames]  
# mkdir basicinstall  
# mkdir fullinstall
```

You can also create roles based on the type of servers:

```
e.g. # mkdir webservers  
# mkdir dbservers  
# mkdir appservers
```

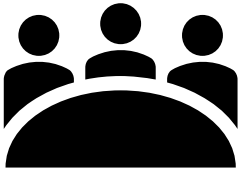
Create sub-directory **tasks** within each directory

```
# mkdir basicinstall/tasks  
# mkdir fullinstall/tasks
```

Create yml files within these sub-directories

```
# touch basicinstall/tasks/main.yml  
# touch fullinstall/tasks/main.yml
```

# Roles



```
# vim fullinstall/tasks/main.yml
```

```
---
- name: Install httpd package
  yum:
    name: httpd
    state: present

- name: Start httpd
  service:
    name: httpd
    state: started

- name: Open port for http
  firewallld:
    service: http
    permanent: true
    state: enabled

- name: Restart firewallld
  service:
    name: firewallld
    state: reloaded
```

```
# vim basicinstall/tasks/main.yml
```

```
---
- name: Install httpd package
  yum:
    name: httpd
    state: present

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

```
# vim /etc/ansible/playbooks/byrole.yml
```

```
---
- name: Full install
  hosts: all
  roles:
    - fullinstall

- name: Basic install
  hosts: localhost
  roles:
    - basicinstall
```



# Roles by Application



```
---
- name: Install packages
  hosts: all
  tasks:
    - name: Install Apache package
      yum:
        name: httpd
        state: present
    - name: Install Time package
      yum:
        name: ntpd or chrony
        state: present
    - name: Install DNS package
      yum:
        name: named
        state: present
```

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- To create roles
  - # Go to ControlNode
  - # cd /etc/ansible/roles

Make directory for each role

```
# mkdir apache
# mkdir ntpd
# mkdir named
```

Create sub-directory tasks within each directory

```
# mkdir apache/tasks
# mkdir ntpd/tasks
# mkdir named/tasks
```

Create yml files within these sub-directories

```
# touch apache/tasks/main.yml
# touch ntpd/tasks/main.yml
# touch named/tasks/main.yml
```

```
---
- name: Install packages
  hosts: all
  roles:
    - apache
    - ntpd
    - named
```



# Roles on Ansible Galaxy

- You can find a ton of resources on roles through Ansible galaxy
- You can download pre-defined or pre-written roles from the Ansible galaxy
- [www.galaxy.ansible.com](http://www.galaxy.ansible.com)

