Lab: Controlling Playbook execution

Introduction:

FORKS: Maximum number of simultaneous connections Ansible made on each Task.

SERIAL: Decides the number of nodes process in each task in a single run.

Objectives:

- **Effects of different serial and forks directives on how a play is processed by Ansible.**

1. Examine the contents of the ansible.cfg file. Note that the inventory file is set to inventory.

Note: Add and Set forks parameter to **4** in.**ansible.cfg** file

```
# cat -n .ansible.cfg
```

Output:

```
[admin@eoc-controller ~]$ cat -n .ansible.cfg
     1  [defaults]
     2  inventory = ~/org-infra
     3  roles_path = ~/roles
     4  remote_user = admin
     5  become = true
     6  forks = 4
     7  [privilege_escalation]
     8  become=True
     9  become_method=sudo
    10  become_user=root
    11  become_ask_pass=False
```

1.1 Let's create **playbook.yml** file. The playbook executes on the webserver & dev host group, ensures that the latest **httpd package** is installed and that the httpd service is enabled and started.

```
---
- name: Update web server
  hosts: "webservers,dev"
  become: yes
  tasks:
    - name: Latest httpd package installed
      dnf:
        name: httpd
        state: latest
      notify:
        - Restart httpd
  handlers:
    - name: Restart httpd
      service:
        name: httpd
        enabled: yes
        state: restarted
```

1.2 Let's view the **playbook.yml** manifest.

```
# cat -n playbook.yml
```

Output:

```
[admin@eoc-controller ~]$cat -n playbook.yml
     1  ---
     2  - name: Update web server
     3    hosts: "webservers,dev"
     4    become: yes
     5    tasks:
     6      - name: Latest httpd package installed
     7        dnf:
     8          name: httpd
     9          state: latest
    10        notify:
    11          - Restart httpd
    12    handlers:
    13      - name: Restart httpd
    14        service:
    15          name: httpd
    16          enabled: yes
    17          state: restarted
```

1.3 Finally examine the contents of the **remove_apache.yml** file. The playbook executes on the webserver& dev host group, ensures that the httpd service is **disabled** and **stopped**, and then ensures that the httpd package is not installed.

```
---
- hosts: "webservers,dev"
  tasks:
    - service:
        name: httpd
        enabled: no
        state: stopped
    - dnf:
        name: httpd
        state: absent
```

1.4 Let's view the **remove_apache.yml** manifest file.

```
# cat -n remove_apache.yml
```

Output:

```
[admin@eoc-controller ~]$cat -n remove_apache.yml
     1  ---
     2  - hosts: "webservers,dev"
     3    tasks:
     4      - service:
     5          name: httpd
     6          enabled: no
     7          state: stopped
     8      - dnf:
     9          name: httpd
    10          state: absent
```

1.5 Let's Execute the **playbook.yml** playbook using **time** command to determine how long it takes for the playbook to run. Watch the playbook as it runs. Note how ansible performs each task on all three hosts at the same time.

```
# time ansible-playbook playbook.yml
```

Output:

```
[admin@eoc-controller ~]$ time ansible-playbook playbook.yml

PLAY [Update web server] ********************************************************************************************

TASK [Gathering Facts] **********************************************************************************************
ok: [eoc-node1]
ok: [eoc-node3]

TASK [Latest httpd package installed] *******************************************************************************
ok: [eoc-node1]
ok: [eoc-node3]

PLAY RECAP **********************************************************************************************************
eoc-node1                  : ok=2    changed=0    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
eoc-node3                  : ok=2    changed=0    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0


real    0m5.791s
user    0m0.935s
sys     0m0.235s
```

1.6 Execute the **remove_apache.yml** playbook to stop and disable the httpd service and to remove the httpd package.

```
# time ansible-playbook remove_apache.yml
```

Output:

```
[admin@eoc-controller ~]$ time ansible-playbook remove_apache.yml

PLAY [webservers,dev] ***************************************************************************************************

TASK [Gathering Facts] **************************************************************************************************
ok: [eoc-node3]
ok: [eoc-node1]

TASK [service] **********************************************************************************************************
changed: [eoc-node3]
changed: [eoc-node1]

TASK [dnf] **************************************************************************************************************
changed: [eoc-node1]
changed: [eoc-node3]

PLAY RECAP **************************************************************************************************************
eoc-node1                  : ok=3    changed=2    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
eoc-node3                  : ok=3    changed=2    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0


real    0m7.896s
user    0m1.199s
sys     0m0.297s
```

1.7 Change the value of the **fork parameter** to **1** in **ansible.cfg**.

```
[admin@eoc-controller ~]$ cat -n .ansible.cfg
     1  [defaults]
     2  inventory = ~/org-infra
     3  roles_path = ~/roles
     4  remote_user = admin
     5  become = true
     6  forks = 1
     7  [privilege_escalation]
     8  become=True
     9  become_method=sudo
    10  become_user=root
    11  become_ask_pass=False
```

1.8 Re-execute the **playbook.yml** playbook using time command to determine how long it takes for the playbook to run.

```
# time ansible-playbook playbook.yml
```

Output:

```
[admin@eoc-controller ~]$ time ansible-playbook playbook.yml

PLAY [Update web server] ********************************************************************************************

TASK [Gathering Facts] **********************************************************************************************
ok: [eoc-node3]
ok: [eoc-node1]

TASK [Latest httpd package installed] *******************************************************************************
changed: [eoc-node3]
changed: [eoc-node1]

RUNNING HANDLER [Restart httpd] *************************************************************************************
changed: [eoc-node3]
changed: [eoc-node1]

PLAY RECAP **********************************************************************************************************
eoc-node1                  : ok=3    changed=2    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
eoc-node3                  : ok=3    changed=2    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0


real    0m12.714s
user    0m1.297s
sys     0m0.318s
```

1.9 Execute the **remove_apache.yml** playbook to stop and disable the httpd service and to remove the httpd package.

```
# time ansible-playbook remove_apache.yml
```

Output:

```
[admin@eoc-controller ~]$ time ansible-playbook remove_apache.yml

PLAY [webservers,dev] ***********************************************************************************************

TASK [Gathering Facts] **********************************************************************************************
ok: [eoc-node3]
ok: [eoc-node1]

TASK [service] ******************************************************************************************************
changed: [eoc-node3]
changed: [eoc-node1]

TASK [dnf] **********************************************************************************************************
changed: [eoc-node3]
changed: [eoc-node1]

PLAY RECAP **********************************************************************************************************
eoc-node1                  : ok=3    changed=2    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
eoc-node3                  : ok=3    changed=2    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0


real    0m14.190s
user    0m1.263s
sys     0m0.300s
```

1.10 Set the value of the fork's parameter to **2** in **ansible.cfg**.

```
[admin@eoc-controller ~]$cat .ansible.cfg
[defaults]
inventory = ~/org-infra
roles_path = ~/roles
remote_user = admin
become = true
forks = 2
[privilege_escalation]
become=True
become_method=sudo
become_user=root
become_ask_pass=False
```

1.11 Add the following serial parameter to the play in the playbook.yml playbook so that the play only executes on two hosts at a time.

```
[admin@eoc-controller ~]$ cat -n playbook.yml
     1  ---
     2  - name: Update web server
     3    hosts: "webservers,dev"
     4    serial: 1
     5    become: yes
     6    tasks:
     7      - name: Latest httpd package installed
     8        dnf:
     9          name: httpd
    10          state: latest
    11        notify:
    12          - Restart httpd
    13    handlers:
    14      - name: Restart httpd
    15        service:
    16          name: httpd
    17          enabled: yes
    18          state: restarted
```

1.12 Re-execute the playbook.yml playbook. Watch the playbook as it runs. Note how Ansible executes the entire play on just two hosts before re-executing the play on the two remaining hosts.

```
# time ansible-playbook playbook.yml
```

Output:

```
[admin@eoc-controller ~]$ time ansible-playbook playbook.yml

PLAY [Update web server] ********************************************************************************************

TASK [Gathering Facts] **********************************************************************************************
ok: [eoc-node3]

TASK [Latest httpd package installed] *******************************************************************************
changed: [eoc-node3]

RUNNING HANDLER [Restart httpd] *************************************************************************************
changed: [eoc-node3]

PLAY [Update web server] ********************************************************************************************

TASK [Gathering Facts] **********************************************************************************************
ok: [eoc-node1]

TASK [Latest httpd package installed] *******************************************************************************
changed: [eoc-node1]

RUNNING HANDLER [Restart httpd] *************************************************************************************
changed: [eoc-node1]

PLAY RECAP **********************************************************************************************************
eoc-node1                  : ok=3    changed=2    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
eoc-node3                  : ok=3    changed=2    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0


real    0m12.626s
user    0m1.311s
sys     0m0.340s
```

1.13 Execute the **remove_apache.yml** playbook to stop and disable the httpd service and to remove the httpd package.

```
# time ansible-playbook remove_apache.yml
```

Output:

```
[admin@eoc-controller ~]$ time ansible-playbook remove_apache.yml

PLAY [webservers,dev] **********************************************************************************************

TASK [Gathering Facts] *********************************************************************************************
ok: [eoc-node1]
ok: [eoc-node3]

TASK [service] *****************************************************************************************************
changed: [eoc-node3]
changed: [eoc-node1]

TASK [dnf] *********************************************************************************************************
changed: [eoc-node3]
changed: [eoc-node1]

PLAY RECAP *********************************************************************************************************
eoc-node1                  : ok=3    changed=2    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
eoc-node3                  : ok=3    changed=2    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0


real    0m8.204s
user    0m1.267s
sys     0m0.321s
```

1.14 Set the value of the fork's parameter to **3** in **ansible.cfg**.

```
[admin@eoc-controller ~]$cat .ansible.cfg
[defaults]
inventory = ~/org-infra
roles_path = ~/roles
remote_user = admin
become = true
forks = 3
[privilege_escalation]
become=True
become_method=sudo
become_user=root
become_ask_pass=False
```

1.15 Set the **serial** parameter in the **playbook.yml** to **2**.

```
[admin@eoc-controller ~]$ cat -n playbook.yml
     1  ---
     2  - name: Update web server
     3    hosts: "webservers,dev"
     4    serial: 2
     5    become: yes
     6    tasks:
     7      - name: Latest httpd package installed
     8        dnf:
     9          name: httpd
    10          state: latest
    11        notify:
    12          - Restart httpd
    13    handlers:
    14      - name: Restart httpd
    15        service:
    16          name: httpd
    17          enabled: yes
    18          state: restarted
```

1.16 Re-execute the **playbook.yml** playbook. Ansible executes the entire play on just three hosts and then re-executes the play on the one remaining host.

```
# time ansible-playbook playbook.yml
```

Output:

```
[admin@eoc-controller ~]$ time ansible-playbook playbook.yml

PLAY [Update web server] ********************************************************************************************

TASK [Gathering Facts] **********************************************************************************************
ok: [eoc-node3]

TASK [Latest httpd package installed] *******************************************************************************
changed: [eoc-node3]

RUNNING HANDLER [Restart httpd] *************************************************************************************
changed: [eoc-node3]

PLAY [Update web server] ********************************************************************************************

TASK [Gathering Facts] **********************************************************************************************
ok: [eoc-node1]

TASK [Latest httpd package installed] *******************************************************************************
changed: [eoc-node1]

RUNNING HANDLER [Restart httpd] *************************************************************************************
changed: [eoc-node1]

PLAY RECAP **********************************************************************************************************
eoc-node1                  : ok=3    changed=2    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
eoc-node3                  : ok=3    changed=2    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0


real    0m12.315s
user    0m1.343s
sys     0m0.327s
```