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VIDEO CLASSROOM

Lab: Troubleshooting Ansible



Performance Checklist

In this lab, you will troubleshoot problems that occur when you try to run a playbook that has been provided to you.

Outcomes

You should be able to:

Troubleshoot playbooks.

Troubleshoot managed hosts.

Log in to workstation as student using student as the password. Run the `lab troubleshoot-review start` command.

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

This script verifies that Ansible is installed on workstation, and creates the `~student/troubleshoot-review/html/` directory. It downloads the `ansible.cfg`, `inventory-lab`, `secure-web.yml`, and `vhsts.conf` files from `http://materials.example.com/labs/troubleshoot-review/` to the `/home/student/troubleshoot-review/` directory. It also downloads the `index.html` file to the `/home/student/troubleshoot-review/html/` directory.

Procedure 8.3. Instructions

From the `~/troubleshoot-review` directory, check the syntax of the `secure-web.yml` playbook. This playbook contains one play that sets up Apache HTTPD with TLS/SSL for hosts in the group `webservers`. Fix the issue that is reported.

- 1.1. On workstation, change to the `/home/student/troubleshoot-review` project directory.

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

- 1.2. Check the syntax of the `secure-web.yml` playbook. This playbook sets up Apache HTTPD with TLS/SSL for hosts in the `webservers` group when everything is correct.

```
[student@workstation troubleshoot-review]$ ansible-playbook --syntax-check \  
> secure-web.yml  
ERROR! We were unable to read either as JSON nor YAML, these are the errors we got from each:  
JSON: Expecting value: line 1 column 1 (char 0)  
  
Syntax Error while loading YAML.  
mapping values are not allowed in this context  
  
The error appears to be in '/home/student/troubleshoot-review/secure-web.yml': line 7, column 30, but may be elsewhere in the file depending on the exact syntax problem.  
  
The offending line appears to be:  
  
vars:  
  random_var: This is colon: test  
                ^ here
```

- 1.3. Correct the syntax issue in the definition of the `random_var` variable by adding double quotes to the `This is colon: test` string. The resulting change should appear as follows:

```
...output omitted...  
vars:  
  random_var: "This is colon: test"  
...output omitted...
```

HIDE SOLUTION

Check the syntax of the `secure-web.yml` playbook again. Fix the issue that is reported.

- 2.1. Check the syntax of `secure-web.yml` using `ansible-playbook --syntax-check` again.

```
[student@workstation troubleshoot-review]$ ansible-playbook --syntax-check \
> secure-web.yml
ERROR! We were unable to read either as JSON nor YAML, these are the errors we got from each:
JSON: Expecting value: line 1 column 1 (char 0)

Syntax Error while loading YAML.
  did not find expected '-' indicator

The error appears to be in '/home/student/troubleshoot-review/secure-web.yml': line 38, column 10, but may be elsewhere in the file depending on the exact syntax problem.

The offending line appears to be:

    - name: start and enable web services
      ^ here
```

2.2. Correct any syntax issues in the indentation. Remove the extra space at the beginning of the *start and enable web services* task elements. The resulting change should appear as follows:

```
...output omitted...
  args:
    creates: /etc/pki/tls/certs/serverb.lab.example.com.crt

- name: start and enable web services
  service:
    name: httpd
    state: started
    enabled: yes

- name: deliver content
  copy:
    dest: /var/www/vhosts/serverb-secure
    src: html/
...output omitted...
```

HIDE SOLUTION

Check the syntax of the `secure-web.yml` playbook a third time. Fix the issue that is reported.

3.1. Check the syntax of the `secure-web.yml` playbook.

```
[student@workstation troubleshoot-review]$ ansible-playbook --syntax-check \
> secure-web.yml
ERROR! We were unable to read either as JSON nor YAML, these are the errors we got from each:
JSON: Expecting value: line 1 column 1 (char 0)

Syntax Error while loading YAML.
  found unacceptable key (unhashable type: 'AnsibleMapping')

The error appears to be in '/home/student/troubleshoot-review/secure-web.yml': line 13, column 20, but may be elsewhere in the file depending on the exact syntax problem.

The offending line appears to be:

    yum:
      name: {{ item }}
      ^ here

We could be wrong, but this one looks like it might be an issue with missing quotes. Always quote template expression brackets when they start a value. For instance:

    with_items:
      - {{ foo }}

Should be written as:

    with_items:
      - "{{ foo }}"
```

3.2. Correct the `item` variable in the `install web server packages` task. Add double quotes to `{{ item }}`. The resulting change should appear as follows:

```
...output omitted...
- name: install web server packages
  yum:
    name: "{{ item }}"
    state: latest
  notify:
    - restart services
  loop:
    - httpd
    - mod_ssl
...output omitted...
```

HIDE SOLUTION

Check the syntax of the secure-web.yml playbook a fourth time. It should not show any syntax errors.

4.1. Review the syntax of the secure-web.yml playbook. It should not show any syntax errors.

```
[student@workstation troubleshoot-review]$ ansible-playbook --syntax-check \
> secure-web.yml

playbook: secure-web.yml
```

HIDE SOLUTION

Run the secure-web.yml playbook. Ansible is not able to connect to serverb.lab.example.com. Fix this problem.

5.1. Run the secure-web.yml playbook. This will fail with an error.

```
[student@workstation troubleshoot-review]$ ansible-playbook secure-web.yml

PLAY [create secure web service] *****

TASK [Gathering Facts] *****
fatal: [serverb.lab.example.com]: UNREACHABLE! => {"changed": false, "msg": "Failed to connect to the host via ssh: students@serverc.l
ab.example.com: Permission denied (publickey,gssapi-keyex,gssapi-with-mic,password).", "unreachable": true}

PLAY RECAP *****
serverb.lab.example.com  : ok=0    changed=0    unreachable=1    failed=0    ...
```

5.2. Run the secure-web.yml playbook again, adding the -vvv parameter to increase the verbosity of the output.

Notice that Ansible appears to be connecting to serverc.lab.example.com instead of serverb.lab.example.com.

```
[student@workstation troubleshoot-review]$ ansible-playbook secure-web.yml -vvv
...output omitted...
TASK [Gathering Facts] *****
task path: /home/student/troubleshoot-review/secure-web.yml:3
<serverc.lab.example.com> ESTABLISH SSH CONNECTION FOR USER: students
<serverc.lab.example.com> SSH: EXEC ssh -C -o ControlMaster=auto -o ControlPersist=60s -o KbdInteractiveAuthentication=no -o Preferred
Authentications=gssapi-with-mic,gssapi-keyex,hostbased,publickey -o PasswordAuthentication=no -o 'User="students"' -o ConnectTimeout=1
0 -o ControlPath=/home/student/.ansible/cp/bc0c05136a serverc.lab.example.com '/bin/sh -c '"'"'echo ~students && sleep 0'"'"'
```

5.3. Correct the line in the inventory file. Delete the ansible_host host variable so the file appears as shown below:

```
[webservers]
serverb.lab.example.com
```

HIDE SOLUTION

Run the secure-web.yml playbook again. Ansible should authenticate as the devops remote user on the managed host. Fix this issue.

6.1. Run the secure-web.yml playbook.

```
[student@workstation troubleshoot-review]$ ansible-playbook secure-web.yml -vvv
...output omitted...
TASK [Gathering Facts] *****
task path: /home/student/troubleshoot-review/secure-web.yml:3
<serverb.lab.example.com> ESTABLISH SSH CONNECTION FOR USER: students
...output omitted...
fatal: [serverb.lab.example.com]: UNREACHABLE! => {
...output omitted...
```

6.2. Edit the `secure-web.yml` playbook to make sure `devops` is the `remote_user` for the play. The first lines of the playbook should appear as follows:

```
---
# start of secure web server playbook
- name: create secure web service
  hosts: webserver
  remote_user: devops
...output omitted...
```

HIDE SOLUTION

Run the `secure-web.yml` playbook a third time. Fix the issue that is reported.

7.1. Run the `secure-web.yml` playbook.

```
[student@workstation troubleshoot-review]$ ansible-playbook secure-web.yml -vvv
...output omitted...
failed: [serverb.lab.example.com] (item=mod_ssl) => {
  "ansible_loop_var": "item",
  "changed": false,
  "invocation": {
    "module_args": {
      "allow_downgrade": false,
      "autoremove": false,
      "validate_certs": true
    }
  },
  "item": "mod_ssl",
  "msg": "This command has to be run under the root user.",
  "results": []
}
...output omitted...
```

7.2. Edit the play to make sure that it has `become: true` or `become: yes` set. The resulting change should appear as follows:

```
---
# start of secure web server playbook
- name: create secure web service
  hosts: webserver
  remote_user: devops
  become: true
...output omitted...
```

HIDE SOLUTION

Run the `secure-web.yml` playbook one more time. It should complete successfully. Use an ad hoc command to verify that the `httpd` service is running.

8.1. Run the `secure-web.yml` playbook.

```
[student@workstation troubleshoot-review]$ ansible-playbook secure-web.yml

PLAY [create secure web service] *****
...output omitted...
TASK [install web server packages] *****
changed: [serverb.lab.example.com] => (item=httpd)
changed: [serverb.lab.example.com] => (item=mod_ssl)
...output omitted...
TASK [httpd_conf_syntax variable] *****
ok: [serverb.lab.example.com] => {
  "msg": "The httpd_conf_syntax variable value is {'cmd': ['/sbin/httpd', '-t'], 'stdout': '', 'stderr': 'Syntax OK', 'rc': 0, 'start': '2021-07-16 14:08:35.304347', 'end': '2021-07-16 14:08:35.342415', 'delta': '0:00:00.038068', 'changed': True, 'stdout_lines': [], 'stderr_lines': ['Syntax OK'], 'failed': False, 'failed_when_result': False}"
}
...output omitted...
RUNNING HANDLER [restart services] *****
changed: [serverb.lab.example.com]

PLAY RECAP *****
serverb.lab.example.com : ok=10  changed=7  unreachable=0  failed=0  ...
```

8.2. Use an ad hoc command to determine the state of the `httpd` service on `serverb.lab.example.com`. The `httpd` service should now be running on `serverb.lab.example.com`.

```
[student@workstation troubleshoot-review]$ ansible all -u devops -b \  
> -m command -a 'systemctl status httpd'  
serverb.lab.example.com | CHANGED | rc=0 >>  
• httpd.service - The Apache HTTP Server  
  Loaded: loaded (/usr/lib/systemd/system/httpd.service; enabled; vendor preset: disabled)  
  Active: active (running) since Fri 2021-07-16 14:08:37 EDT; 3min 1s ago  
...output omitted...
```

HIDE SOLUTION

Evaluation

On workstation, run the lab troubleshoot-review grade script to confirm success on this exercise.

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

Finish

On workstation, run the lab troubleshoot-review finish script to clean up this lab.

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

This concludes the lab.

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