Red Hat Enterprise Linux Automation with Ansible

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Guided Exercise: Troubleshooting Playbooks ☆

In this exercise, you will troubleshoot a playbook that has been given to you that does not work properly.

Outcomes

You should be able to troubleshoot and resolve issues in playbooks.

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

On `workstation`, run the `lab troubleshoot-playbook start` script. It verifies whether Ansible is installed on `workstation`. It also creates the `/home/student/troubleshoot-playbook/` directory, and downloads to this directory the `inventory`, `samba.yml`, and `samba.conf.j2` files from `http://materials.example.com/labs/troubleshoot-playbook/`.

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

Procedure 8.1. Instructions

On `workstation`, change to the `/home/student/troubleshoot-playbook/` directory.

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

Create a file named `ansible.cfg` in the current directory. It should set the `log_path` parameter to write Ansible logs to the `/home/student/troubleshoot-playbook/ansible.log` file. It should set the `inventory` parameter to use the `/home/student/troubleshoot-playbook/inventory` file deployed by the lab script.

When you are finished, `ansible.cfg` should have the following contents:

```
[defaults]
log_path = /home/student/troubleshoot-playbook/ansible.log
inventory = /home/student/troubleshoot-playbook/inventory
```

Run the playbook. It will fail with an error.

This playbook would set up a Samba server if everything were correct. However, the run will fail due to missing double quotes on the `random_var` variable definition. Read the error message to see how `ansible-playbook` reports the problem. Notice the variable `random_var` is assigned a value that contains a colon and is not quoted.

```
[student@workstation troubleshoot-playbook]$ ansible-playbook samba.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-playbook/samba.yml': line 8, column 30, but may be elsewhere in the file depending on th
e exact syntax problem.

The offending line appears to be:

    install_state: installed
    random_var: This is colon: test
                             ^ here
```

Confirm that the error has been properly logged to the `/home/student/troubleshoot-playbook/ansible.log` file.

```
[student@workstation troubleshoot-playbook]$ tail ansible.log

The error appears to be in '/home/student/troubleshoot-playbook/samba.yml': line 8, column 30, but may be elsewhere in the file depending on th
e exact syntax problem.

The offending line appears to be:

    install_state: installed
    random_var: This is colon: test
                             ^ here
```

Edit the `samba.yml` playbook and correct the error by adding quotes to the entire value being assigned to `random_var`. The corrected version of the playbook contains the following content:

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

Check the playbook using the `--syntax-check` option. Another error is issued due to extra white space in the indentation on the last task, `deliver samba config`.

```
[student@workstation troubleshoot-playbook]$ ansible-playbook --syntax-check \
> samba.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 key

The error appears to be in '/home/student/troubleshoot-playbook/samba.yml': line 44, column 4, but may be elsewhere in the file depending on th
e exact syntax problem.

The offending line appears to be:


   - name: deliver samba config
   ^ here
```

Edit the playbook and remove the extra space for all lines in that task. The corrected playbook should appear as follows:

```
...output omitted...
  - name: configure firewall for samba
    firewalld:
      state: enabled
      permanent: true
      immediate: true
      service: samba

  - name: deliver samba config
    template:
      src: templates/samba.conf.j2
      dest: /etc/samba/smb.conf
      owner: root
      group: root
      mode: 0644
```

Run the playbook using the `--syntax-check` option. An error is issued due to the `install_state` variable being used as a parameter in the `install samba` task. It is not quoted.

```
[student@workstation troubleshoot-playbook]$ ansible-playbook --syntax-check \
> samba.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-playbook/samba.yml': line 14, column 15, but may be elsewhere in the file depending on t
he exact syntax problem.

The offending line appears to be:

      name: samba
      state: {{ install_state }}
             ^ 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 }}"
```

Edit the playbook and correct the `install samba` task. The reference to the `install_state` variable should be in quotes. The resulting file content should look like the following:

```
...output omitted...
  tasks:
  - name: install samba
    yum:
      name: samba
      state: "{{ install_state }}"
...output omitted...
```

Run the playbook using the `--syntax-check` option. It should not show any additional syntax errors.

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

playbook: samba.yml
```

Run the playbook. An error, related to SSH, will be issued.

```
[student@workstation troubleshoot-playbook]$ ansible-playbook samba.yml
PLAY [Install a samba server] **************************************************

TASK [Gathering Facts] *********************************************************
fatal: [servera.lab.exammple.com]: UNREACHABLE! => {"changed": false, "msg": "Failed to connect to the host via ssh: ssh: connect to host serve
ra.lab.exammple.com port 22: Connection timed out", "unreachable": true}

PLAY RECAP *********************************************************************
servera.lab.exammple.com   : ok=0    changed=0    unreachable=1    failed=0  ...
```

Ensure the managed host `servera.lab.example.com` is running, using the `ping` command.

```
[student@workstation troubleshoot-playbook]$ ping -c3 servera.lab.example.com
PING servera.lab.example.com (172.25.250.10) 56(84) bytes of data.
64 bytes from servera.lab.example.com (172.25.250.10): icmp_seq=1 ttl=64 time=0.247 ms
64 bytes from servera.lab.example.com (172.25.250.10): icmp_seq=2 ttl=64 time=0.329 ms
64 bytes from servera.lab.example.com (172.25.250.10): icmp_seq=3 ttl=64 time=0.320 ms

--- servera.lab.example.com ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 1999ms
rtt min/avg/max/mdev = 0.247/0.298/0.329/0.041 ms
```

Ensure that you can connect to the managed host `servera.lab.example.com` as the `devops` user using SSH, and that the correct SSH keys are in place. Log off again when you have finished.

```
[student@workstation troubleshoot-playbook]$ ssh devops@servera.lab.example.com
Activate the web console with: systemctl enable --now cockpit.socket
...output omitted...
[devops@servera ~]$ exit
logout
Connection to servera.lab.example.com closed.
```

Rerun the playbook with `-vvvv` to get more information about the run. An error is issued because the `servera.lab.example.com` managed host is not reachable.

```
[student@workstation troubleshoot-playbook]$ ansible-playbook -vvvv samba.yml
...output omitted...

PLAYBOOK: samba.yml ************************************************************
1 plays in samba.yml

PLAY [Install a samba server] **************************************************

TASK [Gathering Facts] *********************************************************
task path: /home/student/troubleshoot-playbook/samba.yml:2
<servera.lab.exammple.com> ESTABLISH SSH CONNECTION FOR USER: devops
...output omitted...
fatal: [servera.lab.exammple.com]: UNREACHABLE! => {
    "changed": false,
    "msg": "Failed to connect to the host via ssh: OpenSSH_8.0p1, OpenSSL ... Control socket \"/home/student/.ansible/cp/d4775f48c9\" does not
exist\r\ndebug2: resolving \"servera.lab.exammple.com\" port 22\r\ndebug2: ssh_connect_direct\r\ndebug1: Connecting to servera.lab.exammple.com
[3.223.115.185] port 22.\r\ndebug2: fd 4 setting O_NONBLOCK\r\ndebug1: connect to address 3.223.115.185 port 22: Connection timed out\r\nssh: c
onnect to host servera.lab.exammple.com port 22: Connection timed out",
    "unreachable": true
}

...output omitted...
PLAY RECAP *********************************************************************
servera.lab.exammple.com   : ok=0    changed=0    unreachable=1    failed=0
```

When using the highest level of verbosity with Ansible, examining the Ansible log file is a better option than checking console output. You might view the log file using the `less` command, or you might search for patterns in the log file using the `grep` command. Search for the word `fatal` in the `/home/student/troubleshoot-playbook/ansible.log` file.

```
[student@workstation troubleshoot-playbook]$ grep -i fatal ansible.log
2021-07-15 13:56:21,766 p=45752 u=student n=ansible | fatal: [servera.lab.exammple.com]: UNREACHABLE! => {"changed": false, "msg": "Failed to c
onnect to the host via ssh: ssh: connect to host servera.lab.exammple.com port 22: Connection timed out", "unreachable": true}
2021-07-15 14:22:43,262 p=46055 u=student n=ansible | fatal: [servera.lab.exammple.com]: UNREACHABLE! => {
```

Investigate the `inventory` file for errors. Notice the `[samba_servers]` group has misspelled `servera.lab.example.com`. Correct this error as shown below:

```
[samba_servers]
servera.lab.example.com
...output omitted...
```

Run the playbook again. The *debug install_state variable* task returns the message *The state for the samba service is installed*. This task makes use of the *debug* module, and displays the value of the *install_state* variable. An error is also shown in the *deliver samba config* task, because no `samba.j2` file is available in the working directory, `/home/student/troubleshoot-playbook/`.

```
[student@workstation troubleshoot-playbook]$ ansible-playbook samba.yml

PLAY [Install a samba server] ************************************************
...output omitted...
TASK [debug install_state variable] ******************************************
ok: [servera.lab.example.com] => {
    "msg": "The state for the samba service is installed"
}
...output omitted...
TASK [deliver samba config] **************************************************
fatal: [servera.lab.example.com]: FAILED! => {"changed": false, "msg": "Could not find or access 'samba.j2'\nSearched in:\n\t/home/student/trou
bleshoot-playbook/templates/samba.j2\n\t/home/student/troubleshoot-playbook/samba.j2\n\t/home/student/troubleshoot-playbook/templates/samba.j2
\n\t/home/student/troubleshoot-playbook/samba.j2 on the Ansible Controller.\nIf you are using a module and expect the file to exist on the remo
te, see the remote_src option"}
...output omitted...
PLAY RECAP *******************************************************************
servera.lab.example.com    : ok=7    changed=3    unreachable=0    failed=1  ...
```

Edit the playbook, and correct the `src` parameter in the *deliver samba config* task to be `samba.conf.j2`. When you are finished it should look like the following:

```
...output omitted...
  - name: deliver samba config
    template:
      src: samba.conf.j2
      dest: /etc/samba/smb.conf
      owner: root
...output omitted...
```

Run the playbook again. Execute the playbook using the `--step` option. It should run without errors.

```
[student@workstation troubleshoot-playbook]$ ansible-playbook samba.yml --step

PLAY [Install a samba server] ************************************************
Perform task: TASK: Gathering Facts (N)o/(y)es/(c)ontinue: y
...output omitted...
Perform task: TASK: install samba (N)o/(y)es/(c)ontinue: y
...output omitted...
Perform task: TASK: install firewalld (N)o/(y)es/(c)ontinue: y
...output omitted...
Perform task: TASK: debug install_state variable (N)o/(y)es/(c)ontinue: y
...output omitted...
Perform task: TASK: start samba (N)o/(y)es/(c)ontinue: y
...output omitted...
Perform task: TASK: start firewalld (N)o/(y)es/(c)ontinue: y
...output omitted...
Perform task: TASK: configure firewall for samba (N)o/(y)es/(c)ontinue: y
...output omitted...
Perform task: TASK: deliver samba config (N)o/(y)es/(c)ontinue: y
...output omitted...
PLAY RECAP *******************************************************************
servera.lab.example.com    : ok=8    changed=1    unreachable=0    failed=0
```

Finish

On `workstation`, run the `lab troubleshoot-playbook finish` script to clean up this exercise.

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

This concludes the guided exercise.

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