Red Hat Enterprise Linux Automation with Ansible

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Chapter 8. Troubleshooting Ansible ☆

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Abstract

Goal	Troubleshoot playbooks and managed hosts.
Objectives	• Troubleshoot generic issues with a new playbook and repair them. • Troubleshoot failures on managed hosts when running a playbook.
Sections	• Troubleshooting Playbooks (and Guided Exercise) • Troubleshooting Ansible Managed Hosts (and Guided Exercise)

Lab •	Troubleshooting Ansible

Troubleshooting Playbooks

Objectives

After completing this section, you should be able to troubleshoot generic issues with a new playbook and repair them.

Log Files for Ansible

By default, Ansible is not configured to log its output to any log file. It provides a built-in logging infrastructure that can be configured through the `log_path` parameter in the `default` section of the `ansible.cfg` configuration file, or through the `$ANSIBLE_LOG_PATH` environment variable. If any or both are configured, Ansible stores output from both the `ansible` and `ansible-playbook` commands in the log file configured, either through the `ansible.cfg` configuration file or the `$ANSIBLE_LOG_PATH` environment variable.

If you configure Ansible to write log files to `/var/log`, then Red Hat recommends that you configure `logrotate` to manage the Ansible log files.

The Debug Module

The `debug` module provides insight into what is happening in the play. This module can display the value for a certain variable at a certain point in the play. This feature is key to debugging tasks that use variables to communicate with each other (for example, using the output of a task as the input to the following one).

The following examples use the `msg` and `var` settings inside of `debug` tasks. The first example displays the value at run time of the `ansible_facts['memfree_mb']` fact as part of a message printed to the output of `ansible-playbook`. The second example displays the value of the `output` variable.

```
- name: Display free memory
  debug:
    msg: "Free memory for this system is {{ ansible_facts['memfree_mb'] }}"
```

```
- name: Display the "output" variable
  debug:
    var: output
    verbosity: 2
```

Managing Errors

There are several issues than can occur during a playbook run, mainly related to the syntax of either the playbook or any of the templates it uses, or due to connectivity issues with the managed hosts (for example, an error in the host name of the managed host in the inventory file). Those errors are issued by the `ansible-playbook` command at execution time.

Earlier in this course, you learned about the `--syntax-check` option, which checks the YAML syntax for the playbook. It is a good practice to run a syntax check on your playbook before using it or if you are having problems with it.

```
[student@demo ~]$ ansible-playbook play.yml --syntax-check
```

You can also use the `--step` option to step through a playbook one task at a time. The `ansible-playbook --step` command interactively prompts for confirmation that you want each task to run.

```
[student@demo ~]$ ansible-playbook play.yml --step
```

The `--start-at-task` option allows you to start execution of a playbook from a specific task. It takes as an argument the name of the task at which to start.

```
[student@demo ~]$ ansible-playbook play.yml --start-at-task="start httpd service"
```

Debugging

The output given by a playbook that was run with the `ansible-playbook` command is a good starting point for troubleshooting issues related to hosts managed by Ansible. Consider the following output from a playbook execution:

```
PLAY [Service Deployment] ******************************************************
...output omitted...
TASK: [Install a service] ******************************************************
ok: [demoservera]
ok: [demoserverb]

PLAY RECAP *********************************************************************
demoservera                  : ok=2    changed=0    unreachable=0    failed=0
demoserverb                  : ok=2    changed=0    unreachable=0    failed=0
```

The previous output shows a `PLAY` header with the name of the play to be executed, followed by one or more `TASK` headers. Each of these headers represents their associated *task* in the playbook, and it is executed in all the managed hosts belonging to the group included in the playbook in the *hosts* parameter.

As each managed host executes each play's tasks, the name of the managed host is displayed under the corresponding `TASK` header, along with the task state on that managed host. Task states can appear as `ok`, `fatal`, `changed`, or `skipping`.

At the bottom of the output for each play, the `PLAY RECAP` section displays the number of tasks executed for each managed host.

As discussed earlier in the course, you can increase the verbosity of the output from `ansible-playbook` by adding one or more `-v` options. The `ansible-playbook -v` command provides additional debugging information, with up to four total levels.

Table 8.1. Verbosity Configuration

Option	Description
`-v`	The output data is displayed.
`-vv`	Both the output and input data are displayed.
`-vvv`	Includes information about connections to managed hosts.
`-vvvv`	Includes additional information such scripts that are executed on each remote host, and the user that is executing each script.

Recommended Practices for Playbook Management

Although the previously discussed tools can help to identify and fix issues in playbooks, when developing those playbooks it is important to keep in mind some recommended practices that can help ease the troubleshooting process. Some recommended practices for playbook development are listed below:

- Use a concise description of the play's or task's purpose to name plays and tasks. The play name or task name is displayed when the playbook is executed. This also helps document what each play or task is supposed to accomplish, and possibly why it is needed.

- Include comments to add additional inline documentation about tasks.
- Make effective use of vertical white space. In general, organize task attributes vertically to make them easier to read.
- Consistent horizontal indentation is critical. Use spaces, not tabs, to avoid indentation errors. Set up your text editor to insert spaces when you press the **Tab** key to make this easier.
- Try to keep the playbook as simple as possible. Only use the features that you need.

REFERENCES

Configuring Ansible — Ansible Documentation
(https://docs.ansible.com/ansible/2.9/installation_guide/intro_configuration.html)

debug — Print statements during execution — Ansible Documentation
(https://docs.ansible.com/ansible/2.9/modules/debug_module.html)

Best Practices — Ansible Documentation
(https://docs.ansible.com/ansible/2.9/user_guide/playbooks_best_practices.html)

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