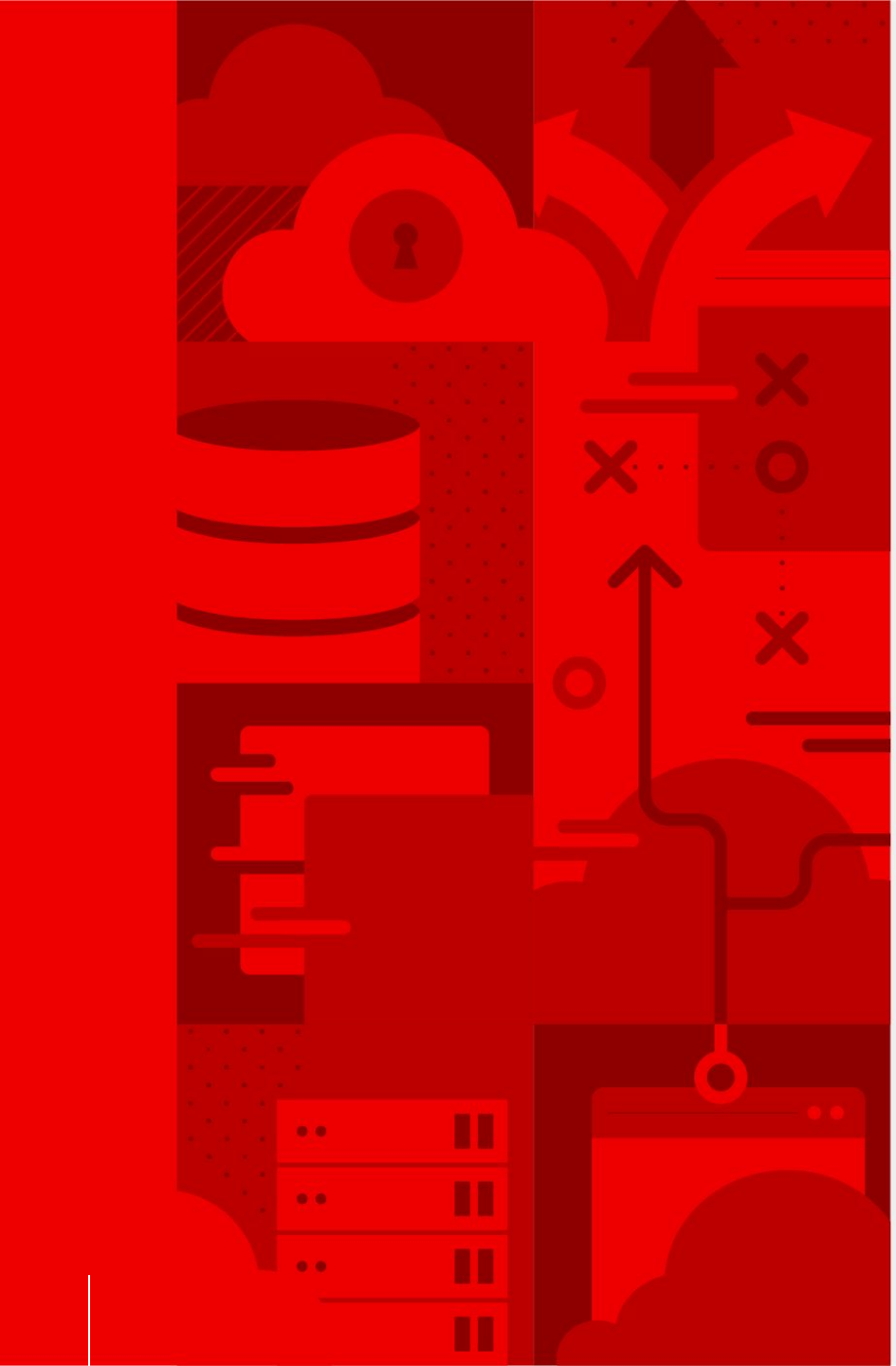


Ansible Automation: A Story from the Trenches

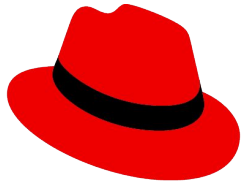
David Glaser

Senior Technical Account Manager

11/20/2019

Red Hat

Me!



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Ansible is a tool, automation is a skill

- Large customer with thousands of hosts
- Migrating from Chef to Ansible
- Customer team produced a set of Ansible playbooks and roles, then requested we review them
- We found a number of improvements, both obvious and subtle

Facts or no Facts?

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Ansible Fact Gathering

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Problem?

```
- name: RHEL Base configurations
  hosts: all
  gather_facts: no
  tasks:
  - name: checking host platform
    setup:
      filter: ansible_distribution
    register: host_distribution

  - name: checking host version
    setup:
      filter: ansible_distribution_major_version
    register: host_major_version
```

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When to gather facts

- Ansible gathers facts by default
- Don’t gather facts when you need speed and won’t be using any of the facts on the host
- Filtering of facts happens on return, so there’s no speed up

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Shell and Command modules

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More shells than MarioKart!

- About 70% of the tasks were shell tasks
  - Most instances could be replaced with Ansible modules

- Shell and command modules use should be minimized
  - Not idempotent
  - Shell uses the environment of the user on the host which can be dangerous
  - Unless modified, always show up as a ‘changed’ return value
  - Harder to diagnose issues

- Use Ansible modules whenever possible
  - Make sure they are from a trusted source

Module Priority

1. Red Hat supported modules built into Ansible Engine
2. Vendor modules
3. Community modules (Ansible Galaxy, Github, etc)
4. command and shell modules

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Know what you can Handle(er)

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Problem?

```
- name: Create user
  user:
    name: idm
    home: "/opt/IDMfile"
    shell: /bin/ksh
    state: present
  notify:
      - restart nscd
      - Create IDMfile directory

- name: create kshrc file
  copy:
    src: dot-kshrc
    dest: /opt/IDMfile/.kshrc
    owner: idm
    group: root
    mode: '0600'
```

```
# handlers
  -    name: restart nscd
       service:
          name: nscd
          state: restarted

  -    name: Create IDMfile directory
       file:
          path: /opt/IDMfile
          owner: idm
          group: root
          mode: '0755'
          state: directory
```

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Use Handlers wisely

- Handlers get run at the end of a play, not where they are called
- Handlers are only run on a change. If the play calling them does not result in a changed state, the handler is ignored
- Should not put anything in a play after a handler that is dependant on that handler unless you use a **meta: flush_handlers** routine

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Keep it simple

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Make your playbooks easy to read

Ansible should be written consistently

- Tasks can be written as a single line per parameter or multiple lines per parameter using an '=' sign. Decide on one and stick to it.

  Use

  ```
  module:
    name: value1
    state: value2
  ```

  Or

  ```
  module: name=value1 state=value2
  ```

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Make your playbooks easy to read

Ansible should be easy to understand

- Simplify the logic used in when statements
  - Use ‘not’ only when needed
    - when: not variable == “no”
    - when: variable != “no”

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Make your playbooks easy to read

Ansible should be easy to understand

- Simplify the logic used in when statements
  - Use ‘not’ only when needed
    - when: not variable == “no”
    - when: variable != “no”

  - Separate when statements that contain logical and(s) on separate lines
    - when: variable1 == “17” and variable2 == “Stand” and variable3 is defined
    - when:
      - variable1 == “17”
      - variable2 == “Stand”
      - Variable3 is defined

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Just Do it

(Apologies to Nike)

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Problem?

```
- set_fact:
    file_attr_immutable: "immutable"
- stat:
    path: "/etc/file.cfg"
  register: file_status
- name: check the file immutable and set it off
  file:
    path: "/etc/file.cfg"
    state: file
    attributes: -i
  when:  file_status.stat.exists and file_attr_immutable in file_status.stat.attributes
```

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Automate to the end state

- Don’t put in extra tasks if you aren’t using them.
- Don’t check for a state if you are going to (possibly) reset that state
- Use tags or debug levels to execute certain tasks under certain conditions

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Fail early and Fail often

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Problem?

```
- name: Install/Upgrade PatchClient
  package:
    name: PatchClient
    state: latest

- name: Configure the PatchCLient
  shell: "bash /opt/PatchClient/config.sh client.dat > /dev/null"
  when: client.dat is defined
```

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Try not to partially run tasks

- Check for error conditions (undefined variables, missing files, etc) early in a play
- Block groups of statements together so they complete or fail as a group

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Try not to partially run tasks

- Check for error conditions (undefined variables, missing files, etc) early in a play
- Block groups of statements together so they complete or fail as a group

```
- name: Set up PatchClient
  block:
      - name: Install/Upgrade PatchClient
        package:
         name: PatchClient
         state: latest

      - name: Configure the PatchCLient
        shell: "bash /opt/PatchClient/config.sh client.dat > /dev/null"
   when: client.dat is defined
```

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Summary

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Summary

Automation is a process

Many different ways and levels of automation with Ansible

Use best practices and recommendations

https://docs.ansible.com/ansible/latest/user_guide/playbooks_best_practices.html

Don’t be afraid to ask others to review

Come, come, Mr. Scott. Young minds, fresh ideas. Be tolerant. - James T. Kirk

Look at your playbooks as a whole

Don’t lose the forest for the trees

Questions

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