Blocks

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Blocks create logical groups of tasks. Blocks also offer ways to handle task errors, similar to exception handling in many programming languages.

Grouping tasks with blocks

All tasks in a block inherit directives applied at the block level. Most of what you can apply to a single task (with the exception of loops) can be applied at the block level, so blocks make it much easier to set data or directives common to the tasks. The directive does not affect the block itself, it is only inherited by the tasks enclosed by a block. For example, a when statement is applied to the tasks within a block, not to the block itself.

```
tasks:
  - name: Install, configure, and start Apache
    when: ansible_facts['distribution'] == 'CentOS'
    block:
      - name: Install httpd and memcached
        ansible.builtin.yum:
          name:
          - httpd
          - memcached
          state: present

      - name: Apply the foo config template
        ansible.builtin.template:
          src: templates/src.j2
          dest: /etc/foo.conf

      - name: Start service bar and enable it
```

```
      ansible.builtin.service:
        name: bar
        state: started
        enabled: True
  become: true
  become_user: root
  ignore_errors: true
```

In the example above, the 'when' condition will be evaluated before Ansible runs each of the three tasks in the block. All three tasks also inherit the privilege escalation directives, running as the root user. Finally, `ignore_errors: true` ensures that Ansible continues to execute the playbook even if some of the tasks fail.

> [!NOTE] All tasks in a block, including the ones included through include_role, inherit directives applied at the block level.

Names for blocks have been available since Ansible 2.3. We recommend using names in all tasks, within blocks or elsewhere, for better visibility into the tasks being executed when you run the playbook.

Handling errors with blocks

You can control how Ansible responds to task errors using blocks with `rescue` and `always` sections.

> [!NOTE] Errors caused by invalid task definitions and unreachable hosts do not trigger the `rescue` or `always` sections of a block.

Rescue blocks specify tasks to run when an earlier task in a block fails. This approach is similar to exception handling in many programming languages. Ansible only runs rescue blocks after a task returns a 'failed' state.

> tasks:
>
> - name: Handle the error block: - name: Print a message ansible.builtin.debug: msg: 'I execute normally'

- name: Force a failure
  ansible.builtin.command: /bin/false
- name: Never print this
  ansible.builtin.debug: msg: 'I never
  execute, due to the above task failing, :-('

rescue:
- name: Print when errors ansible.builtin.debug: msg: 'I caught an
  error, can do stuff here to fix it, :-)'

You can also add an `always` section to a block. Tasks in the `always` section run no matter what the task status of the previous block is.

> tasks:
>
> - name: Always do X block: - name: Print a message
>   ansible.builtin.debug: msg: 'I execute normally'
>
>   > - name: Force a failure
>   >   ansible.builtin.command: /bin/false
>   > - name: Never print this
>   >   ansible.builtin.debug: msg: 'I never execute
>   >   :-('
>
>   always:
>   - name: Always do this ansible.builtin.debug: msg: "This always
>   executes, :-)"

Together, these elements offer complex error handling.

```
tasks:
  - name: Attempt and graceful roll back demo
    block:
      - name: Print a message
        ansible.builtin.debug:
          msg: 'I execute normally'

      - name: Force a failure
```

```
        ansible.builtin.command: /bin/false

      - name: Never print this
        ansible.builtin.debug:
          msg: 'I never execute, due to the above task failing, :-('
    rescue:
      - name: Print when errors
        ansible.builtin.debug:
          msg: 'I caught an error'

      - name: Force a failure in middle of recovery! >:-)
        ansible.builtin.command: /bin/false

      - name: Never print this
        ansible.builtin.debug:
          msg: 'I also never execute :-('
    always:
      - name: Always do this
        ansible.builtin.debug:
          msg: "This always executes"
```

The tasks in the `block` execute normally. If any tasks in the block return `failed`, the `rescue` section executes tasks to recover from the error. The `always` section runs regardless of the results of the `block` and `rescue` sections.

If an error occurs in the block and the rescue task succeeds, Ansible reverts the failed status of the original task for the run and continues to run the play as if the original task had succeeded. The rescued task is considered successful and does not trigger `max_fail_percentage` or `any_errors_fatal` configurations. However, Ansible still reports a failure in the playbook statistics.

You can use blocks with `flush_handlers` in a rescue task to ensure that all handlers run even if an error occurs:

```
tasks:
  - name: Attempt and graceful roll back demo
    block:
      - name: Print a message
        ansible.builtin.debug:
          msg: 'I execute normally'
        changed_when: true
        notify: Run me even after an error
```

```
      - name: Force a failure
        ansible.builtin.command: /bin/false
    rescue:
      - name: Make sure all handlers run
        meta: flush_handlers
handlers:
   - name: Run me even after an error
     ansible.builtin.debug:
       msg: 'This handler runs even on error'
```

2.1

Ansible provides a couple of variables for tasks in the `rescue` portion of a block:

ansible_failed_task
The task that returned 'failed' and triggered the rescue. For example, to get the name use `ansible_failed_task.name`.

ansible_failed_result
The captured return result of the failed task that triggered the rescue. This would equate to having used this var in the `register` keyword.

These can be inspected in the `rescue` section:

```
tasks:
  - name: Attempt and graceful roll back demo
    block:
      - name: Do Something
        ansible.builtin.shell: grep $(whoami) /etc/hosts

      - name: Force a failure, if previous one succeeds
        ansible.builtin.command: /bin/false
    rescue:
      - name: All is good if the first task failed
        when: ansible_failed_task.name == 'Do Something'
        ansible.builtin.debug:
          msg: All is good, ignore error as grep could not find 'me' in hosts

      - name: All is good if the second task failed
        when: "'/bin/false' in ansible_failed_result.cmd | d([])"
        ansible.builtin.fail:
          msg: It is still false!!!
```

> [!NOTE] In `ansible-core` 2.14 or later, both variables are propagated from an inner block to an outer `rescue` portion of a block when nesting blocks.

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An introduction to playbooks

`playbooks_reuse_roles`
Playbook organization by roles

`Communication<communication>`
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