ansible-runner-role Documentation

Release 1.2.1

Vladimir Botka

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This role and the documentation is work in progess. Please feel free to share your feedback and report issues. Contributions are welcome.

CHAPTER

ONE

USER'S GUIDE

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1.1 Introduction

Run this role to install and configure Ansible Runner. Optionaly configure cron to periodically run Ansible playbooks.

- Ansible role: ansible_runner
- Supported systems:

  - FreeBSD Supported Production Releases
  - Ubuntu Supported Releases
- (Requirements in future releases: ansible_lib)

Note:

- The utility *ansible-runner* is not part of standard Ansible installation. See Installing Ansible Runner

---

See also:

- Ansible Runner documentation
- Ansible Runner source code
- REST API ansible-runner-service

1.2 Installation

The most convenient way how to install an Ansible role is to use Ansible Galaxy CLI `ansible-galaxy`. The utility comes with the standard Ansible package and provides the user with a simple interface to the Ansible Galaxy's services. For example, take a look at the current status of the role

```
shell> ansible-galaxy info vbotka.ansible_runner
```

and install it

```
shell> ansible-galaxy install vbotka.ansible_runner
```

Install the library of tasks (for future releases)

```
shell> ansible-galaxy install vbotka.ansible_lib
```

See also:

- To install specific versions from various sources see Installing content.
- Take a look at other roles `shell> ansible-galaxy search --author=vbotka`

1.3 Playbook

Below is a simple playbook that calls this role at a single host srv.example.com (2)

```
shell> cat ansible-runner.yml
- hosts: srv.example.com
  gather_facts: true
  connection: ssh
  remote_user: admin
  become: yes
  become_user: root
  become_method: sudo
  roles:
    - vbotka.ansible_runner
```

Note: `gather_facts: true` (3) must be set to gather facts needed to evaluate OS-specific options of the role. For example to install packages the variable `ansible_os_family` is needed to select the appropriate Ansible module.

See also:

- For details see Connection Plugins (4-5)
- See also Understanding Privilege Escalation (6-8)

1.4 Debug

To see additional debug information enable debug output in the configuration

```
ar_debug: true
```

, or set the extra variable in the command

```
shell> ansible-playbook ansible-runner.yml -e 'ar_debug=true'
```

Note: The debug output of this role is optimized for the **yaml** callback plugin. Set this plugin for example in the environment `shell> export ANSIBLE_STDOUT_CALLBACK=yaml`.

See also:

- Playbook Debugger

1.5 Tags

The tags provide the user with a very useful tool to run selected tasks of the role. To see what tags are available list the tags of the role with the command

```
shell> ansible-playbook ansible-runner.yml --list-tags

playbook: ansible-runner.yml

play #1 (srv.example.com): srv.example.com TAGS: []
   TASK TAGS: [always, ar_config, ar_debug, ar_links, ar_packages, ar_vars]
```

For example, display the list of the variables and their values with the tag `ar_debug` (when the debug is enabled `ar_debug: true`)

```
shell> ansible-playbook ansible-runner.yml -t ar_debug
```

See what packages will be installed

```
shell> ansible-playbook ansible-runner.yml -t ar_packages --check
```

Install packages and exit the play

```
shell> ansible-playbook ansible-runner.yml -t ar_packages
```

1.6 Tasks

Test single tasks at single remote host *test_01*. Create a playbook

```
shell> cat ansible.yml
- hosts: test_01
  become: true
  roles:
    - vbotka.ansible_runner
```

Customize configuration in `host_vars/test_01/ar-*.yml` and check the syntax

```
shell> ansible-playbook ansible-runner.yml --syntax-check
```

Then dry-run the selected task and see what will be changed. Replace <tag> with valid tag.

```
shell> ansible-playbook ansible-runner.yml -t <tag> --check --diff
```

When all seems to be ready run the command. Run the command twice and make sure the playbook and the configuration is idempotent

```
shell> ansible-playbook ansible-runner.yml -t <tag>
```

1.6.1 Ansible Runner packages

Synopsis

`ansible-runner` can be installed by `pip` or from distribution's packages, and ports.

See also:

- Annotated Source code *packages.yml*

Example 1: Install ansible-runner in Ubuntu by pip for admin

Create a playbook

```
shell> ansible-runner.yml
- hosts: test_01
  become: true
  roles:
    - vbotka.ansible_runner
```

Create *host_vars/test_01/ansible-runner.yml*

```
shell> cat host_vars/test_01/ansible-runner.yml
ar_install: false
ar_pip_install: true
ar_debug: false
ar_owner: admin
```

Install ansible-runner

```
shell> ansible-playbook ansible-runner.yml -e "ar_install=true"
...
TASK [vbotka.ansible_runner : packages: Install Ansible Runner pip packages for␣
↪admin]
ok: [test_01] => (item={'name': 'ansible-runner'})
```

Show ansible-runner package installed by pip for admin

```
shell> whoami
admin

shell> pip list | grep ansible-runner
ansible-runner               1.4.6
```

Example 2: Install ansible-runner in FreeBSD from the port

Create a playbook

```
shell> ansible-runner.yml
- hosts: test_01
  become: true
  roles:
    - vbotka.ansible_runner
```

Create *host_vars/test_01/ansible-runner.yml*

```
shell> cat host_vars/test_01/ansible-runner.yml
<TBD>
```

Install ansible-runner

```
shell> ansible-playbook ansible-runner.yml -e "ar_install=true"
<TBD>
...
TASK [vbotka.ansible_runner : packages: Install Ansible Runner pip packages for␣
↪admin]
ok: [test_01] => (item={'name': 'ansible-runner'})
```

Show ansible-runner package installed by pip for admin

```
<TBD>
shell> whoami


shell> which ansible-runner
ansible-runner               1.4.6
```

Example 1: Install ansible-runner in Ubuntu by pip for admin

Create a playbook

```
shell> ansible-runner.yml
- hosts: test_01
  become: true
  roles:
    - vbotka.ansible_runner
```

Create *host_vars/test_01/ansible-runner.yml*

```
shell> cat host_vars/test_01/ansible-runner.yml
ar_install: false
ar_pip_install: true
ar_debug: false
ar_owner: admin
```

Install ansible-runner

```
shell> ansible-playbook ansible-runner.yml -e "ar_install=true"
...
TASK [vbotka.ansible_runner : packages: Install Ansible Runner pip packages for␣
↪admin]
ok: [test_01] => (item={'name': 'ansible-runner'})
```

Show ansible-runner package installed by pip for admin

```
shell> whoami
admin

shell> pip list | grep ansible-runner
ansible-runner               1.4.6
```

Example 2: Install ansible-runner in FreeBSD from the port

Create a playbook

```
shell> ansible-runner.yml
- hosts: test_01
  become: true
  roles:
    - vbotka.ansible_runner
```

Create *host_vars/test_01/ansible-runner.yml*

```
shell> cat host_vars/test_01/ansible-runner.yml
<TBD>
```

Install ansible-runner

```
shell> ansible-playbook ansible-runner.yml -e "ar_install=true"
<TBD>
...
TASK [vbotka.ansible_runner : packages: Install Ansible Runner pip packages for␣
↪admin]
ok: [test_01] => (item={'name': 'ansible-runner'})
```

Show ansible-runner package installed by pip for admin

```
 <TBD>
shell> whoami


shell> which ansible-runner
ansible-runner               1.4.6
```

1.7 Variables

In this chapter we describe role's default variables stored in the directory **defaults**.

See also:

- Ansible variable precedence: Where should I put a variable?

1.8 Default variables

<TBD>

[defaults/main.yml]

```
---
# defaults ansible_runner

ar_install: true
ar_debug: false
ar_backup_conf: false

# Install distro packages or pip
# false - distro packages, true -  pip
# ar_pip_install: false                 # OS specific variable see vars/defaults

# FreeBSD
freebsd_install_retries: 10
freebsd_install_delay: 5
freebsd_install_method: "packages"
# freebsd_install_method: "ports"
freebsd_use_packages: true

# Linux
linux_install_retries: 10
linux_install_delay: 5

# Python
pip_install_retries: 10
pip_install_delay: 5
# pip_extraagrs: ""                     # Optional

# pip package dependent
# ar_pip_executable: "pip3"             # OS specific variable see vars/defaults
# ar_pip_requirements: []               # Optional

# Configuration
ar_config: []
```

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```
34
35 # Links
36 # ar_links: []  # OS specific variable see vars/defaults
37
38 # EOF
39 ...
```

1.9 Best practice

Display the variables for debug if needed. Then disable this task `ar_debug: false` to speedup the playbook

```
shell> ansible-playbook ansible-runner.yml -t ar_debug
```

Install packages Then disable this task `ar_install: false` to speedup the playbook

```
shell> ansible-playbook ansible-runner.yml -t ar_packages \
                                           -e 'ar_install=true'
```

The role and the configuration data in the examples are idempotent. Once the installation and configuration have passed there should be no changes reported by *ansible-playbook* when running the playbook repeatedly. Disable debug, and install to speedup the playbook

```
shell> ansible-playbook ansible-runner.yml
```

1.10 Ansible Runner Usage Examples

1.10.1 Cron

Example 1: Run Ansible playbooks in cron

- *Run ssh-agent*
- *Wrapper ansible-runner*
- *Command for cron*
- *Crontab*
- *Email sent by cron*
- *Project*
- *Playbook*
- *Artifacts*

Run ssh-agent

`ssh-agent` is needed to provide the ssh connection plugin with the password to the private key, when used. The script below is executed by the command interpreter for login shells

```
cntrlr> cat /home/admin/.profile
if [ -n "$BASH_VERSION" ]; then
    if [ -f "$HOME/.bashrc" ]; then
        . "$HOME/.bashrc"
    fi
    if [ -f "$HOME/.bashrc_ssh" ]; then
        . "$HOME/.bashrc_ssh"
    fi
fi
if [ -d "$HOME/bin" ] ; then
    PATH="$HOME/bin:$PATH"
fi
```

and will start `ssh-agent` on login and prepare *SSH_ENV* (5)

```
cntrlr> cat /home/admin/.bashrc_ssh
SSH_ENV="$HOME/.ssh/environment"
function start_agent {
    echo "Initialising new SSH agent..."
    /usr/bin/ssh-agent | sed 's/^echo/#echo/' > "${SSH_ENV}"
    echo succeeded
    chmod 600 "${SSH_ENV}"
    . "${SSH_ENV}" > /dev/null
    /usr/bin/ssh-add;
}
if [ -f "${SSH_ENV}" ]; then
    . "${SSH_ENV}" > /dev/null
    #ps ${SSH_AGENT_PID} doesn't work under cywgin
    ps -ef | grep ${SSH_AGENT_PID} | grep ssh-agent$ > /dev/null || {
        start_agent;
    }
else
    start_agent;
fi
```

Example of *.ssh/environment* created by *ssh-agent*

```
cntrlr> cat /home/admin/.ssh/environment
SSH_AUTH_SOCK=/tmp/ssh-8fUkZ7qOzVPs/agent.5214; export SSH_AUTH_SOCK;
SSH_AGENT_PID=5216; export SSH_AGENT_PID;
#echo Agent pid 5216;
```

See also:

- Start ssh-agent on login - stackoverflow.com
- SSH Quick-Start Guide - FreeBSD handbook
- Single Sign-On using SSH - ssh.com

Wrapper ansible-runner

Wrapper of *ansible-runner* will source *.ssh/environment* (9) and run the *playbook* from the *project* (10)

```
cntrlr> cat /home/admin/bin/arwrapper.bash
#!/bin/bash
runner=$HOME/bin/ansible-runner
```

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```
project=$HOME/.ansible/runner/$2
playbook=${3:-all.yml}
case "$1" in
    run)
       echo $(date '+%Y-%m-%d %H:%M:%S') $0
       source $HOME/.ssh/environment
       $runner run $project -p $playbook
       ;;
    clean)
       rm -rf $project/artifacts
       ;;
    *)
       printf "$0: run|clean project [playbook]\n"
       exit 1
       ;;
esac
exit
```

Command for cron

The script below will use *arwrapper.sh* (9) to run the playbook *pb-01.yml* (7) in the projects *test_01, test_02,* and *test_03* (6). If the command (9) succeeds the script will print *[OK]* report (14). If you don't want to receive email on success remove this line and optionally enable the cleaning of the artifacts (13)

```
cntrlr> cat /home/admin/bin/ansible-cron-test.bash
#!/bin/bash
marker=$(printf "%80s" | sed "s/ /./g")
rc=0
cmd=$HOME/bin/arwrapper.bash
projects="test_01 test_02 test_03"
playbook=pb-01.yml
for project in ${projects[@]}; do
    out=$($cmd run $project $playbook 2>&1)
    if [ $? -eq 0 ]; then
        printf "[OK]  $project $playbook PASSED\n"
        # $cmd clean $project
    else
        printf "[ERR] $out\n$marker\n"
        rc=1
    fi
done
exit $rc
```

Crontab

Schedule the script in *cron*

```
cntrlr> whoami
admin
cntrlr> crontab -l
MAILTO=admin
#Ansible: Ansible runner daily test
50 20 * * * $HOME/bin/ansible-cron-test.sh
```

See also:

- Ansible role's task FreeBSD postinstall cron.yml
- Ansible role's task Linux postinstall cron.yml

Email sent by cron

In our case the */etc/aliases* redirect the emails for *root* to the user *admin*. Cron will report the result of the scpript *ansible-cron-test.sh*. If you want to receive email on a failure only remove the *[OK]* report from the script and optionally clean the *artifacts*. The *artifacts* will be available for a review if the script fails

```
Date: Tue,  7 Jul 2020 20:50:06 +0200 (CEST)
From: Cron Daemon <root@cntrlr.example.com>
To: admin@cntrlr.example.com
Subject: Cron <admin@cntrlr> $HOME/bin/ansible-cron-test.sh

[OK]  test_01 pb-01.yml PASSED
[OK]  test_02 pb-01.yml PASSED
[OK]  test_03 pb-01.yml PASSED
```

Project

Example of the project's directory without the artifacts. The artifacts will be created by *ansible-runner*

```
cntrlr> tree /home/admin/.ansible/runner/test_01
/home/admin/.ansible/runner/test_01
├── env
├── inventory
│   └── hosts
└── project
    ├── ansible.cfg
    ├── group_vars
    ├── host_vars
    └── pb-01.yml
```

Note: It's necesary to provide *ansible-playbook* wiht the *vault password* if any data were encrypted. Use env/cmdline. For example

---

```
cntrl> cat /home/admin/.ansible/runner/test_01/env/cmdline
--vault-password-file $HOME/.vault-psswd
```

See also:

- Runner Input Directory Hierarchy
- Example playbook how to create projects pb-create-runner-private.yml

Playbook

Example of a playbook used in the test

```
cntrlr> cat /home/admin/.ansible/runner/test_01/project/pb-01.yml
- hosts: test_01
  remote_user: admin
  gather_facts: no
  tasks:
    - debug:
        msg: TEST
```

Artifacts

Example of the project's artifacts

```
cntrl> tree /home/admin/.ansible/runner/test_01/artifacts/
/home/admin/.ansible/runner/test_01/artifacts
└── aaa5d36e-e8d4-432a-ab52-b69062c85311
    ├── command
    ├── fact_cache
    ├── job_events
    │   ├── 1-2b5c9412-f0c4-45dc-a425-5c8c29e37ec0.json
    │   ├── 2-5ce0c5a2-1f02-cdab-8869-00000000001f.json
    │   ├── 3-5ce0c5a2-1f02-cdab-8869-000000000021.json
    │   ├── 4-28749e27-409a-46c4-9551-7ce80c02be83.json
    │   ├── 5-997d90c1-6357-45c6-8df9-437c2940c74e.json
    │   └── 6-6e41cf27-8c1e-4266-9ffb-8a54375bd4cc.json
    ├── rc
    ├── status
    └── stdout
```

See also:

- Runner Artifacts Directory Hierarchy
- ansible_lib: al_runner_events

1.10.2 Job events

Example 1: List artifacts' job events

- *Test negative result*
- *Cron email on failure*
- *Artifacts*
- *Playbook*
- *Events*
- *Failed event(s)*

Test negative result

Let's modify the playbook so that it'll fail. For example (8)

```
cntrlr> cat ~/.ansible/runner/test_02/project/pb-01.yml
- hosts: test_02
  remote_user: admin
  gather_facts: no
  tasks:
    - debug:
        msg: TEST
    - command: /usr/bin/false
```

Cron email on failure

Then the cron task in the example *Cron: Example 1* will fail and *admin* will receive an email similar to this one

```
Date: Wed,  8 Jul 2020 13:27:07 +0200 (CEST)
From: Cron Daemon <root@cntrlr.example.com>
To: admin@cntrlr.example.com
Subject: Cron <admin@cntrlr> $HOME/bin/ansible-cron-test.sh

[OK]  test_01 pb-01.yml PASSED
[ERR] 2020-07-08 13:27:03 /home/admin/bin/arwrapper.sh

PLAY [test_02] ************************************************************

TASK [debug] **************************************************************
ok: [test_02] => {
    "msg": "TEST"
    }

    TASK [command] ************************************************************
    fatal: [test_02.g2.netng.org]: FAILED! =>
    {"changed": true,
     "cmd": ["/usr/bin/false"],
     "delta": "0:00:00.013809",
     "end": "2020-07-08 +13:26:32.197207",
     "msg": "non-zero return code",
     "rc": 1,
     "start": "2020-07-08 13:26:32.183398",
     "stderr": "",
     "stderr_lines": [],
     "stdout": "",
     "stdout_lines": []}

    PLAY RECAP ****************************************************************
    test_02: ok=1 changed=0 unreachable=0 failed=1 skipped=0 rescued=0 ignored=0
    ..............................................................................
    [OK]  test_03 pb-01.yml PASSED
```

Artifacts

Let's take look at the artifacts of the failed project

```
cntrlr> tree ~/.ansible/runner/test_02/artifacts/
/home/admin/.ansible/runner/test_02/artifacts/
└── 0428ede5-40c2-48f9-b33d-b9d1a64609af
```

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```
    ├── command
    ├── fact_cache
    ├── job_events
    │   ├── 1-ff7d4af5-26bc-4d4c-8eac-6c75e547cb22.json
    │   ├── 2-5ce0c5a2-1f02-fda4-7a07-00000000001f.json
    │   ├── 3-5ce0c5a2-1f02-fda4-7a07-000000000021.json
    │   ├── 4-a1e17955-d452-424d-a1c1-bb4b387fd180.json
    │   ├── 5-97175f4b-9c82-4160-a17c-32a3e6d0c3ff.json
    │   ├── 6-5ce0c5a2-1f02-fda4-7a07-000000000022.json
    │   ├── 7-e1a3349e-199f-4ad7-969c-8680bbb1bac0.json
    │   ├── 8-bb64ec8e-d1b0-4114-9093-9bbd6807b293.json
    │   └── 9-72588652-8937-4eda-9aa7-b6bc443e4aa9.json
    ├── rc
    ├── status
    └── stdout

3 directories, 13 files
```

Playbook

Prepare a playbook to help with the analysis of the artifacts. For example, the playbook below will use Ansible library task al_runner_events.yml (13) and display selected attributes (18) from the *job events*. Feel free to modify *msg* (18) and display other attributes

```
cntrlr> cat ar-events.yml
- hosts: localhost
  gather_facts: false

  vars:
    my_home: "{{ lookup('env','HOME') }}"
    al_runner_events_dir: "{{ my_home ~
    '/.ansible/runner/test_02/artifacts/0428ede5-40c2-48f9-b33d-b9d1a64609af/job_
↪events' }}"

  tasks:
    - include_role:
        name: vbotka.ansible_lib
        tasks_from: al_runner_events
        apply:
          tags: always
      tags: always
    - debug:
        msg: "{{ item.counter }} {{ item.event }}"
      loop: "{{ al_runner_events_list|sort(attribute='counter') }}"
      loop_control:
        label: "{{ item.counter }}"
      tags: events
    - debug:
        msg: "{{ item.stdout }}"
      loop: "{{ al_runner_events_list|sort(attribute='counter') }}"
      loop_control:
        label: "{{ item.counter }}"
      when: item.event == 'runner_on_failed'
      tags: failed
```

See also:

- Examples of ansible-runner

Events

The play below gives the list of the events

```
cntrlr> ansible-playbook ar-events.yml -t events | grep msg\":
    "msg": "1 playbook_on_start"
    "msg": "2 playbook_on_play_start"
    "msg": "3 playbook_on_task_start"
    "msg": "4 runner_on_start"
    "msg": "5 runner_on_ok"
    "msg": "6 playbook_on_task_start"
    "msg": "7 runner_on_start"
    "msg": "8 runner_on_failed"
    "msg": "9 playbook_on_stats"
```

Failed event(s)

The next play displays the details of the failed event(s)

```
cntrlr> echo -e $(ansible-playbook ar-events.yml -t failed | grep msg\":)
    "msg": "fatal: [test_02]: FAILED! =>{
    \"changed\": true,
    \"cmd\": [\"/usr/bin/false\"],
    \"delta\": \"0:00:00.014716\",
    \"end\": \"2020-07-08 17:05:56.104764\",
    \"msg\": \"non-zero return code\",
    \"rc\": 1,
    \"start\": \"2020-07-08 17:05:56.090048\",
    \"stderr\": \"\",
    \"stderr_lines\": [],
    \"stdout\": \"\",
    \"stdout_lines\": []}"
```

CHAPTER

TWO

ANNOTATED SOURCE CODE

Table of Contents

2.1 Tasks

2.1.1 main.yml

Synopsis: Tasks of the playbook.

Description of the task.

[main.yml]

```
---
# tasks for ansible_runner

- import_tasks: vars.yml
  tags: [ar_vars, always]

- import_tasks: debug.yml
  when: ar_debug|bool
  tags: [ar_debug, always]

- import_tasks: packages.yml
  when: ar_install|bool
  tags: ar_packages

```

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```
- import_tasks: links.yml
  tags: ar_links

- import_tasks: config.yml
  tags: ar_config

# EOF
...
```

2.1.2 config.yml

Synopsis: Configure config.

Description of the task.

[config.yml]

```
---

- name: "config: configure ansible-runner"
  debug:
    msg: No config
  when: ar_debug|bool

# EOF
...
```

2.1.3 debug.yml

Synopsis: Configure debug.

Description of the task.

[debug.yml]

```
---

- name: "debug: Ansible Runner"
  vars:
    msg: |
      ansible_os_family [{{ ansible_os_family }}]
      ansible_distribution [{{ ansible_distribution }}]
      ansible_distribution_major_version [{{ ansible_distribution_major_version }}]
      ansible_distribution_version [{{ ansible_distribution_version }}]
      ansible_distribution_release [{{ ansible_distribution_release }}]
      ansible_python_version [{{ ansible_python_version }}]

      ar_install [{{ ar_install }}]

      freebsd_install_method [{{ freebsd_install_method }}]
      freebsd_use_packages [{{ freebsd_use_packages }}]
      freebsd_install_retries [{{ freebsd_install_retries }}]
      freebsd_install_delay [{{ freebsd_install_delay }}]

      linux_install_retries [{{ linux_install_retries }}]
```

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```
      linux_install_delay [{{ linux_install_delay }}]

      pip_install_retries [{{ pip_install_retries }}]
      pip_install_delay [{{ pip_install_delay }}]
      pip_extraagrs [{{ pip_extraagrs|default('UNDEFINED') }}]

      ar_pip_install [{{ ar_pip_install }}]
      ar_pip_executable [{{ ar_pip_executable }}]
      ar_pip_requirements [{{ pip_requirements|default('UNDEFINED') }}]

      ansible_user_id [{{ ansible_user_id }}]

      ar_owner [{{ ar_owner }}]
      ar_backup_conf [{{ ar_backup_conf }}]

      ar_packages
      {{ ar_packages|to_nice_yaml }}
      ar_links
      {{ ar_links|to_nice_yaml }}

      ar_config
      {{ ar_config|to_nice_yaml }}

  debug:
    msg: "{{ msg.split('\n') }}"

# EOF
...
```

2.1.4 links.yml

Synopsis: Configure links.

Description of the task.

[links.yml]

```
---

- name: "links: Create directories for links"
  file:
    state: "directory"
    dest: "{{ item.dest|dirname }}"
  loop: "{{ ar_links }}"

- name: "links: Create links"
  file:
    state: "link"
    src: "{{ item.src }}"
    dest: "{{ item.dest }}"
    force: "{{ item.force|default(false) }}"
  loop: "{{ ar_links }}"

# EOF
...
```

2.1.5 packages.yml

Synopsis: Configure packages.

Description of the task.

[packages.yml]

```yaml
---

# packages ------------------------------------------------------------

# FreeBSD
- name: "packages: Install Ansible Runner FreeBSD packages"
  block:
    - name: "packages: Install Ansible Runner packages FreeBSD"
      pkgng:
        name: "{{ item.name }}"
      loop: "{{ ar_packages }}"
      register: result
      until: result is succeeded
      retries: "{{ freebsd_install_retries }}"
      delay: "{{ freebsd_install_delay }}"
    - name: "packages: Debug FreeBSD packages"
      when: ar_debug|bool
      debug:
        var: result
  when:
    - not ar_pip_install
    - ansible_os_family == "FreeBSD"
    - freebsd_install_method|lower == "packages"

- name: "packages: Install FreeBSD ports"
  block:
    - name: "packages: Install Ansible Runner ports FreeBSD"
      portinstall:
        name: "{{ item.name }}"
        use_packages: "{{ freebsd_use_packages }}"
      loop: "{{ ar_packages }}"
      register: result
      until: result is succeeded
      retries: "{{ freebsd_install_retries }}"
      delay: "{{ freebsd_install_delay }}"
    - name: "packages: Debug FreeBSD ports"
      when: ar_debug|bool
      debug:
        var: result
  when:
    - not ar_pip_install
    - ansible_os_family == "FreeBSD"
    - freebsd_install_method|lower == "ports"

# Linux
- name: "packages: Install Ansible Runner packages Linux"
  block:
    - name: "packages: Install Ansible Runner packages Linux"
      package:
        name: "{{ item.name }}"
      loop: "{{ ar_packages }}"
```

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```
      register: result
      until: result is succeeded
      retries: "{{ linux_install_retries }}"
      delay: "{{ linux_install_delay }}"
    - name: "packages: Debug Linux"
      when: ar_debug|bool
      debug:
        var: result
  when:
    - not ar_pip_install
    - ansible_os_family == "RedHat" or ansible_os_family == "Debian"

# pip -----------------------------------------------------------------
- name: "packages: Test {{ ar_pip_executable }} exists"
  when: ar_pip_install
  block:
    - name: "packages: Stat {{ ar_pip_executable }}"
      stat:
        path: "{{ ar_pip_executable }}"
      register: result
    - name: "packages: Not exists {{ ar_pip_executable }}"
      fail:
        msg: "[ERROR] {{ ar_pip_executable }} does not exist."
      when: not result.stat.exists

- name: "packages: Install Ansible Runner pip packages for {{ ar_owner }}"
  when: ar_pip_install
  become_user: "{{ ar_owner }}"
  become: true
  changed_when: false  # Note 1.
  pip:
    name: "{{ item.name }}"
    executable: "{{ ar_pip_executable }}"
    version: "{{ item.version|default(omit) }}"
    state: "{{ item.state|default(omit) }}"
    extra_args: "{{ pip_extraagrs|default(omit) }}"
  loop: "{{ ar_packages }}"
  register: result
  until: result is succeeded
  retries: "{{ pip_install_retries }}"
  delay: "{{ pip_install_delay }}"

- name: "packages: Debug pip packages"
  when:
    - ar_pip_install
    - ar_debug|bool
  debug:
    var: result

- name: "packages: Install Ansible Runner pip requirements for {{ ar_owner }}"
  when:
    - ar_pip_install
    - ar_pip_requirements is defined
  become_user: "{{ ar_owner }}"
  become: true
  changed_when: false  # Note 1.
  pip:
```

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```
    requirements: "{{ ar_pip_requirements }}"
    executable: "{{ ar_pip_executable }}"
    extra_args: "{{ pip_extraagrs|default(omit) }}"
  register: result
  until: result is succeeded
  retries: "{{ pip_install_retries }}"
  delay: "{{ pip_install_delay }}"

- name: "packages: Debug pip requirements"
  when:
    - ar_pip_install
    - ar_debug|bool
  debug:
    var: result

# Note 1.
# The pip module isn't always idempotent #28952
# https://github.com/ansible/ansible/issues/28952

# EOF
...
```

2.1.6 vars.yml

Synopsis: Configure vars.

Description of the task.

[vars.yml]

```
---

- name: "Declare ar_owner when undefined"
  when: ar_owner is undefined
  set_fact:
    ar_owner: "{{ ansible_user_id }}"

- name: "Default vars for {{ ansible_os_family }}
                          {{ ansible_distribution }}
                          {{ ansible_distribution_release }}"
  include_vars: "{{ item }}"
  with_first_found:
    - files:
        - "{{ ansible_distribution }}-{{ ansible_distribution_release }}.yml"
        - "{{ ansible_distribution }}.yml"
        - "{{ ansible_os_family }}.yml"
        - "defaults.yml"
        - "default.yml"
      paths: "{{ role_path }}/vars/defaults"

- name: "Custom vars for {{ ansible_os_family }}
                         {{ ansible_distribution }}
                         {{ ansible_distribution_release }}"
  include_vars: "{{ item }}"
  with_first_found:
    - files:
```

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```
        - "{{ ansible_distribution }}-{{ ansible_distribution_release }}.yml"
        - "{{ ansible_distribution }}.yml"
        - "{{ ansible_os_family }}.yml"
        - "defaults.yml"
        - "default.yml"
      paths: "{{ role_path }}/vars"

# EOF
...
```

CHAPTER

THREE

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CHAPTER

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CHAPTER

FIVE

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