

ЛР 2. Ansible + Caddy

Часть 1. Установка и настройка Ansible

1. Установили пакетный менеджер `pip` и сам `ansible` командами `curl https://bootstrap.pypa.io/ get-pip.py -o get-pip.py && python3 get-pip.py` и `python3 -m pip install ansible`

```
root@netakie:~# ls -ll
total 2224
drwxr-xr-x 5 root root    4096 Oct 12 18:06 ansible
drwxr-xr-x 3 root root    4096 Oct 14 14:38 etc
-rw-r--r-- 1 root root 2266947 Oct 12 18:21 get-pip.py
root@netakie:~#
```

2. Создали директорию `ansible`, где и работали далее. Создали базовый конфиг файл, затем папку `inventory` и в ней файл с хостами (тренировались на `localhost`) .

```
root@netakie:~/ansible# ls -ll
total 20
-rw-r--r-- 1 root root    75 Oct 12 18:06 ansible.cfg
drwxr-xr-x 5 root root   4096 Oct 12 18:06 caddy_deploy
-rw-r--r-- 1 root root   375 Oct 12 18:06 caddy_deploy.yml
drwxr-xr-x 3 root root   4096 Oct 12 18:15 inventory
drwxr-xr-x 3 root root   4096 Oct 12 18:06 roles
```

ansible/ansible.cfg:

```
GNU nano 6.2 ansible.cfg
[defaults]
host_key_checking = false
inventory          = inventory/hosts
|
```

ansible/inventory/hosts

```
GNU nano 6.2 hosts
[my_servers]
local_server    ansible_host=localhost
```

3. Проверяем, что сервер с Ansible подключился к localhost командами `ansible my_servers -m ping -c local` и `ansible my_servers -m setup -c local`

```
root@netakie:~/ansible# ansible my_servers -m ping -c local
[WARNING]: Platform linux on host local_server is using the discovered Python interpreter at
/usr/bin/python3.10, but future installation of another Python interpreter could change the meaning of that
path. See https://docs.ansible.com/ansible-core/2.17/reference_appendices/interpreter_discovery.html for more
information.
local_server | SUCCESS => {
  "ansible_facts": {
    "discovered_interpreter_python": "/usr/bin/python3.10"
  },
  "changed": false,
  "ping": "pong"
}
root@netakie:~/ansible# ansible my_servers -m setup -c local
[WARNING]: Platform linux on host local_server is using the discovered Python interpreter at /usr/bin/python3.10, but future
installation of another Python interpreter could change the meaning of that path. See https://docs.ansible.com/ansible-
core/2.17/reference_appendices/interpreter_discovery.html for more information.
local_server | SUCCESS => {
  "ansible_facts": {
    "ansible_all_ipv4_addresses": [
      "192.168.0.7"
    ],
    "ansible_all_ipv6_addresses": [
      "fe80::f816:3eff:fe96:d258"
    ],
    "ansible_apparmor": {
      "status": "enabled"
    },
    "ansible_architecture": "x86_64",
    "ansible_bios_date": "04/01/2014",
    "ansible_bios_vendor": "SeaBIOS",
    "ansible_bios_version": "1.15.0-1",
    "ansible_board_asset_tag": "NA",
    "ansible_board_name": "NA",
```

4. Создание и удаление файла на клиенте:
- создаем текстовый файл с произвольным содержимым, через модуль shell: `ansible my_servers -c local -m shell -a 'echo test_file_content > $HOME/test.txt'`
 - проверяем, что по нужному пути создан нужный файл с нужным именем и содержимым
 - удаляем файл через модуль file: `ansible my_servers -c local -m file -a 'path=$HOME/test.txt state=absent'`

```

root@netakie:~/ansible# ansible my_servers -c local -m shell -a 'echo test_file_content > $HOME/test.txt'
[WARNING]: Platform linux on host local_server is using the discovered Python interpreter at /usr/bin/python3.10, but future
installation of another Python interpreter could change the meaning of that path. See https://docs.ansible.com/ansible-
core/2.17/reference_appendices/interpreter_discovery.html for more information.
local_server | CHANGED | rc=0 >>

root@netakie:~/ansible# cd $HOME
root@netakie:~# ls -ll
total 2228
drwxr-xr-x 5 root root    4096 Oct 14 20:30 ansible
drwxr-xr-x 3 root root    4096 Oct 14 14:38 etc
-rw-r--r-- 1 root root 2266947 Oct 12 18:21 get-pip.py
-rw-r--r-- 1 root root     18 Oct 14 20:49 test.txt
root@netakie:~# cat test.txt
test_file_content
root@netakie:~# cd ansible
root@netakie:~/ansible# ansible my_servers -c local -m file -a 'path=$HOME/test.txt state=absent'
[WARNING]: Platform linux on host local_server is using the discovered Python interpreter at /usr/bin/python3.10, but future
installation of another Python interpreter could change the meaning of that path. See https://docs.ansible.com/ansible-
core/2.17/reference_appendices/interpreter_discovery.html for more information.
local_server | CHANGED => {
  "ansible_facts": {
    "discovered_interpreter_python": "/usr/bin/python3.10"
  },
  "changed": true,
  "path": "/root/test.txt",
  "state": "absent"
}
root@netakie:~/ansible# cd $HOME
root@netakie:~# ls -ll
total 2224
drwxr-xr-x 5 root root    4096 Oct 14 20:30 ansible
drwxr-xr-x 3 root root    4096 Oct 14 14:38 etc
-rw-r--r-- 1 root root 2266947 Oct 12 18:21 get-pip.py
root@netakie:~#

```

Часть 2. Установка Caddy

1. Создали в рабочей директории папку roles и в ней инициализировали исходное конфигурационное “дерево” (пользовались командой `ansible-galaxy init caddy_deploy`)

```
root@netakie:~# cd ansible
root@netakie:~/ansible# ls -ll
total 20
-rw-r--r-- 1 root root 75 Oct 14 20:30 ansible.cfg
drwxr-xr-x 5 root root 4096 Oct 12 18:06 caddy_deploy
-rw-r--r-- 1 root root 375 Oct 12 18:06 caddy_deploy.yml
drwxr-xr-x 3 root root 4096 Oct 14 20:35 inventory
drwxr-xr-x 3 root root 4096 Oct 12 18:06 roles
root@netakie:~/ansible# cd roles
root@netakie:~/ansible/roles# tree
.
├── caddy_deploy
│   ├── README.md
│   ├── defaults
│   │   └── main.yml
│   ├── files
│   ├── handlers
│   │   └── main.yml
│   ├── meta
│   │   └── main.yml
│   ├── tasks
│   │   └── main.yml
│   ├── templates
│   │   └── Caddyfile.j2
│   ├── tests
│   │   ├── inventory
│   │   └── test.yml
│   └── vars
│       └── main.yml
```

2. Наполнили файл roles/caddy_deploy/tasks/main.yml

```
GNU nano 6.2 main.yml
# tasks file for caddy_deploy

- name: Install prerequisites
  apt:
    pkg:
      - debian-keyring
      - debian-archive-keyring
      - apt-transport-https
      - curl

- name: Add key for Caddy repo
  apt_key:
    url: https://dl.cloudsmith.io/public/caddy/stable/gpg.key
    state: present
    keyring: /usr/share/keyrings/caddy-stable-archive-keyring.gpg

- name: add Caddy repo
  apt_repository:
    repo: "deb [signed-by=/usr/share/keyrings/caddy-stable-archive-keyring.gpg] https://dl.cloudsmith.io/public/caddy/stable/deb/debian any-version main"
    state: present
    filename: caddy-stable

- name: add Caddy src repo
  apt_repository:
    repo: "deb-src [signed-by=/usr/share/keyrings/caddy-stable-archive-keyring.gpg] https://dl.cloudsmith.io/public/caddy/stable/deb/debian any-version main"
    state: present
    filename: caddy-stable

- name: Install Caddy webserver
  apt:
    name: caddy
    update_cache: yes
    state: present
```

3. В рабочей директории создали собственно файл конфигурации самого плейбука caddy_deploy.yml, где указываем нужные нам хосты и роли

```
GNU nano 6.2 caddy_deploy.yml

- name: Install and configure Caddy webserver # Любое описание
  hosts: my_servers # хосты из файла inventory/hosts, где будем выполнять наш плейбук
  connection: local # аналог -c local, но для плейбуков

  roles:
    - caddy_deploy # собственно, роль для выполнения
```

4. Запускаем наш плейбук командой ansible-playbook caddy_deploy.yml

```
root@netakie:~/ansible# ansible-playbook caddy_deploy.yml

PLAY [Install and configure Caddy webserver] *****

TASK [Gathering Facts] *****
[WARNING]: Platform linux on host local_server is using the discovered Python interpreter at /usr/bin/python3.10, but future installation of another Python interpreter could change the meaning of that path. See https://docs.ansible.com/ansible-core/2.17/reference_appendices/interpreter_discovery.html for more information.
ok: [local_server]

TASK [caddy_deploy : Install prerequisites] *****
ok: [local_server]

TASK [caddy_deploy : Add key for Caddy repo] *****
ok: [local_server]

TASK [caddy_deploy : add Caddy repo] *****
ok: [local_server]

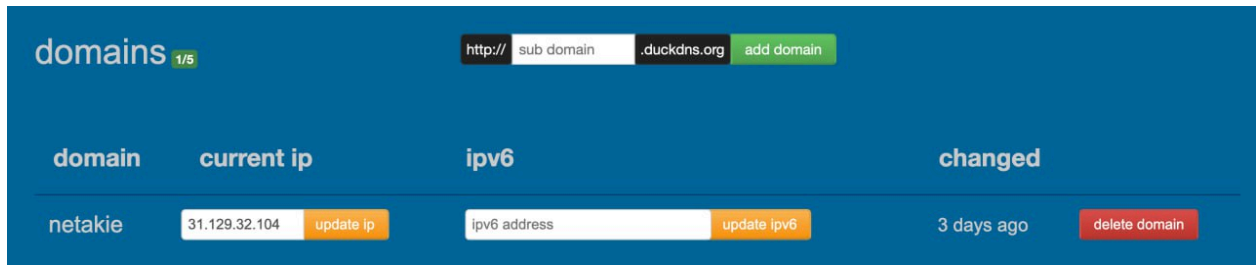
TASK [caddy_deploy : add Caddy src repo] *****
ok: [local_server]

TASK [caddy_deploy : Install Caddy webserver] *****
ok: [local_server]

PLAY RECAP *****
local_server : ok=6 changed=0 unreachable=0 failed=0 skipped=0 rescued=0 ignored=0
```

Часть 3. Домен и настройка Caddyfile

1. Регистрируем себе бесплатный домен на ip-адрес виртуальной машины root, на сервисе duckdns.org



2. Создали шаблон (Jinja2) и переменные (в формате {{ var }})

roles/caddy_deploy/templates/Caddyfile.j2

```
GNU nano 6.2 Caddyfile.j2
netakie.duckdns.org {
    root * /usr/share/caddy
    file_server

    log {
        output file /var/log/caddy_access.log
        format json
        level INFO
    }
}
```

roles/caddy_deploy/vars/main.yml

```
GNU nano 6.2 main.yml
---
# vars file for caddy_deploy

domain_name: netakie.duckdns.org

log: # Можно поиграться со значениями
    file: /var/log/caddy_access.log
    level: "INFO"
```

3. Добавили в наш плейбук (в tasks) новые шаги, отвечающие за создание конфигурационного файла из шаблона и последующую перезагрузку сервиса

```
GNU nano 6.2 main.yml
# tasks file for caddy_deploy
- name: Install prerequisites
  apt:
    pkg:
      - debian-keyring
      - debian-archive-keyring
      - apt-transport-https
      - curl
- name: Add key for Caddy repo
  apt_key:
    url: https://dl.cloudsmith.io/public/caddy/stable/gpg.key
    state: present
    keyring: /usr/share/keyrings/caddy-stable-archive-keyring.gpg
- name: add Caddy repo
  apt_repository:
    repo: "deb [signed-by=/usr/share/keyrings/caddy-stable-archive-keyring.gpg] https://dl.cloudsmith.io/public/caddy/stable/deb/debian any-version main"
    state: present
    filename: caddy-stable
- name: add Caddy src repo
  apt_repository:
    repo: "deb-src [signed-by=/usr/share/keyrings/caddy-stable-archive-keyring.gpg] https://dl.cloudsmith.io/public/caddy/stable/deb/debian any-version main"
    state: present
    filename: caddy-stable
- name: Install Caddy webserver
  apt:
    name: caddy
    update_cache: yes
    state: present
- name: Create config file
  template:
    src: templates/Caddyfile.j2 # Откуда берем
    dest: /etc/caddy/Caddyfile # Куда кладем
- name: Reload Caddy with new config
  service:
    name: caddy
    state: reloaded
```

4. Снова запускаем плейбук и убеждаемся, что тестовая страничка Caddy автоматически поднялась на подписанном сертификате с https

```
root@netakie:~/ansible# ansible-playbook caddy_deploy.yml

PLAY [Install and configure Caddy webserver] *****

TASK [Gathering Facts] *****
[WARNING]: Platform linux on host local_server is using the discovered Python interpreter at /usr/bin/python3.10, but future installation of another Python interpreter could change the meaning of that path. See https://docs.ansible.com/ansible-core/2.17/reference_appendices/interpreter_discovery.html for more information.
ok: [local_server]

TASK [caddy_deploy : Install prerequisites] *****
ok: [local_server]

TASK [caddy_deploy : Add key for Caddy repo] *****
ok: [local_server]

TASK [caddy_deploy : add Caddy repo] *****
ok: [local_server]

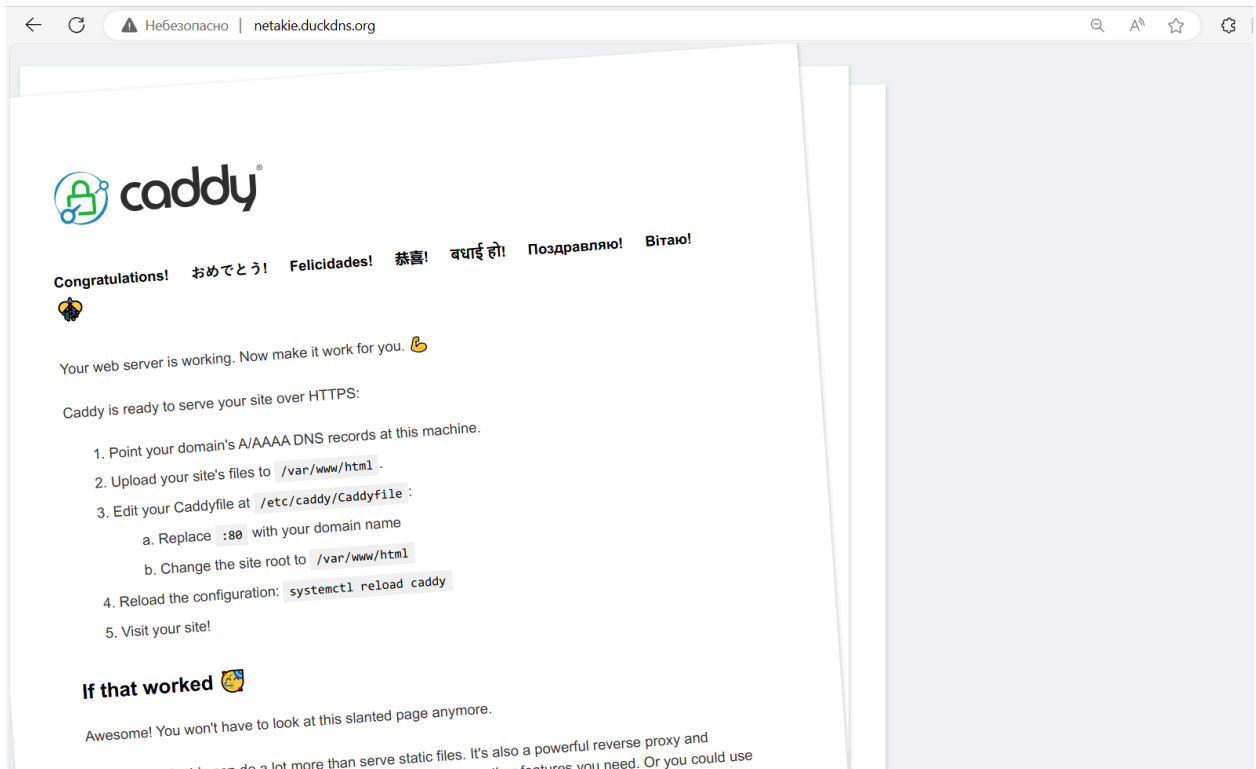
TASK [caddy_deploy : add Caddy src repo] *****
ok: [local_server]

TASK [caddy_deploy : Install Caddy webserver] *****
ok: [local_server]

TASK [caddy_deploy : Create config file] *****
ok: [local_server]

TASK [caddy_deploy : Reload Caddy with new config] *****
changed: [local_server]

PLAY RECAP *****
local_server : ok=8 changed=1 unreachable=0 failed=0 skipped=0 rescued=0 ignored=0
```



Задания:

1. Переписать пример с созданием и удалением файла из шага 5 Части 1 с ad-hoc команд на плейбук формат, а так же добавить четвертый шаг - перед удалением поменять содержимое файла на любое другое.

ЛИСТИНГ:


```
GNU nano 6.2 task1.yml
---
- name: Create, modify and delete file
  hosts: my_servers
  connection: local
  tasks:
    - name: Create test file
      copy:
        content: "test_file_content"
        dest: "$HOME/test.txt"

    - name: Change content of test file
      lineinfile:
        path: "$HOME/test.txt"
        line: "new_content"

    - name: Delete test file
      file:
        path: "$HOME/test.txt"
        state: absent
```

работа плейбука:

```
root@netakie:~/ansible# ansible-playbook task1.yml

PLAY [Create, modify and delete file] *****

TASK [Gathering Facts] *****
[WARNING]: Platform linux on host local_server is using the discovered Python interpreter at /usr/bin/python3.10, but future installation of another Python interpreter could change the meaning of that path. See https://docs.ansible.com/ansible-core/2.17/reference_appendices/interpreter_discovery.html for more information.
ok: [local_server]

TASK [Create test file] *****
changed: [local_server]

TASK [Change content of test file] *****
changed: [local_server]

TASK [Delete test file] *****
changed: [local_server]

PLAY RECAP *****
local_server : ok=4 changed=3 unreachable=0 failed=0 skipped=0 rescued=0 ignored=0
```

2. Вместо дефолтной страницы Caddy подставили свою index.html с Hello world внутри. Добавили это в качестве дополнительного шага в tasks. Правка шаблона Caddyfile.j2 не потребовалась.

доп. шаги в tasks:

```

GNU nano 6.2 main.yml *
- name: Install Caddy webserver
  apt:
    name: caddy
    update_cache: yes
    state: present

- name: Create index.html file
  copy:
    content: |
      <!DOCTYPE html>
      <html lang="en">
      <head>
        <meta charset="UTF-8">
        <meta name="viewport" content="width=device-width, initial-scale=1.0">
        <title>Hello World</title>
      </head>
      <body>
        <h1>Hello, World!</h1>
      </body>
      </html>
    dest: /usr/share/caddy/index.html
    owner: caddy
    group: caddy
    mode: '0644'

- name: Create Caddyfile with custom config
  copy:
    content: |
      :80 {
        root * /usr/share/caddy
        file_server
        header {
          X-Frame-Options "DENY"
          X-Content-Type-Options "nosniff"
        }
        reverse_proxy /api/* http://localhost:8080 # Проксирование запросов на /api
      }
    dest: /etc/caddy/Caddyfile
    owner: root
    group: root
    mode: '0644'

- name: Reload Caddy with new config
  service:
    name: caddy
    state: reloaded

```

работа плейбука:

```

root@metakie:~/ansible# ansible-playbook caddy_deploy.yml

PLAY [Install and configure Caddy webserver] *****

TASK [Gathering Facts] *****
[WARNING]: Platform linux on host local_server is using the discovered Python interpreter at /usr/bin/python3.10, but future installation of another Python interpreter could change the
meaning of that path. See https://docs.ansible.com/ansible-core/2.17/reference_appendices/interpreter_discovery.html for more information.
ok: [local_server]

TASK [caddy_deploy : Install prerequisites] *****
ok: [local_server]

TASK [caddy_deploy : Add key for Caddy repo] *****
ok: [local_server]

TASK [caddy_deploy : add Caddy repo] *****
ok: [local_server]

TASK [caddy_deploy : add Caddy src repo] *****
ok: [local_server]

TASK [caddy_deploy : Install Caddy webserver] *****
ok: [local_server]

TASK [caddy_deploy : Create index.html file] *****
ok: [local_server]

TASK [caddy_deploy : Create Caddyfile with custom config] *****
ok: [local_server]

TASK [caddy_deploy : Reload Caddy with new config] *****
changed: [local_server]

PLAY RECAP *****
local_server : ok=9 changed=1 unreachable=0 failed=0 skipped=0 rescued=0 ignored=0

```

страничка домена:

