ЛР 2. Ansible + Caddy

Часть 1. Установка и настройка Ansible

Подключились к ВМ

```
root@daniil:~#
```

Устанавливаем пакетный менеджер pip для нашего python

```
root@daniil:~# curl https://bootstrap.pypa.io/get-pip.py -o get-pip.py && python3 get-pip.py
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
100 2222k  100 2222k    0     0  5787k      0 --:--:-- --:--:-- --:--:-- 5802k
Collecting pip
  Using cached pip-24.3.1-py3-none-any.whl.metadata (3.7 kB)
Using cached pip-24.3.1-py3-none-any.whl (1.8 MB)
Installing collected packages: pip
  Attempting uninstall: pip
    Found existing installation: pip 24.3.1
    Uninstalling pip-24.3.1:
      Successfully uninstalled pip-24.3.1
Successfully installed pip-24.3.1
WARNING: Running pip as the 'root' user can result in broken permissions and conflicting behaviour with the system package manager, possibly rendering your system unusable.It is recommended to use a virtual env
ronment instead: https://pip.pypa.io/warnings/venv. Use the --root-user-action option if you know what you are doing and want to suppress this warning.
```

Устанавливаем, собственно, ansible

```
root@daniil:~# python3 -m pip install ansible
Requirement already satisfied: ansible in /usr/local/lib/python3.10/dist-packages (10.7.0)
Requirement already satisfied: ansible-core~=2.17.7 in /usr/local/lib/python3.10/dist-packages (from ansible) (2.17.7)
Requirement already satisfied: jinja2>=3.0.0 in /usr/local/lib/python3.10/dist-packages (from ansible-core~=2.17.7->ansible) (3.1.4)
Requirement already satisfied: PyYAML>=5.1 in /usr/local/lib/python3.10/dist-packages (from ansible-core~=2.17.7->ansible) (5.4.1)
Requirement already satisfied: cryptography in /usr/lib/python3/dist-packages (from ansible-core~=2.17.7->ansible) (3.4.8)
Requirement already satisfied: packaging in /usr/local/lib/python3.10/dist-packages (from ansible-core~=2.17.7->ansible) (24.2)
Requirement already satisfied: resolvelib<1.1.0,>=0.5.3 in /usr/local/lib/python3.10/dist-packages (from ansible-core~=2.17.7->ansible) (1.0.1)
Requirement already satisfied: MarkupSafe>=2.0 in /usr/local/lib/python3.10/dist-packages (from jinja2>=3.0.0->ansible-core~=2.17.7->ansible) (3.0.2)
WARNING: Running pip as the 'root' user can result in broken permissions and conflicting behaviour with the system package manager, possibly rendering your system unusable.It is recommended to use a virtual envi
ronment instead: https://pip.pypa.io/warnings/venv. Use the --root-user-action option if you know what you are doing and want to suppress this warning.
```

Выбираем или создаем директорию, где будем работать. Создаем базовый конфиг файл, затем папку inventory и в ней файл с хостами

```
root@daniil:/home/ansible# cat ansible.cfg
[defaults]
host_key_checking = False
inventory = inventory/hosts
root@daniil:/home/ansible# cat inventory/hosts
[my_servers]
local_server ansible_host=87.228.36.105
root@daniil:/home/ansible#
```

Проверяем, что сервер с Ansible подключился к "клиенту"

```
root@daniil:/home/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@daniil:/home/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": [
            "192.168.0.20"
        ],
        "ansible_all_ipv6_addresses": [
            "fe80::f816:3eff:fe42:16ac"
        ],
        "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",
        "ansible_board_serial": "NA",
        "ansible_board_vendor": "NA",
        "ansible_board_version": "NA",
        "ansible_chassis_asset_tag": "NA",
        "ansible_chassis_serial": "NA",
        "ansible_chassis_vendor": "QEMU",
        "ansible_chassis_version": "pc-i440fx-6.2",
        "ansible_cmdline": {
```

Создаем текстовый файл с производным содержимым, через модуль shell

Проверяем, что по нужному пути создался нужный файл с нужным именем и содержимым и удаляем файл через модуль file

Часть 2. Установка Caddy

Для начала создадим в рабочей директории папку roles и в ней инициализируем исходное конфигурационное "дерево"

Наполняем файл roles/caddy_deploy/tasks/main.yml

Запускаем плейбук: ansible-playbook caddy_deploy.yml и проверяем, успешно ли все шаги выполнились

Часть 3. Домен и настройка Caddyfile

Регистрируем себе бесплатный домен на выданный ранее ip-адрес, например на сервисе duckdns.org

Снова запускаем плейбук, после чего вводим в браузере имя своего домена и убеждаемся, что тестовая страничка Caddy автоматически поднялась на подписанном сертификате с https
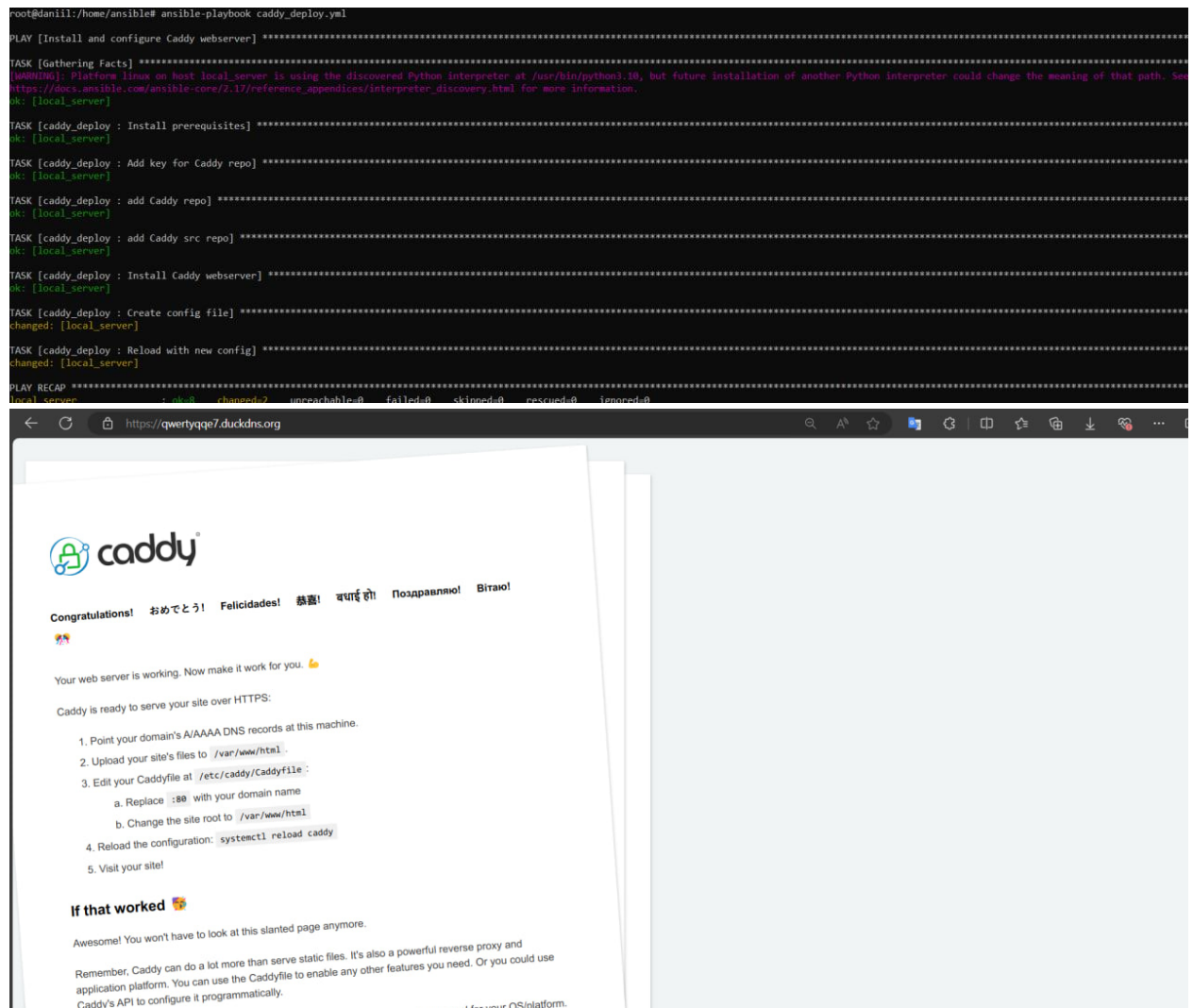
Задание 1

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.

Создаём playbook (task1.yml)
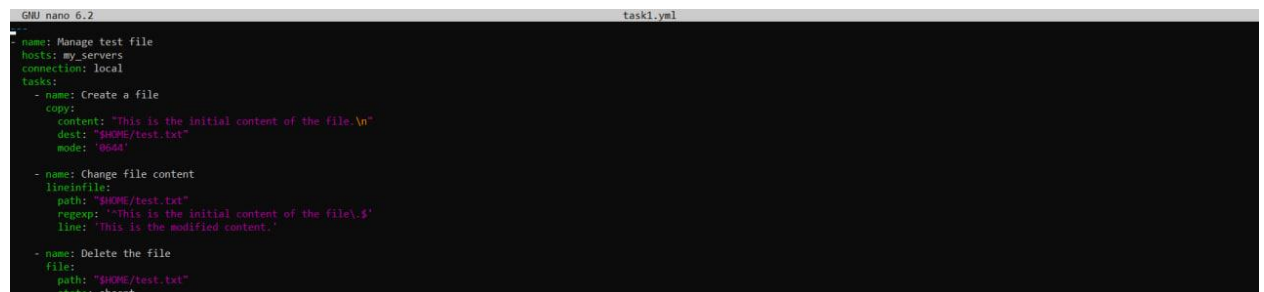
```
root@daniil:/home/ansible# ansible-playbook task1.yml

PLAY [Manage test 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 a file] ********************************************************
changed: [local_server]

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

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

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

Задание 2

Сделать всю работу на удаленном сервере, а не на одном и том же localhost

Настроим удалённый сервер


```
  GNU nano 6.2                                              inventory/hosts
[my_servers]
remote_server ansible_host=87.228.36.105 ansible_user=root ansible_ssh_pass=DQjDKXqgbKen
```

Проверим подключение


```
root@daniil:/home/ansible# ansible my_servers -m ping
[WARNING]: Platform linux on host remote_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.
remote_server | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python3.10"
    },
    "changed": false,
    "ping": "pong"
}
```

Изменим playbook для работы на удалённом сервере


```
  GNU nano 6.2
---
- name: Manage test file
  hosts: my_servers
  tasks:
    - name: Create a file
      copy:
        content: "This is the initial content of the file.\n"
        dest: "/root/test.txt"
        mode: '0644'

    - name: Change file content
      lineinfile:
        path: "/root/test.txt"
        regexp: '^This is the initial content of the file\.$'
        line: 'This is the modified content.'

    - name: Delete the file
      file:
        path: "/root/test.txt"
        state: absent
```

Запустим его

```
root@daniil:/home/ansible# ansible-playbook task1.yml

PLAY [Manage test file] ************************************************************************

TASK [Gathering Facts] ************************************************************************
[WARNING]: Platform linux on host remote_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: [remote_server]

TASK [Create a file] ************************************************************************
changed: [remote_server]

TASK [Change file content] ************************************************************************
changed: [remote_server]

TASK [Delete the file] ************************************************************************
changed: [remote_server]

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

Адаптируем playbook для caddy

```yaml
---
- name: Install and configure Caddy webserver   # Любое описание
  hosts: my_servers    # хосты из файла inventory/hosts, где будем выполнять наш плейбук
  roles:
    - caddy_deploy   # собственно, роль для выполнения
```

Запустим его

```
root@daniil:/home/ansible# ansible-playbook caddy_deploy.yml

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

TASK [Gathering Facts] ************************************************************************
[WARNING]: Platform linux on host remote_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: [remote_server]

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

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

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

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

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

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

TASK [caddy_deploy : Reload with new config] ************************************************************************
changed: [remote_server]

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

Проверим состояние службы

```
root@daniil:/home/ansible# ansible my_servers -m shell -a 'service caddy status'
[WARNING]: Platform linux on host remote_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.
remote_server | CHANGED | rc=0 >>
● caddy.service - Caddy
     Loaded: loaded (/lib/systemd/system/caddy.service; enabled; vendor preset: enabled)
     Active: active (running) since Sun 2024-12-08 00:55:45 UTC; 2h 3min ago
       Docs: https://caddyserver.com/docs/
    Process: 29053 ExecReload=/usr/bin/caddy reload --config /etc/caddy/Caddyfile --force (code=exited, status=0/SUCCESS)
   Main PID: 25384 (caddy)
      Tasks: 8 (limit: 2268)
     Memory: 11.4M
        CPU: 961ms
     CGroup: /system.slice/caddy.service
             └─25384 /usr/bin/caddy run --environ --config /etc/caddy/Caddyfile

Dec 08 02:58:16 daniil caddy[25384]: {"level":"info","ts":1733626696.676351,"logger":"http","msg":"enabling HTTP/3 listener","addr":":443"}
Dec 08 02:58:16 daniil caddy[25384]: {"level":"info","ts":1733626696.676383,"logger":"http.log","msg":"server running","name":"srv0","protocols":["h1","h2","h3"]}
Dec 08 02:58:16 daniil caddy[25384]: {"level":"info","ts":1733626696.676425,"logger":"http.log","msg":"server running","name":"remaining_auto_https_redirects","protocols":["h1","h2","h3"]}
Dec 08 02:58:16 daniil caddy[25384]: {"level":"info","ts":1733626696.676443,"logger":"http","msg":"enabling automatic TLS certificate management","domains":["qwertyqqe7.duckdns.org"]}
Dec 08 02:58:16 daniil caddy[25384]: {"level":"info","ts":1733626696.676451,"logger":"http","msg":"servers shutting down with eternal grace period"}
Dec 08 02:58:16 daniil caddy[25384]: {"level":"info","ts":1733626696.6768904,"msg":"autosaved config (load with --resume flag)","file":"/var/lib/caddy/.config/caddy/autosave.json"}
Dec 08 02:58:16 daniil caddy[25384]: {"level":"info","ts":1733626696.6769347,"logger":"admin.api","msg":"load complete"}
Dec 08 02:58:16 daniil caddy[25384]: {"level":"info","ts":1733626696.6787343,"logger":"admin","msg":"stopped previous server","address":"localhost:2019"}
Dec 08 02:58:16 daniil systemd[1]: Reloaded Caddy.
Dec 08 02:58:25 daniil caddy[25384]: 2024-12-08 02:58:25.069720328 +0000 UTC m=+7359.863735012 write error: can't open new logfile: open /var/log/caddy_access.log: permission denied
```