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«НАЦИОНАЛЬНЫЙ ИССЛЕДОВАТЕЛЬСКИЙ УНИВЕРСИТЕТ ИТМО»
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Отчет по лабораторной работе №2
по дисциплине «Администрирование компьютерных сетей»

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Часть 1.

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

```
root@hahaton:~# 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 5008k      0 --:--:-- --:--:-- --:--:-- 5005k
Collecting pip
  Downloading pip-24.3.1-py3-none-any.whl.metadata (3.7 kB)
Collecting setuptools
  Downloading setuptools-75.3.0-py3-none-any.whl.metadata (6.9 kB)
Collecting wheel
  Downloading wheel-0.44.0-py3-none-any.whl.metadata (2.3 kB)
Downloading pip-24.3.1-py3-none-any.whl (1.8 MB)
 1.8/1.8 MB 16.3 MB/s eta 0:00:00
Downloading setuptools-75.3.0-py3-none-any.whl (1.3 MB)
 1.3/1.3 MB 42.6 MB/s eta 0:00:00
Downloading wheel-0.44.0-py3-none-any.whl (67 kB)
Installing collected packages: wheel, setuptools, pip
Successfully installed pip-24.3.1 setuptools-75.3.0 wheel-0.44.0
```

Создали конфиг файл и папку inventory и в ней файл с хостами.

Проверяем, что сервер с ansible подключился к “клиенту”: `ansible my_servers -m setup -c local`

```
root@hahaton:~/ansible_project# 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": [
      "192.168.0.14"
    ],
    "ansible_all_ipv6_addresses": [
      "fe80::f816:3eff:fee6:cab"
    ],
    "ansible_apparmor": {
      "status": "enabled"
    }
  },
  "discovered_interpreter_python": "/usr/bin/python3.10"
}
```

Создаем текстовый файл с произвольным содержимым: `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@hahaton:~/ansible_project# 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@hahaton:~/ansible_project# ls -la ..
total 2264
drwx----- 7 root root 4096 Nov 7 10:33 .
drwxr-xr-x 20 root root 4096 Nov 7 09:02 ..
drwxr-xr-x 3 root root 4096 Nov 7 10:32 .ansible
-rw-r--r-- 1 root root 3106 Oct 15 2021 .bashrc
drwx----- 3 root root 4096 Nov 7 10:27 .cache
drwxr-xr-x 3 root root 4096 Nov 7 10:30 .local
-rw-r--r-- 1 root root 161 Jul 9 2019 .profile
drwx----- 2 root root 4096 Nov 7 09:02 .ssh
drwxr-xr-x 3 root root 4096 Nov 7 10:31 ansible_project
-rw-r--r-- 1 root root 2275758 Nov 7 10:27 get-pip.py
-rw-r--r-- 1 root root 18 Nov 7 10:33 test.txt
root@hahaton:~/ansible_project# 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"
}

```

Часть 2.

Создали в рабочей директории папку roles и в ней инициализировали исходное конфигурационное tree: ansible-galaxy init caddy_deploy

```

root@hahaton:~/ansible_project# tree
.
├── ansible.cfg
├── caddy_deploy.yml
├── inventory
│   └── hosts
├── manage_playbook.yml
├── roles
│   └── 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

```

Наполняем файл roles/caddy_deploy/tasks/main.yml и в рабочей директории создаем файл конфигурации самого плейбука, где указываем нужные нам хосты и роли.

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

```
root@hahaton:~/ansible_project/roles# cd ..
root@hahaton:~/ansible_project# 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 informat
ion.
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] *****
*****
changed: [local_server]

PLAY RECAP *****
local_server : ok=6 changed=1 unreachable=0 failed=0
skipped=0 rescued=0 ignored=0

root@hahaton:~/ansible_project# service caddy status
● caddy.service - Caddy
   Loaded: loaded (/lib/systemd/system/caddy.service; enabled; vendor pr
   Active: active (running) since Thu 2024-11-07 10:43:29 UTC; 25s ago
     Docs: https://caddyserver.com/docs/
    Main PID: 4453 (caddy)
      Tasks: 8 (limit: 2268)
     Memory: 10.7M
        CPU: 88ms
    CGroup: /system.slice/caddy.service
            └─4453 /usr/bin/caddy run --environ --config /etc/caddy/Caddy
```

Часть 3.

Регистрируем домен на выданный ip-адрес на сервисе duckdns.org.
<https://hahaton303.duckdns.org/>

domain	current ip	ipv6	changed
hahaton303	31.129.32.3 update ip	ipv6 address update ipv6	4 seconds ago delete domain

This site is protected by reCAPTCHA and the Google
[Privacy Policy](#) and
[Terms of Service](#) apply.

Создали шаблон (Jinja2) и переменные roles/caddy_deploy/templates/Caddyfile.j2

```
{{ domain_name }} {
```

```
    root * /usr/share/caddy
```

```
    file_server
```

```
    log {
```

```
        output file {{ log.file }}
```

```
        format json
```

```
        level {{ log.level }}
```

```
    }
```

```
}
```

roles/caddy_deploy/vars/main.yml

```
---
```

```
# vars file for caddy_deploy
```

```
domain_name: hahaton303.duckdns.org
```

```
log: # Можно поиграться со значениями
```

```
file: /var/log/caddy_access.log
```

```
level: "DEBUG"
```

Добавляем в плейбук новые шаги, отвечающие за создание конфигурационного файла из шаблона и последующую перезагрузку сервиса.

```
- name: Create config file
```

```
  template:
```

```
    src: templates/Caddyfile.j2 # Откуда берем
```

```
    dest: /etc/caddy/Caddyfile # Куда кладем
```

- name: Reload with new config

service:

name: caddy

state: reloaded

Снова запускаем плейбук:

```
root@hahaton:~/ansible_project# 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]

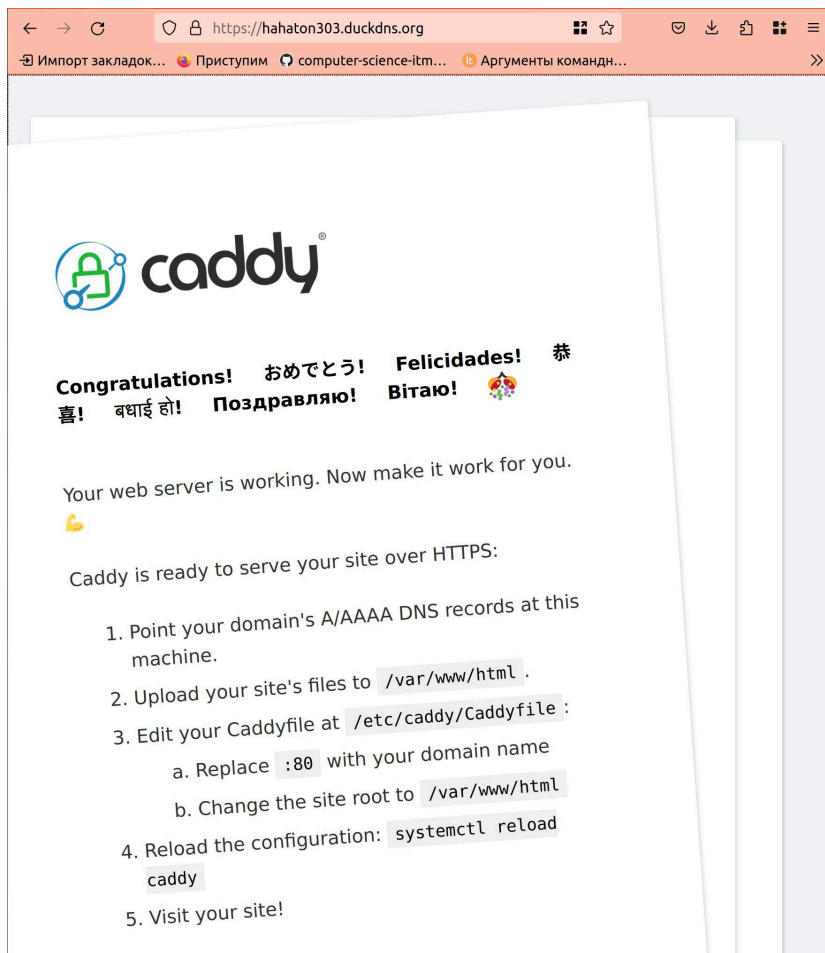
TASK [caddy_deploy : add Caddy src repo] *****
*****
ok: [local_server]

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

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

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

PLAY RECAP *****
local_server : ok=8 changed=2 unreachable=0 failed=0
skipped=0 rescued=0 ignored=0
```

Задание 1

Переписываем пример с созданием и удалением файла из шага 5 ч.1 на плейбук формат, а также перед удалением меняем содержимое файла на любое другое.

Создали Playbook, в manage_playbook.yml написали следующее:

```
--
name: Manage test file
hosts: localhost
become: false
tasks:
  - name: Create a test file with initial content
    ansible.builtin.shell: echo "test_file_content" > $HOME/test.txt

  - name: Check if the test file exists
    ansible.builtin.stat:
      path: $HOME/test.txt
      register: test_file

  - name: Change file content if it exists
    ansible.builtin.shell: echo "new_test_content" > $HOME/test.txt
    when: test_file.stat.exists

  - name: Remove the test file
    ansible.builtin.file:
      path: $HOME/test.txt
      state: absent
```

1. Создали файл с содержимым test_file_content.
2. Проверили наличие файла с помощью модуля stat.
3. Изменили содержимое файла на new_test_content, если файл существует.
4. Удалили файл.

Запустили новый плейбук.

```
root@hahaton:~/ansible_project# ansible-playbook manage_playbook.yml

PLAY [Manage test file] *****

TASK [Gathering Facts] *****
ok: [localhost]

TASK [Create a test file with initial content] *****
changed: [localhost]

TASK [Check if the test file exists] *****
ok: [localhost]

TASK [Change file content if it exists] *****
changed: [localhost]

TASK [Remove the test file] *****
changed: [localhost]

PLAY RECAP *****
localhost : ok=5    changed=3    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
```

Все задачи выполнены успешно.

Задание 2

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

Настроили удалённый сервер для работы с Ansible.

В файле inventory/hosts прописали следующее:

[my_servers]

remote_server ansible_host=31.129.32.3 ansible_user=root
ansible_ssh_pass=wFNsVT0upPcf

Проверили подключение к удалённому серверу.


```

root@hahaton:~/ansible_project# ansible my_servers -i inventory/hosts -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"
}

```

Далее изменили плейбук для работы на удалённом сервере, изменили путь:

```

GNU nano 6.2                                manage_playbook.yml *
---
- name: Manage test file
  hosts: my_servers
  become: false
  tasks:
    - name: Create a test file with initial content
      ansible.builtin.shell: echo "test_file_content" > /root/test.txt

    - name: Check if the test file exists
      ansible.builtin.stat:
        path: /root/test.txt
      register: test_file

    - name: Change file content if it exists
      ansible.builtin.shell: echo "new_test_content" > /root/test.txt
      when: test_file.stat.exists

    - name: Remove the test file
      ansible.builtin.file:
        path: /root/test.txt
        state: absent

```

Ещё раз запустили плейбук.

```

root@hahaton:~/ansible_project# ansible-playbook manage_playbook.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 test file with initial content] *****
changed: [remote_server]

TASK [Check if the test file exists] *****
ok: [remote_server]

TASK [Change file content if it exists] *****
changed: [remote_server]

TASK [Remove the test file] *****
changed: [remote_server]

PLAY RECAP *****
remote_server : ok=5    changed=3    unreachable=0    failed=0    skipped
=0    rescued=0    ignored=0

```

Изменили caddy_deploy.yml, поменяв в hosts на my_servers.

Запустили плейбук для установки Caddy на удалённом сервере.

```

root@hahaton:~/ansible_project# 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

```

Проверили состояние службы Caddy на сервере.

```

root@hahaton:~/ansible_project# 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 Thu 2024-11-07 10:43:29 UTC; 23h ago
     Docs: https://caddyserver.com/docs/
  Process: 18633 ExecReload=/usr/bin/caddy reload --config /etc/caddy/Caddyfile --force (code=exited, status=0/SUCCESS)
    Main PID: 4453 (caddy)
      Tasks: 9 (limit: 2268)
     Memory: 12.6M
        CPU: 5.631s
    CGroup: /system.slice/caddy.service
            └─4453 /usr/bin/caddy run --environ --config /etc/caddy/Caddyfile

Nov 08 09:51:55 hahaton caddy[4453]: {"level":"info","ts":1731059515.304341,"logger":"http.auto_https","msg":"enabling automatic HTTP->HTTPS redirects","server_name":"srv0"}
Nov 08 09:51:55 hahaton caddy[4453]: {"level":"info","ts":1731059515.3046646,"logger":"http","msg":"enabling HTTP/3 listener","addr":":443"}
Nov 08 09:51:55 hahaton caddy[4453]: {"level":"info","ts":1731059515.3047147,"logger":"http.log","msg":"server running","name":"srv0","protocols":["h1","h2","h3"]}
Nov 08 09:51:55 hahaton caddy[4453]: {"level":"info","ts":1731059515.3047767,"logger":"http.log","msg":"server running","name":"remaining auto_https_redirects","protocols":["h1","h2","h3"]}
Nov 08 09:51:55 hahaton caddy[4453]: {"level":"info","ts":1731059515.3047833,"logger":"http","msg":"enabling automatic TLS certificate management","domains":["hahaton303.duckdns.org"]}
Nov 08 09:51:55 hahaton caddy[4453]: {"level":"info","ts":1731059515.3048184,"logger":"http","msg":"servers shutting down with eternal grace period"}
Nov 08 09:51:55 hahaton caddy[4453]: {"level":"info","ts":1731059515.3052936,"msg":"autosaved config (load with --resume flag)","file":"/var/lib/caddy/.config/caddy/autosave.json"}
Nov 08 09:51:55 hahaton caddy[4453]: {"level":"info","ts":1731059515.3053975,"logger":"admin.api","msg":"load complete"}
Nov 08 09:51:55 hahaton caddy[4453]: {"level":"info","ts":1731059515.3076255,"logger":"admin","msg":"stopped previous server","address":"localhost:2019"}
Nov 08 09:51:55 hahaton systemd[1]: Reloaded Caddy.

```

Также мы изменили главную страничку сайта.

Создали файл roles/caddy_deploy/files/index.html.

```
<!-- roles/caddy_deploy/files/index.html -->
```

```
<html>
```

```
<body>
```

```
<h1>Hello World</h1>
```

```
</body>
```

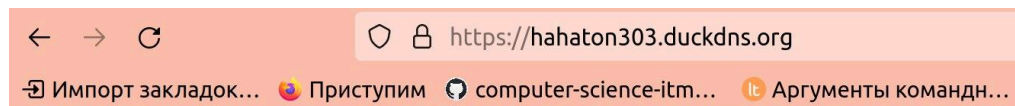
```
</html>
```

Добавили в caddy_deploy.yml следующее:


```
GNU nano 6.2                                caddy_deploy.yml
--
- name: Install and configure Caddy webserver
  hosts: my_servers
  roles:
    - caddy_deploy
  tasks:
    - name: Copy custom index.html to Caddy root directory
      ansible.builtin.copy:
        src: roles/caddy_deploy/files/index.html
        dest: /usr/share/caddy/index.html
        owner: www-data
        group: www-data
        mode: '0644'
```

`mode 0644` переводится как:

- Владелец файла (первая цифра, `6`) может читать и записывать.
- Группа (вторая цифра, `4`) может только читать.
- Остальные пользователи (третья цифра, `4`) тоже могут только читать.
- `owner` — это пользователь, которому принадлежит файл. Обычно это тот, кто создаёт файл или тот, кому его назначили.
- `group` — это группа пользователей, которым предоставлен доступ к файлу в рамках установленных прав. Владелец может назначать свою или любую другую группу, к которой у него есть доступ.



Hello World