

1. Подготовка инфраструктуры

На рисунке 1 изображена настройка ip адрессации

```
GNU nano 5.4 /etc/network/interfaces *
# This file describes the network interfaces available on your system
# and how to activate them. For more information, see interfaces(5).

source /etc/network/interfaces.d/*

# The loopback network interface
auto lo
iface lo inet loopback

# The primary network interface
allow-hotplug enp0s3
iface enp0s3 inet dhcp
address 192.168.176.43
mask 255.255.255.0
gateway 192.168.176.1
-
```

Рисунок 1 – /etc/network/interfaces

На рисунке 2 показана установка ansible на управляющую машину.

```
shiz@DESKTOP-NFB8QMA:/mnt/c/Users/sidor$ sudo apt install ansible
[sudo] password for shiz:
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  ieee-data python-babel-localedata python3-argcomplete python3-babel python3-certifi python3-chardet
  python3-distutils python3-dnspython python3-idna python3-jinja2 python3-jmespath python3-kerberos python3-lib2to3
  python3-libcloud python3-lockfile python3-markupsafe python3-netaddr python3-ntlm-auth python3-packaging
  python3-pycryptodome python3-requests python3-requests-kerberos python3-requests-ntlm python3-requests-toolbelt
  python3-selinux python3-simplejson python3-tz python3-urllib3 python3-winrm python3-xmltodict
Suggested packages:
  cowsay sshpass python3-sniffio python3-trio python-jinja2-doc python-lockfile-doc ipython3 python-netaddr-docs
  python3-openssl python3-socks python-requests-doc
The following NEW packages will be installed:
  ansible ieee-data python-babel-localedata python3-argcomplete python3-babel python3-certifi python3-chardet
  python3-distutils python3-dnspython python3-idna python3-jinja2 python3-jmespath python3-kerberos python3-lib2to3
  python3-libcloud python3-lockfile python3-markupsafe python3-netaddr python3-ntlm-auth python3-packaging
  python3-pycryptodome python3-requests python3-requests-kerberos python3-requests-ntlm python3-requests-toolbelt
  python3-selinux python3-simplejson python3-tz python3-urllib3 python3-winrm python3-xmltodict
0 upgraded, 31 newly installed, 0 to remove and 62 not upgraded.
Need to get 28.8 MB of archives.
After this operation, 275 MB of additional disk space will be used.
```

Рисунок 2 – установка ansible

На рисунке 3 продемонстрировано установка ssh

```

shiz@shiz:~$ sudo apt install ssh
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following NEW packages will be installed:
  ssh
0 upgraded, 1 newly installed, 0 to remove and 43 not upgraded.
Need to get 4,850 B of archives.
After this operation, 133 kB of additional disk space will be used.
Get:1 http://ru.archive.ubuntu.com/ubuntu jammy-updates/main amd64 ssh all 1:8.9p1-3ubuntu0.1 [4,850 B]
Fetched 4,850 B in 0s (16.7 kB/s)
Selecting previously unselected package ssh.
(Reading database ... 73975 files and directories currently installed.)
Preparing to unpack .../ssh_1%3a8.9p1-3ubuntu0.1_all.deb ...
Unpacking ssh (1:8.9p1-3ubuntu0.1) ...
Setting up ssh (1:8.9p1-3ubuntu0.1) ...
Scanning processes...
Scanning linux images...

Running kernel seems to be up-to-date.

No services need to be restarted.

No containers need to be restarted.

No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.

```

Рисунок 3 – установка ssh

1. Подключение по ssh

```

Warning: Permanently added '192.168.176.77' (ED25519) to the list of known hosts.
shiz@192.168.176.77's password:
Welcome to Ubuntu 22.04.2 LTS (GNU/Linux 5.15.0-71-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage

System information as of Wed May  3 05:00:41 PM UTC 2023

System load:  0.16064453125   Processes:            124
Usage of /:   44.5% of 11.21GB Users logged in:           1
Memory usage: 6%             IPv4 address for enp0s3: 192.168.176.77
Swap usage:   0%

Expanded Security Maintenance for Applications is not enabled.

43 updates can be applied immediately.
To see these additional updates run: apt list --upgradable

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

Last login: Wed May  3 16:39:50 2023
shiz@shiz:~$ exit

```

Рисунок 4 – подключение по ssh

2. Генерация ключа и связка управляющей и управляемой машины

```
shiz@DESKTOP-NFB8QMA:/mnt/c/Users/sidor$ ssh-keygen
Generating public/private rsa key pair.
Enter file in which to save the key (/home/shiz/.ssh/id_rsa): /home/shiz/.ssh/id_rsa
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /home/shiz/.ssh/id_rsa
Your public key has been saved in /home/shiz/.ssh/id_rsa.pub
The key fingerprint is:
SHA256:9YzgnVuCowPET6X+u81mzM1pGXVrm0Dj1Z6E+Yc3Ipc shiz@DESKTOP-NFB8QMA
The key's randomart image is:
+---[RSA 3072]-----+
|
| . o
| o o . . o .
| . + . = = .oo
| . o S = *.+o
| . o . = .E.*+
| o .oo++.=
| . += * o
| o+o.
+----[SHA256]-----+
shiz@DESKTOP-NFB8QMA:/mnt/c/Users/sidor$ ssh-copy-id shiz@192.168.176.77
/usr/bin/ssh-copy-id: INFO: Source of key(s) to be installed: "/home/shiz/.ssh/id_rsa.pub"
/usr/bin/ssh-copy-id: INFO: attempting to log in with the new key(s), to filter out any that are already installed
/usr/bin/ssh-copy-id: INFO: 1 key(s) remain to be installed -- if you are prompted now it is to install the new keys
shiz@192.168.176.77's password:

Number of key(s) added: 1

Now try logging into the machine, with: "ssh 'shiz@192.168.176.77'"
```

Рисунок 5 - ssh-keygen

3. Создание файла hosts

```
[ webservers ]
server-1 ansible_host=192.168.176.77

[ webservers:vars_ ]
ansible_python_interpreter=/usr/bin/python3
```

Рисунок 6 - ansible/hosts

```
shiz@DESKTOP-NFB8QMA:/mnt/c/Users/sidor$ ansible -i ./hosts -m ping all
Enter passphrase for key '/home/shiz/.ssh/id_rsa':
server-1 | SUCCESS => {
  "changed": false,
  "ping": "pong"
}
```

Рисунок 7 - проверка ansible

2. Выполнение задания

1. Создание файла main.yml в директории tasks

```
---
- name: Install nginx
  apt:
    name: nginx
    state: latest
    become: true

- name: Start nginx service
  service:
    name: nginx
    state: started
    become: true

- name: Install mysql-client
  apt:
    name: mysql-client
    state: latest
    become: true
```

Рисунок 8 - main.yml

2. Создание файла nginxconfig

```
worker_processes 1;

error_log /var/log/nginx/error.log warn;
pid /var/run/nginx.pid;

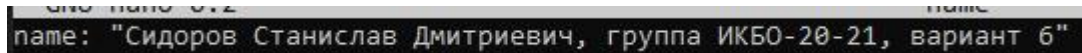
events {
    worker_connections 1024;
}

http {
    server {
        listen 80;
        server_name localhost;

        location / {
            root /usr/share/nginx/html;
            index index.html index.htm;
            add_header X-Name "{ { name } }";
        }
    }
}
```

Рисунок 9 - nginxconfig.j2

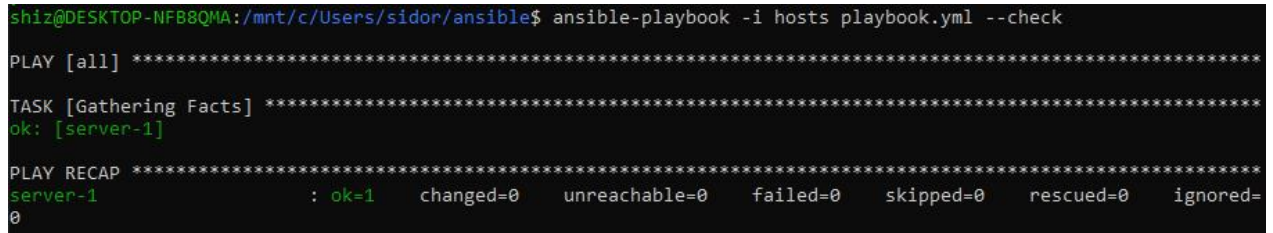
3. Описание переменных vars/name



```
name: "Сидоров Станислав Дмитриевич, группа ИКБО-20-21, вариант 6"
```

Рисунок 10 - содержимое файла vars/name

4. Проверка работоспособности



```
shiz@DESKTOP-NFB8QMA:/mnt/c/Users/sidor/ansible$ ansible-playbook -i hosts playbook.yml --check
PLAY [all] *****
TASK [Gathering Facts] *****
ok: [server-1]
PLAY RECAP *****
server-1 : ok=1 changed=0 unreachable=0 failed=0 skipped=0 rescued=0 ignored=0
0
```

Рисунок 11 - проверка выполнения задания

Выводы

В результате практической работы были получены навыки настройки вычислительной инфраструктуры при помощи системы конфигурационного управления Ansible.