

**РОССИЙСКИЙ УНИВЕРСИТЕТ ДРУЖБЫ НАРОДОВ**

**Факультет физико-математических и естественных наук**

**Кафедра прикладной информатики и теории вероятностей**

**ОТЧЕТ**

**ПО ЛАБОРАТОРНОЙ РАБОТЕ № 1.**

*Дисциплина: администрирование локальных подсистем*

Студент: Саинт-Амур Измаэль

Группа: НПИбд-02-20

**МОСКВА**

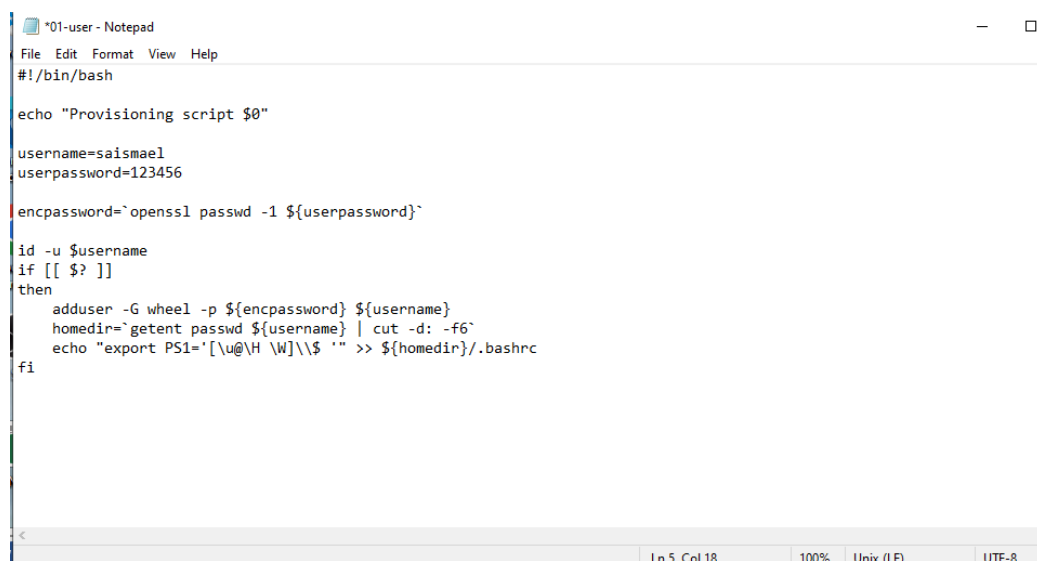
2022 г.

## Постановка задачи

Приобретение практических навыков установки Rocky Linux на виртуальную машину с помощью инструмента Vagrant.

## Выполнение работы

1. В созданном рабочем каталоге разместил образ варианта операционной системы Rocky Linux (а именно Rocky-9.0-20220805.0-x86\_64-minimal.iso).
2. В этом же каталоге создал каталог provision с подкаталогами default, server и client.
3. В каталогах default, server и client разместил заранее подготовленный скрипт заглушку 01-dummy.sh следующего содержания: `#!/bin/bash echo "Provisioning script $0"`
4. В каталоге default разместил заранее подготовленный скрипт 01-user.sh по изменению названия виртуальной машины следующего содержания:
5. В каталоге default разместил заранее подготовленный скрипт 01-hostname.sh по изменению названия виртуальной машины следующего содержания:



```
*01-user - Notepad
File Edit Format View Help
#!/bin/bash

echo "Provisioning script $0"

username=saismael
userpassword=123456

encpassword=`openssl passwd -1 ${userpassword}`

id -u $username
if [[ $? ]]
then
    adduser -G wheel -p ${encpassword} ${username}
    homedir=`getent passwd ${username} | cut -d: -f6`
    echo "export PS1='\u@\H \W]\\$ '" >> ${homedir}/.bashrc
fi

Ln 5, Col 18      100%   Unix (LF)   UTF-8
```

#### 01-hostname - Notepad

File Edit Format View Help

```
#!/bin/bash
```

```
username=saismael|
```

```
hostnamectl set-hostname "${HOSTNAME%.*}}.${username}.net
```

### 1.4.3. Развёртывание лабораторного стенда на ОС Windows

1. Используя FAR, перешел в созданный рабочий каталог с проектом. В этом же каталоге должен быть размещён файл packer.exe

Для регистрации образа виртуальной машины в vagrant в командной строке введите

```
vagrant box add rocky9 vagrant-virtualbox-rocky-9-x86_64.box
```

```
C:\Users\Scorpion 1.0\Desktop\AC\packer\vagrant>vagrant box add rocky9 vagrant-virtualbox-rocky-9-x86_64.box
==> box: Box file was not detected as metadata. Adding it directly...
==> box: Adding box 'rocky9' (v0) for provider:
       box: Unpacking necessary files from: file:///C:/Users/Scorpion%201.0/Desktop/AC/packer/vagrant/vagrant-virtualbox-rocky-9-x86_64.box
       box:
==> box: Successfully added box 'rocky9' (v0) for 'virtualbox'!
```

2. Для запуска виртуальной машины Server ввел в консоли vagrant up server

```
{C:\Users\Scorpion 1.0\Desktop\AC\packer\vagrant} - Far 3.0.6000.0 x86
C:\Users\Scorpion 1.0\Desktop\AC\packer\vagrant>vagrant up server
Bringing machine 'server' up with 'virtualbox' provider...
==> server: You assigned a static IP ending in ".1" to this machine.
==> server: This is very often used by the router and can cause the
==> server: network to not work properly. If the network doesn't work
==> server: properly, try changing this IP.
==> server: Preparing master VM for linked clones...
       server: This is a one time operation. Once the master VM is prepared,
       server: it will be used as a base for linked clones, making the creation
       server: of new VMs take milliseconds on a modern system.
==> server: Importing base box 'rocky9'...
==> server: Cloning VM...
==> server: Matching MAC address for NAT networking...
==> server: You assigned a static IP ending in ".1" to this machine.
==> server: This is very often used by the router and can cause the
==> server: network to not work properly. If the network doesn't work
==> server: properly, try changing this IP.
==> server: Setting the name of the VM: server
Vagrant is currently configured to create VirtualBox synced folders with
the 'SharedFoldersEnableSymlinksCreate' option enabled. If the Vagrant
guest is not trusted, you may want to disable this option. For more
information on this option, please refer to the VirtualBox manual:

  https://www.virtualbox.org/manual/ch04.html#sharedfolders

This option can be disabled globally with an environment variable:

  VAGRANT_DISABLE_VBOXSYMLINKCREATE=1

or on a per folder basis within the Vagrantfile:
```

3. Для запуска виртуальной машины Client ввел в консоли vagrant up client

```
{C:\Users\Scorpion 1.0\Desktop\AC\packer\vagrant} - Far 3.0.6000.0 x86
C:\Users\Scorpion 1.0\Desktop\AC\packer\vagrant>vagrant up client
Bringing machine 'client' up with 'virtualbox' provider...
==> client: Cloning VM...
==> client: Matching MAC address for NAT networking...
==> client: Setting the name of the VM: client
==> client: Fixed port collision for 22 => 2222. Now on port 2200.
==> client: Clearing any previously set network interfaces...
==> client: Preparing network interfaces based on configuration...
    client: Adapter 1: nat
    client: Adapter 2: intnet
==> client: Forwarding ports...
    client: 22 (guest) => 2200 (host) (adapter 1)
==> client: Running 'pre-boot' VM customizations...
==> client: Booting VM...
==> client: Waiting for machine to boot. This may take a few minutes...
    client: SSH address: 127.0.0.1:2200
    client: SSH username: vagrant
    client: SSH auth method: password
==> client: Machine booted and ready!
==> client: Checking for guest additions in VM...
    client: No guest additions were detected on the base box for this VM! Guest
    client: additions are required for forwarded ports, shared folders, host only
    client: networking, and more. If SSH fails on this machine, please install
    client: the guest additions and repack the box to continue.
    client:
    client: This is not an error message; everything may continue to work properly,
    client: in which case you may ignore this message.
==> client: Setting hostname...
==> client: Configuring and enabling network interfaces...
==> client: Mounting shared folders...
```

#### 1.4.4. Внесение изменений в настройки внутреннего окружения виртуальной машины

1. Для отработки созданных скриптов во время загрузки виртуальных машин убедитесь, что в конфигурационном файле Vagrantfile до строк с конфигурацией сервера имеется следующая запись:

```
Vagrantfile - Notepad
File Edit Format View Help
# -*- mode: ruby -*-
# vi: set ft=ruby :

Vagrant.configure("2") do |config|

  # Common configuration
  config.vm.provision "common dummy",
    type: "shell",
    preserve_order: true,
    path: "provision/default/01-dummy.sh"

  config.vm.provision "common hostname",
    type: "shell",
    preserve_order: true,
    run: "always",
    path: "provision/default/01-hostname.sh"

  config.vm.provision "common user",
    type: "shell",
    preserve_order: true,
    path: "provision/default/01-user.sh"

  # Server configuration
```

2. Для работающих под ОС Windows вместо инструкций Makefile следует последовательно ввести в командной строке:

vagrant up server --provision

vagrant up client --provision

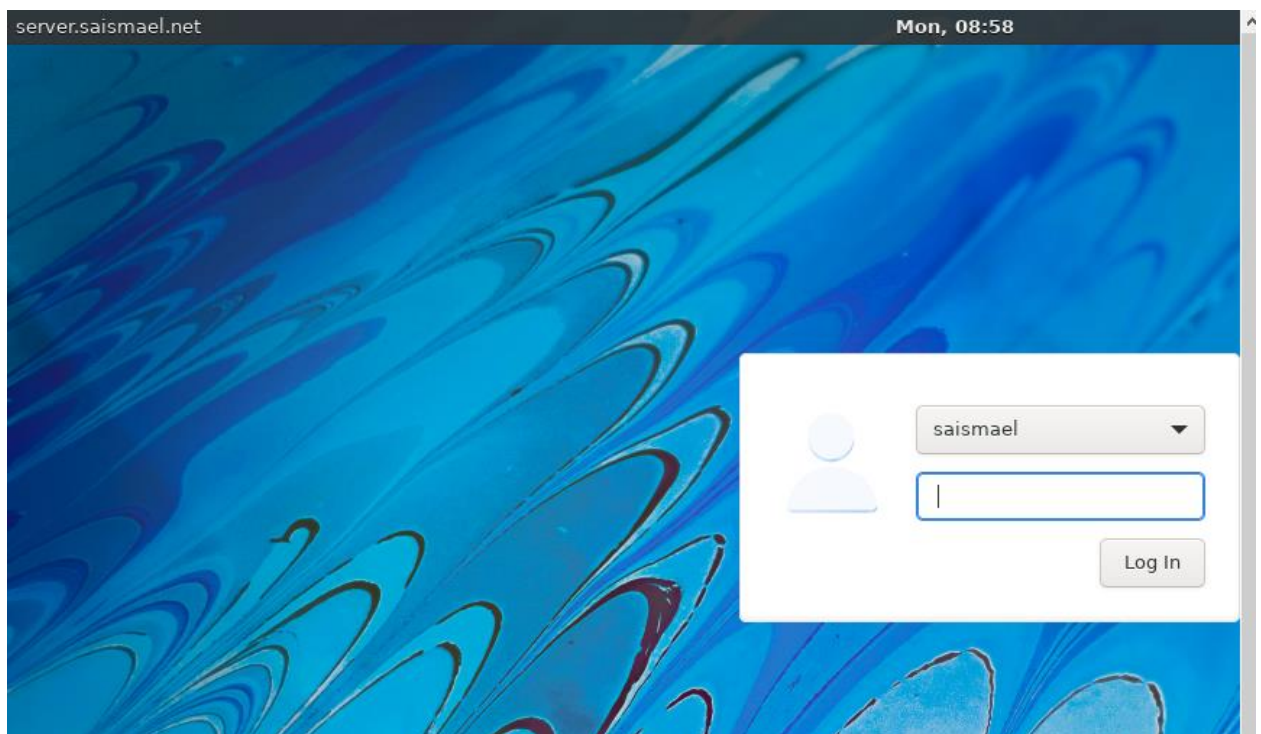
```
(C:\Users\Scorpion 1.0\Desktop\AC\packer\vagrant) - Far 3.0.6000.0 x86
C:\Users\Scorpion 1.0\Desktop\AC\packer\vagrant>vagrant up server --provision
Bringing machine 'server' up with 'virtualbox' provider...
==> server: You assigned a static IP ending in ".1" to this machine.
==> server: This is very often used by the router and can cause the
==> server: network to not work properly. If the network doesn't work
==> server: properly, try changing this IP.
==> server: You assigned a static IP ending in ".1" to this machine.
==> server: This is very often used by the router and can cause the
==> server: network to not work properly. If the network doesn't work
==> server: properly, try changing this IP.
==> server: Clearing any previously set forwarded ports...
==> server: Clearing any previously set network interfaces...
==> server: Preparing network interfaces based on configuration...
server: Adapter 1: nat
server: Adapter 2: intnet
==> server: Forwarding ports...
server: 22 (guest) => 2222 (host) (adapter 1)
==> server: Running 'pre-boot' VM customizations...
==> server: Booting VM...
==> server: Waiting for machine to boot. This may take a few minutes...
server: SSH address: 127.0.0.1:2222
server: SSH username: vagrant
server: SSH auth method: password
==> server: Machine booted and ready!
==> server: Checking for guest additions in VM...
server: The guest additions on this VM do not match the installed version of
server: VirtualBox! In most cases this is fine, but in rare cases it can
server: prevent things such as shared folders from working properly. If you see
server: shared folder errors, please make sure the guest additions within the
server: virtual machine match the version of VirtualBox you have installed on
```

```

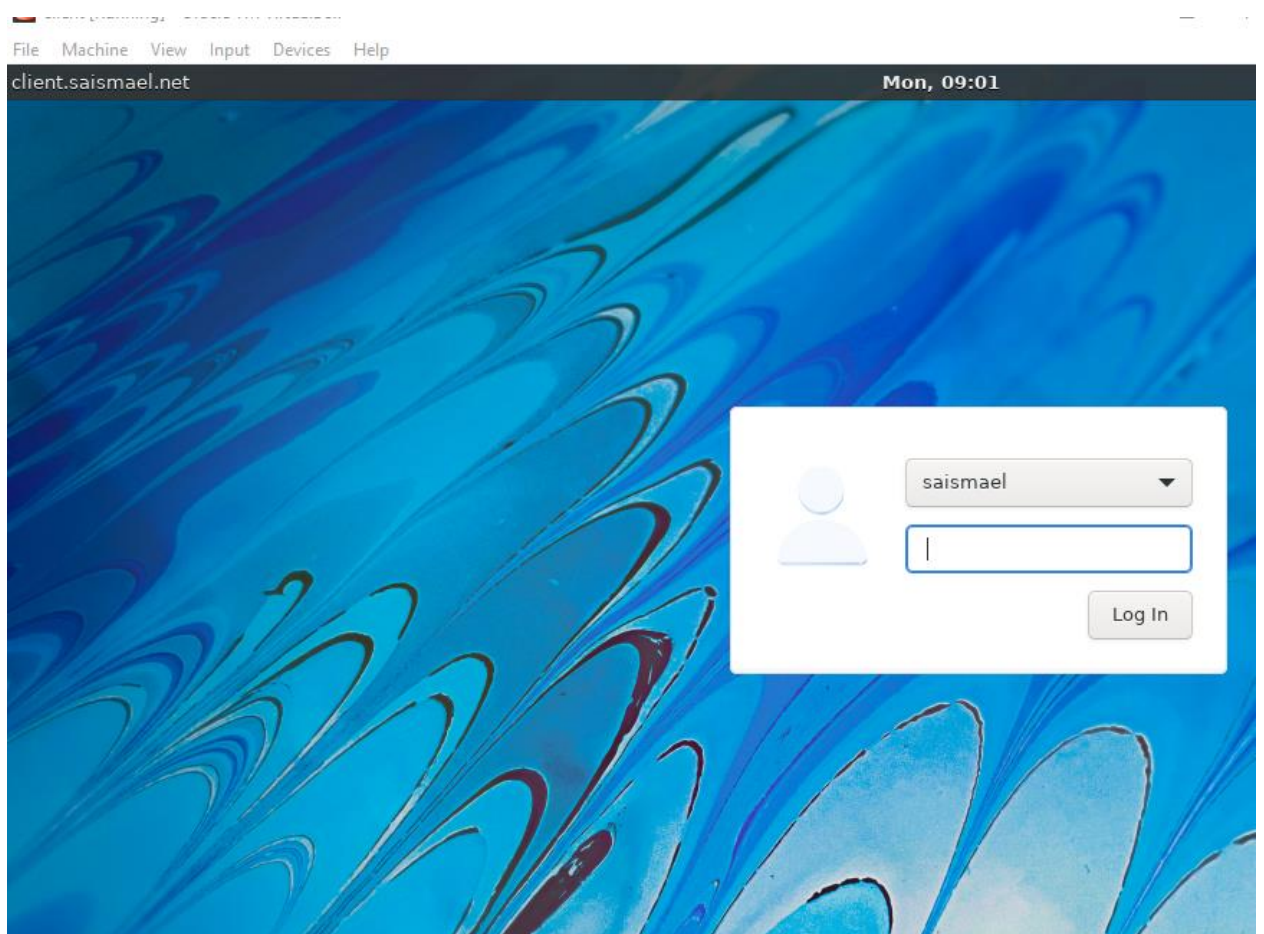
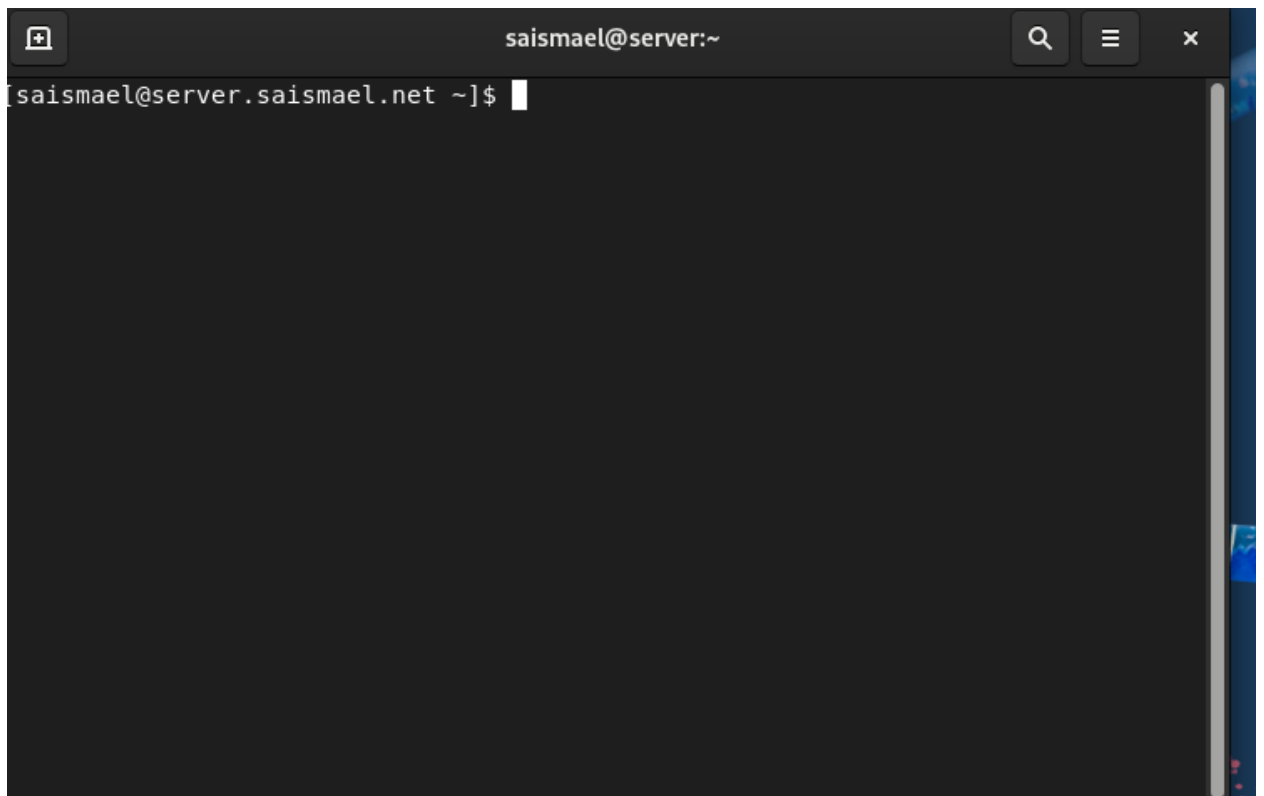
C:\Users\Scorpion 1.0\Desktop\AC\packer\vagrant - Far 3.0.6000.0 x86
C:\Users\Scorpion 1.0\Desktop\AC\packer\vagrant>vagrant up client --provision
Bringing machine 'client' up with 'virtualbox' provider...
==> client: Clearing any previously set forwarded ports...
==> client: Fixed port collision for 22 => 2222. Now on port 2200.
==> client: Clearing any previously set network interfaces...
==> client: Preparing network interfaces based on configuration...
client: Adapter 1: nat
client: Adapter 2: intnet
==> client: Forwarding ports...
client: 22 (guest) => 2200 (host) (adapter 1)
==> client: Running 'pre-boot' VM customizations...
==> client: Booting VM...
==> client: Waiting for machine to boot. This may take a few minutes...
client: SSH address: 127.0.0.1:2200
client: SSH username: vagrant
client: SSH auth method: password
client: Warning: Remote connection disconnect. Retrying...
client: Warning: Remote connection disconnect. Retrying...
client: Warning: Remote connection disconnect. Retrying...
client: Warning: Remote connection disconnect. Retrying...
client: Warning: Remote connection disconnect. Retrying...
==> client: Machine booted and ready!
==> client: Checking for guest additions in VM...
client: The guest additions on this VM do not match the installed version of
client: VirtualBox! In most cases this is fine, but in rare cases it can
client: prevent things such as shared folders from working properly. If you see
client: shared folder errors, please make sure the guest additions within the
client: virtual machine match the version of VirtualBox you have installed on
client: your host and reload your VM.

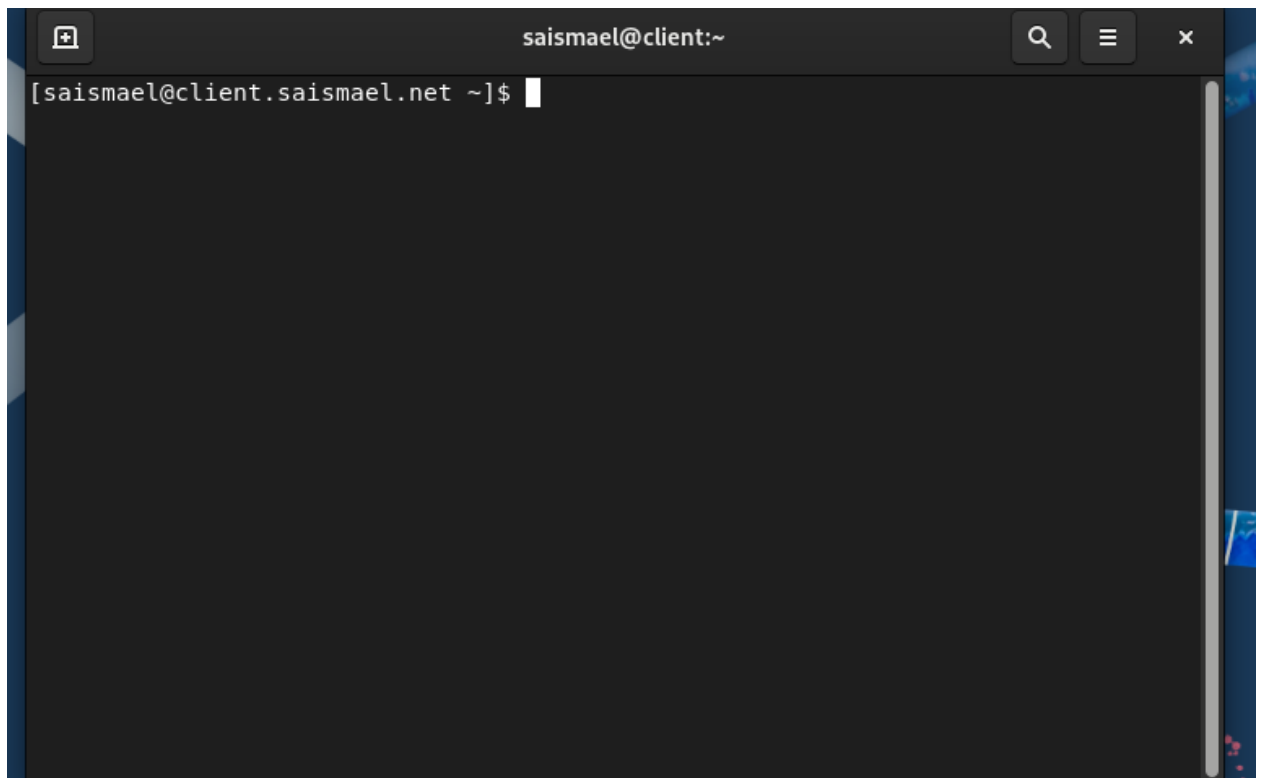
```

3. Залогинился на сервере и клиенте под созданным пользователем.









4. Выключил виртуальные машины.

5. После выключения виртуальных машин скопировал необходимые для работы с Vagrant файлы и box-файлы виртуальных машин на внешний носитель или в другой каталог вашей ОС.

### **Вывод**

Приобрел практические навыки установки Rocky Linux на виртуальную машину с помощью инструмента Vagrant.

### **Контрольные вопросы**

1. Для чего предназначен Vagrant?

Vagrant — свободное и открытое программное обеспечение для создания и конфигурирования виртуальной среды разработки. Является обёрткой для программного обеспечения виртуализации, например VirtualBox, и средств управления конфигурациями, таких как Chef, Salt и Puppet.

2. Что такое box-файл? В чём назначение Vagrantfile?

1) Применительно к Vagrant файл .box представляет собой переносимый пакет рабочей



среды Vagrant. Это фактически TAR-архив, который содержит платформенно- и машинно-зависимый набор всего ПО, которое требуется для функционирования экземпляра среды Vagrant на ВМ.

2)Vagrantfile — файл с конфигурацией запуска виртуальных машин

3. Приведите описание и примеры вызова основных команд Vagrant.

С Vagrant можно работать, используя следующие основные команды:

– vagrant help — вызов справки по командам Vagrant;

```
C:\Users\Scorpion 1.0\Desktop\AC\packer\vagrant>vagrant help
==> vagrant: A new version of Vagrant is available: 2.3.3 (installed version: 2.3.2)!
==> vagrant: To upgrade visit: https://www.vagrantup.com/downloads.html

Usage: vagrant [options] <command> [<args>]

    -h, --help                Print this help.

Common commands:
    autocomplete    manages autocomplete installation on host
    box              manages boxes: installation, removal, etc.
    cloud            manages everything related to Vagrant Cloud
    destroy          stops and deletes all traces of the vagrant machine
    global-status    outputs status Vagrant environments for this user
    halt            stops the vagrant machine
    help            shows the help for a subcommand
    init            initializes a new Vagrant environment by creating a Vagrantfile
    login
    package         packages a running vagrant environment into a box
    plugin           manages plugins: install, uninstall, update, etc.
    port            displays information about guest port mappings
    powershell      connects to machine via powershell remoting
    provision        provisions the vagrant machine
    push            deploys code in this environment to a configured destination
    rdp             connects to machine via RDP
    reload          restarts vagrant machine, loads new Vagrantfile configuration
    resume          resume a suspended vagrant machine
    serve          start Vagrant server
    snapshot        manages snapshots: saving, restoring, etc.
```

vagrant box list — список подключённых к Vagrant box-файлов;

```
C:\Users\Scorpion 1.0\Desktop\AC\packer\vagrant>vagrant box list
rocky9 (virtualbox, 0)

C:\Users\Scorpion 1.0\Desktop\AC\packer\vagrant>
```

– vagrant box add — подключение box-файла к Vagrant;

```
C:\Users\Scorpion 1.0\Desktop\AC\packer\vagrant>vagrant box add rocky9 vagrant-virtualbox-rocky-9-x86_64.box
==> box: Box file was not detected as metadata. Adding it directly...
==> box: Adding box 'rocky9' (v0) for provider:
    box: Unpacking necessary files from: file://C:/Users/Scorpion%201.0/Desktop/AC/packer/vagrant/vagrant-virtualbox-rocky-9-x86_64.box
    box:
==> box: Successfully added box 'rocky9' (v0) for 'virtualbox'!
```

4. Дайте построчные пояснения содержания файлов `vagrant-rocky.pkr.hcl`, `ks.cfg`, `Vagrantfile`, `Makefile`.

А можно не надо