

РОССИЙСКИЙ УНИВЕРСИТЕТ ДРУЖБЫ НАРОДОВ

Факультет физико-математических и естественных наук

Кафедра прикладной информатики и теории вероятностей

ПРЕЗЕНТАЦИЯ

ЛАБОРАТОРНОЙ РАБОТЫ № 1

дисциплина: Администрирование сетевых подсистем

Подготовка лабораторного стенда

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Группа: НПИбд-02-20

МОСКВА

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1. Развёртывание лабораторного стенда на ОС Windows

- ✓ Подготовлены каталоги со скриптами и box-файлом
- ✓ Добавлен образ ВМ в Vagrant
- ✓ Запущены ВМ Server и Client. Проверены их работоспособность
- ✓ Выключены виртуальные машины.

Каталоги и скрипты

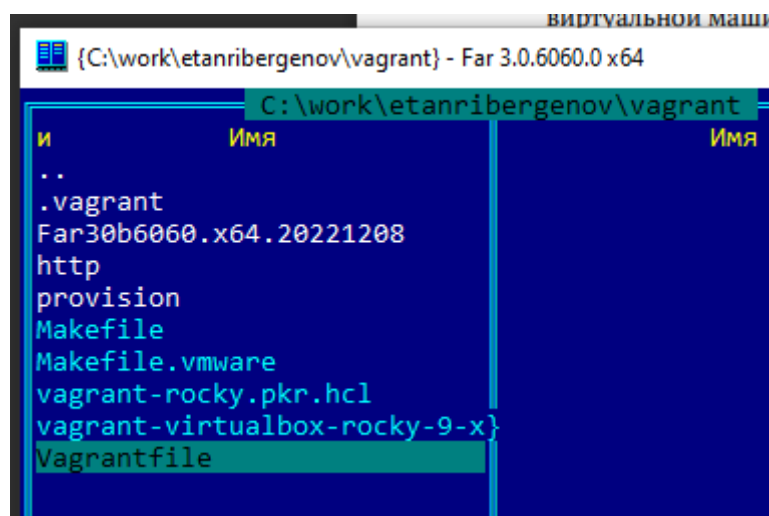


Рис. 1. Рабочий каталог с подкаталогами, box-файлом и конфиг. файлом Vagrantfile

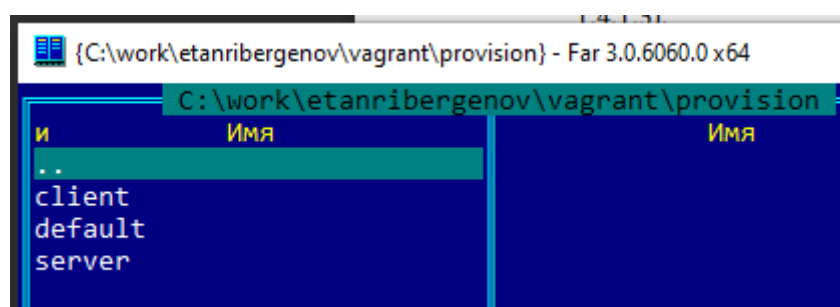


Рис. 2. Каталог provision

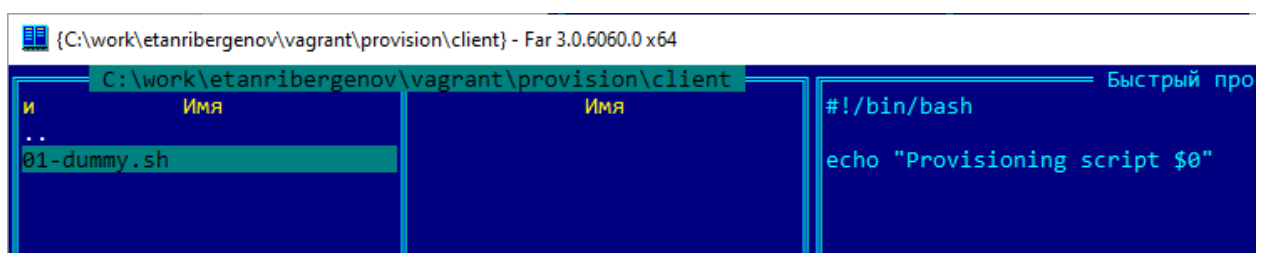
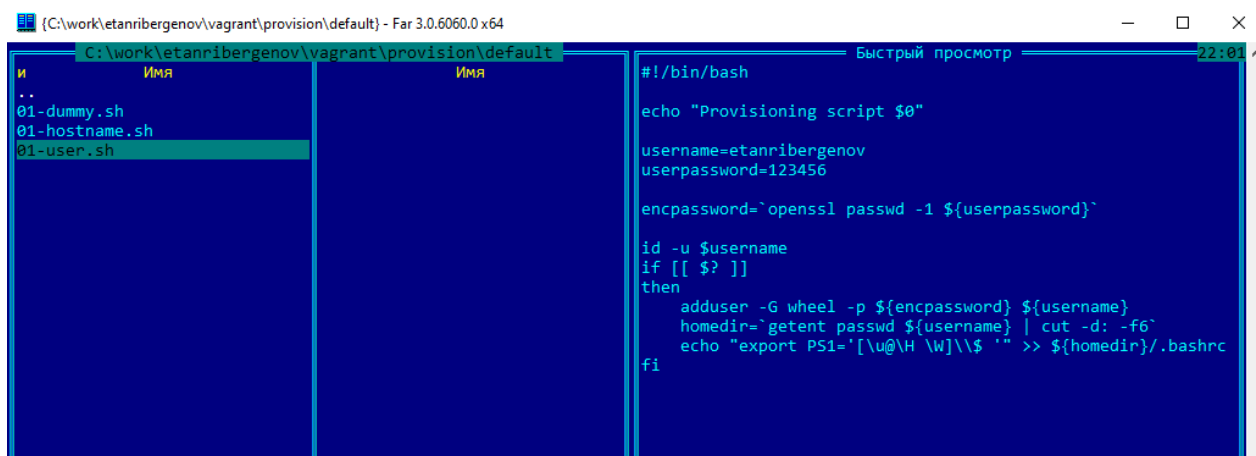


Рис. 3. Файл-заглушка 01-dummy.sh в подкаталогах server и client



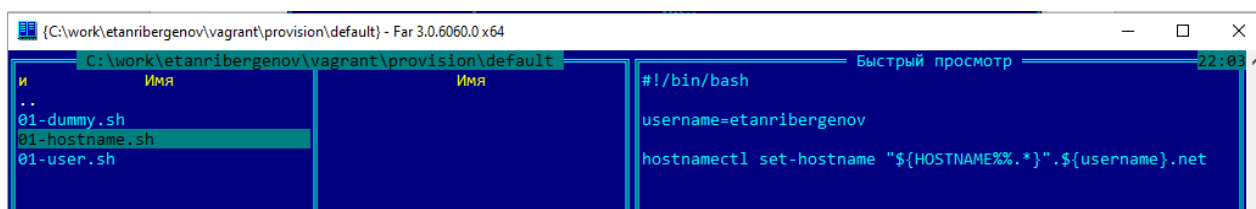
```
#!/bin/bash
echo "Provisioning script $0"

username=etanribergenov
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
```

Рис. 4. Файл 01-user.sh



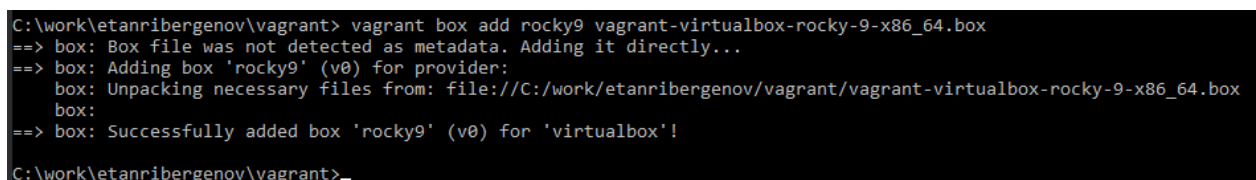
```
#!/bin/bash

username=etanribergenov

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

Рис. 5. Файл 01-hostname.sh.

Регистрация образа виртуальной машины в Vagrant



```
C:\work\etanribergenov\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:/work/etanribergenov/vagrant/vagrant-virtualbox-rocky-9-x86_64.box
       box:
==> box: Successfully added box 'rocky9' (v0) for 'virtualbox'!
C:\work\etanribergenov\vagrant>
```

Рис. 6. Регистрация образа ВМ в Vagrant

Запуск виртуальных машин и проверка их работоспособности

```
{C:\work\etanribergenov\vagrant} - Far 3.0.6060.0 x64

C:\work\etanribergenov\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
```

Рис. 7. Запуск BM Server.

```
[ 20.309450] systemd[1]: Finished Read and set NIS domain names from /etc/sysconf
fig/network.
[ 20.402775] systemd[1]: Started Journal Service.
[ 20.990022] Adding 2097148k swap on /swapfile. Priority
2097148k FS
[ 21.075160] systemd-journald[487]: Received client request to
journal.
[ 26.249909] ACPI: video: Video Device [GFX0] (multi-head: yes rom: no post:
no)
[ 26.268786] input: Video Bus as /devices/LNXSYSTM:00/LNXSYBUS:00/PNP0A03:00/L
NXVIDEO:00/input/input5
[ 26.342688] piix4_smbus 0000:00:07.0: SMBus Host Controller at 0x4100, revision 0
[ 26.576034] input: PC Speaker as /devices/platform/pcspkr/input/input6
[ 27.441364] RAPL PMU: API unit is 2^-32 Joules, 0 fixed counters, 10737418240
ms ovfl timer
[ 37.318645] NET: Registered PF_QIPCRTR protocol family
[ 60.663932] e1000: eth0 NIC Link is Up 1000 Mbps Full Duplex, Flow Control: R
X
[ 60.667731] IPv6: ADDRCONF(NETDEV_CHANGE): eth0: link becomes ready
[ 60.711826] e1000: eth1 NIC Link is Up 1000 Mbps Full Duplex, Flow Control: R
X
[ 61.720245] IPv6: ADDRCONF(NETDEV_CHANGE): eth1: link becomes ready
[ 88.818711] systemd-journald[487]: Time jumped backwards, rotating.
```

Puc. 8. BM server.

```
C:\work\etanribergenov\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 repackage 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...
```

Puc. 9. Занык BM Client.

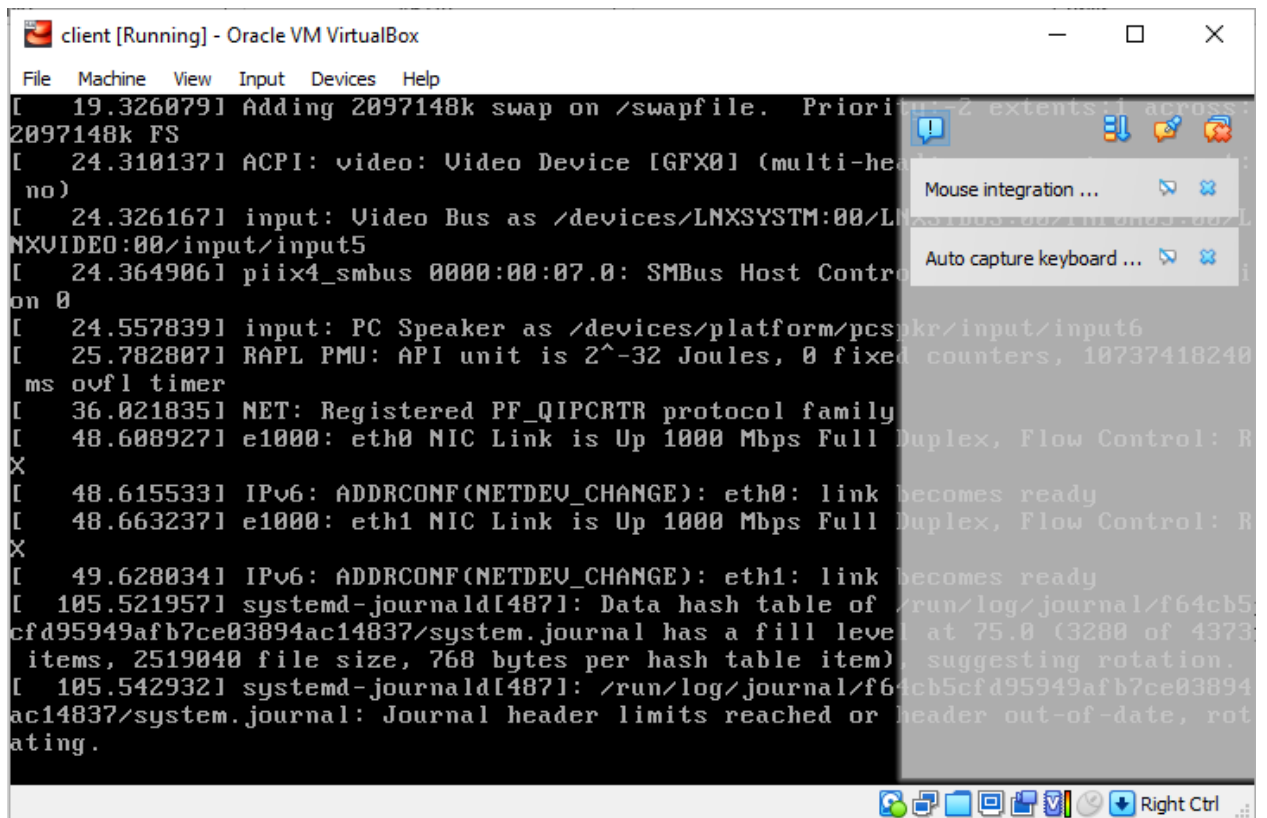


Рис. 10. BM Client.

Выключение виртуальных машин

```
C:\work\etanribergenov\vagrant>vagrant halt server
==> server: Attempting graceful shutdown of VM...

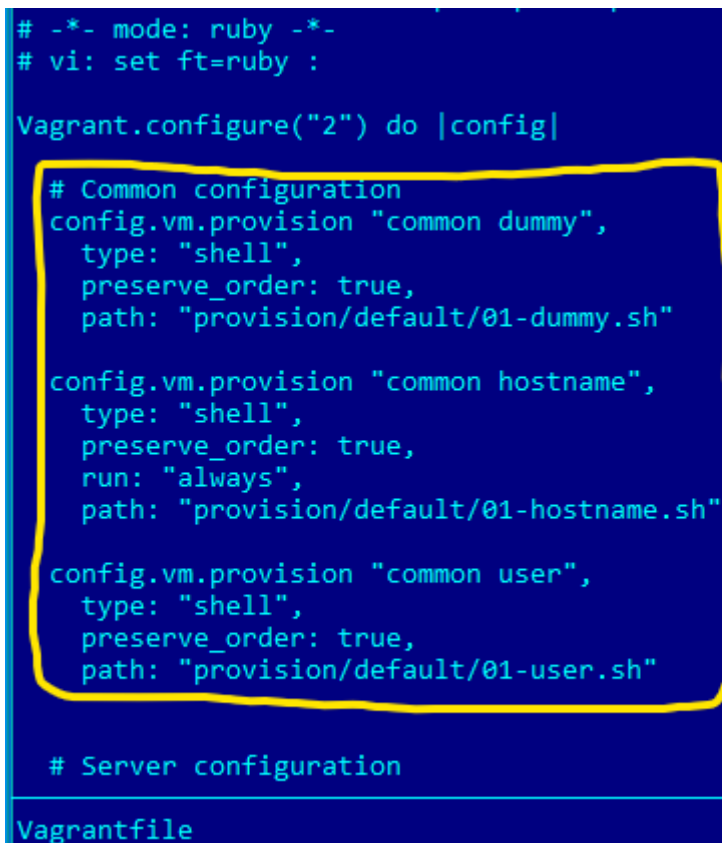
C:\work\etanribergenov\vagrant>vagrant halt client
==> client: Attempting graceful shutdown of VM...
```

Рис. 11. Выключение виртуальных машин.

2. Внесение изменений в настройки внутреннего окружения виртуальной машины

- ✓ Проверка конфигурационного файла Vagrantfile на наличие нужных записей
- ✓ Фиксирование внесённых изменений для внутренних настроек виртуальных машин
- ✓ Вход в системы ВМ под созданным пользователем, проверка отображения имени пользователя в приглашении терминала
- ✓ Выключение ВМ.

Проверка конфигурационного файла Vagrantfile на наличие нужных записей



```
# -*- 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

Vagrantfile
```

Рис. 12. Запись в файле Vagrantfile.

Фиксирование внесённых изменений для внутренних настроек виртуальных машин

Для этого был использован флаг `--provision`

 {C:\work\etanribergenov\vagrant} - Far 3.0.6060.0 x64

```
C:\work\etanribergenov\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
```

Рис. 13. Запуск server с флагом provision

```
C:\work\etanribergenov\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
```

Рис. 14. Запуск client с флагом provision

Вход в системы ВМ под созданным пользователем, проверка отображения имени пользователя в приглашении терминала

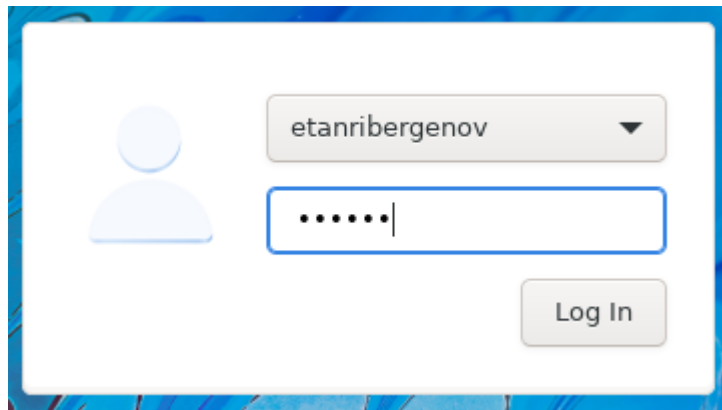


Рис. 15. Вход в клиент и сервер под созданным профилем

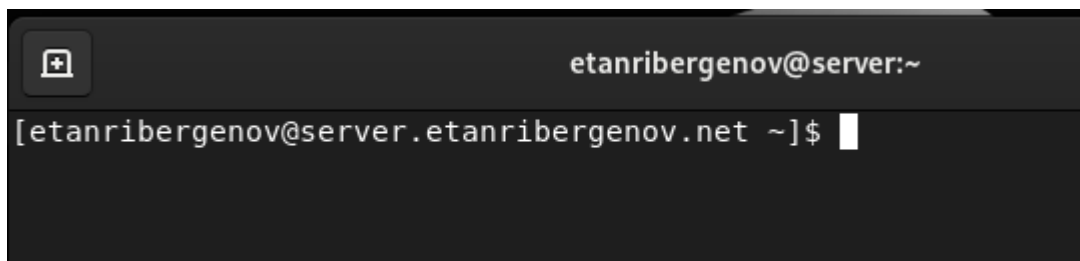


Рис. 16. Терминал сервера

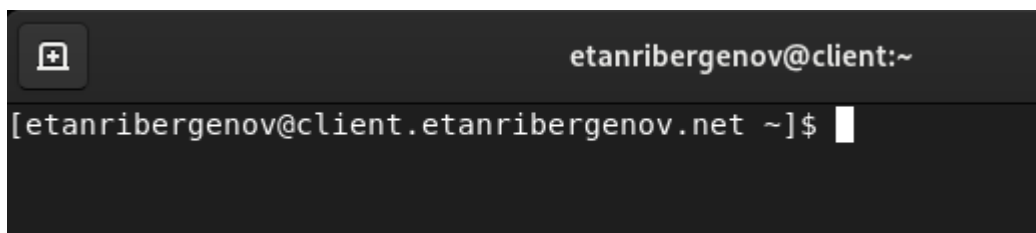


Рис. 17. Терминал клиента

Выключение ВМ

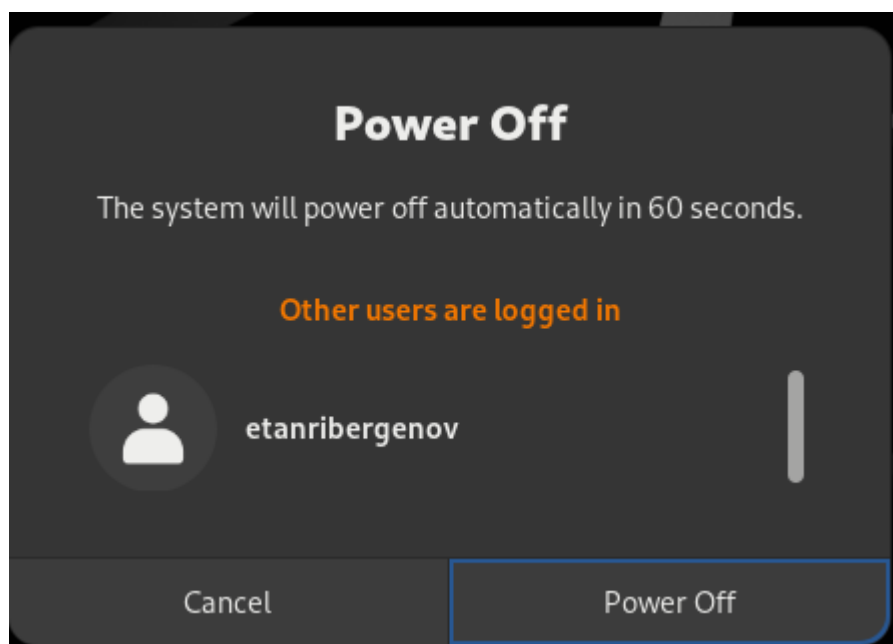


Рис. 18. Выключение ВМ.