Лабораторная работа

Номер 11

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Российский университет дружбы народов, Москва, Россия

Информация

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Цель работы

Приобретение практических навыков по настройке удалённого доступа к серверу с помощью SSH

Смена пароля для root

```
[dmmosharov@server.dmmosharov.net ~]$ sudo -i
[sudo] password for dmmosharov:
[root@server.dmmosharov.net ~]# passwd root
New password:
BAD PASSWORD: The password is shorter than 8 characters
Retype new password:
passwd: password updated successfully
[root@server.dmmosharov.net ~]#
```

Рис. 1: Смена пароля для root

journalctl

```
[dmmosharov@server.dmmosharov.net ~]$ sudo -i
[sudo] password for dmmosharov:
[root@server.dmmosharov.net ~]# journalctl -x -f
Jan 30 22:30:09 server.dmmosharov.net systemd[1]: systemd-coredumpp14522
1-186541-0.service: Deactivated successfully.
  ─ Subject: Unit succeeded
  ─ Defined-By: systemd
  ─ Support: https://wiki.rockylinux.org/rocky/support

  ─ The unit systemd-coredumpp14521-186541-0.service has successfully en
tered the 'dead' state.
Jan 30 22:30:14 server.dmmosharov.net kernel: traps: VBoxClient[186554]
 trap int3 ip:41db4b sp:7ff750a35cd0 error:0 in VBoxClient[1db4b,400000
+bb000]
Jan 30 22:30:14 server.dmmosharov.net systemd-coredump[186555]: Process
 186551 (VBoxClient) of user 1001 terminated abnormally with signal 5/T
RAP, processing...
Jan 30 22:30:14 server.dmmosharov.net systemd[1]: Started systemd-cored
umpp14522-186555-0.service - Process Core Dump (PID 186555/UID 0).
  ─ Subject: A start job for unit systemd-coredumpp14522-186555-0.servic
e has finished successfully
  ─ Defined-By: systemd
  ─ Support: https://wiki.rockylinux.org/rocky/support

  ─ A start job for unit systemd-coredumpp14522-186555-0.service has fin
ished successfully.

  ─ The job identifier is 277664.
Jan 30 22:30:14 server.dmmosharov.net systemd-coredump[186556]: [↗] Pro
cess 186551 (VBoxClient) of user 1001 dumped core.

                                                                   Module
libXau.so.6 from rpm libXau-1.0.11-8.el10.x86_64
                                                                   Module
libxcb.so.1 from rpm libxcb-1.17.0-3.el10.x86_64
                                                                   Module
libX11.so.6 from rpm libX11-1.8.10-1.el10.x86_64
                                                                   Module
libffi.so.8 from rpm libffi-3.4.4-9.el10.x86_64
                                                                   Module
libwayland-client.so.0 from rpm wayland-1.23.0-2.el10.x86_64
```

Рис. 2: journalctl

Авторизация под root по ssh

```
[dmmosharov@server.dmmosharov.net ~]$ ssh root@server.dmmosharov.net
root@server.dmmosharov.net's password:
Activate the web console with: systemctl enable --now cockpit.socket

Last failed login: Fri Jan 30 23:23:07 UTC 2026 from 192.168.1.1 on ssh:notty
There were 18 failed login attempts since the last successful login.
root@server:~#
```

Рис. 3: Авторизация под root по ssh

Лог авторизации

```
  should be reported to its vendor as a bug.
Jan 30 23:26:53 server.dmmosharov.net systemd[1]: systemd-coredump@1516
8-195032-0.service: Deactivated successfully.
  Subject: Unit succeeded
  Defined-By: systemd
  Support: https://wiki.rockylinux.org/rocky/support

  The unit systemd-coredump@15168-195032-0.service has successfully en
tered the 'dead' state.
Jan 30 23:26:58 server.dmmosharov.net kernel: traps: VBoxClient[195041]
 trap int3 ip:41db4b sp:7ff750a35cd0 error:0 in VBoxClient[1db4b,400000
+bb000]
Jan 30 23:26:58 server.dmmosharov.net systemd-coredump[195042]: Process
 195038 (VBoxClient) of user 1001 terminated abnormally with signal 5/T
RAP, processing...
Jan 30 23:26:58 server.dmmosharov.net systemd[1]: Started systemd-cored
ump@15169-195042-0.service - Process Core Dump (PID 195042/UID 0).
  Subject: A start job for unit systemd-coredump@15169-195042-0.servic
e has finished successfully
  Defined-By: systemd
  Support: https://wiki.rockylinux.org/rocky/support

  A start job for unit systemd-coredump@15169-195042-0.service has fin
```

Рис. 4: Лог авторизации

Редактирование /etc/ssh/sshd_config

```
Port 22
Port 2022
#AddressFamily any
#ListenAddress 0.0.0.0
#ListenAddress ::

#HostKey /etc/ssh/ssh_host_rsa_key
#HostKey /etc/ssh/ssh_host_ecdsa_key
#HostKey /etc/ssh/ssh_host_ed25519_key

# Ciphers and keying
#RekeyLimit default none

# Logging
#SyslogFacility AUTH
#LogLevel INFO

# Authentication:

#LoginGraceTime 2m
PermitRootLogin no
#StrictModes yes
#MaxAuthTries 6
#MaxSessions 10

#PubkeyAuthentication yes

# The default is to check both .ssh/authorized_keys and .ssh/authorized
# but this is overridden so installations will only check .ssh/authorized
AuthorizedKeysFile      .ssh/authorized_keys

#AuthorizedPrincipalsFile none

#AuthorizedKeysCommand none
#AuthorizedKeysCommandUser nobody
                        [ Wrote 132 lines ]
^G Help      ^O Write Out ^W Where Is  ^K Cut       ^T Execute
^X Exit      ^R Read File ^\ Replace   ^U Paste     ^J Justify
```

Рис. 5: Редактирование /etc/ssh/sshd_config

Перезапуск sshd

```
[root@server.dmmosharov.net ~]# systemctl restart sshd
[root@server.dmmosharov.net ~]#
```

Рис. 6: Перезапуск sshd

Повторная авторизация под root по ssh

```
root@server:~# su - dmmosharov
Last login: Fri Jan 30 23:17:52 UTC 2026 from 192.168.1.30 on pts/5
[dmmosharov@server.dmmosharov.net ~]$ ssh root@server
The authenticity of host 'server (127.0.1.1)' can't be established.
ED25519 key fingerprint is SHA256:F8sREGCc3d3bqO3xJrbnrCFDPDWDr/+seyPOj5DX9uI.
This host key is known by the following other names/addresses:
    ~/.ssh/known_hosts:1: server.dmmosharov.net
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'server' (ED25519) to the list of known hosts.
root@server's password:
Permission denied, please try again.
root@server's password:
```

Рис. 7: Повторная авторизация под root по ssh

Лог авторизации

```
 The unit systemd-coredump@15215-195616-0.service has successfully en
tered the 'dead' state.
Jan 30 23:31:00 server.dmmosharov.net unix_chkpwd[195623]: password che
ck failed for user (root)
Jan 30 23:31:00 server.dmmosharov.net sshd-session[195554]: pam_unix(ss
hd:auth): authentication failure; logname= uid=0 euid=0 tty=ssh ruser=
rhost=127.0.0.1  user=root
Jan 30 23:31:02 server.dmmosharov.net sshd-session[195554]: Failed pass
word for root from 127.0.0.1 port 34838 ssh2
Jan 30 23:31:04 server.dmmosharov.net kernel: traps: VBoxClient[195628]
 trap int3 ip:41db4b sp:7ff750a35cd0 error:0 in VBoxClient[1db4b,400000
+bb000]
Jan 30 23:31:04 server.dmmosharov.net systemd-coredump[195629]: Process
 195625 (VBoxClient) of user 1001 terminated abnormally with signal 5/T
RAP, processing...
Jan 30 23:31:04 server.dmmosharov.net systemd[1]: Started systemd-cored
ump@15216-195629-0.service - Process Core Dump (PID 195629/UID 0).
 Subject: A start job for unit systemd-coredump@15216-195629-0.servic
```

Рис. 8: Лог авторизации

Авторизация под своей учётной записью по ssh

```
[dmmosharov@server.dmmosharov.net ~]$ ssh dmmosharov@server.dmmosharov.net
dmmosharov@server.dmmosharov.net's password:
Activate the web console with: systemctl enable --now cockpit.socket

Last login: Fri Jan 30 23:30:22 2026
[dmmosharov@server.dmmosharov.net ~]$
```

Рис. 9: Авторизация под своей учётной записью по ssh

Добавление белого списка пользователей

```
  GNU nano 8.1                /etc/ssh/sshd_config
# possible, but leave them commented.  Uncommented options override the
# default value.

# To modify the system-wide sshd configuration, create a  *.conf  file
#  /etc/ssh/sshd_config.d/  which will be automatically included below
Include /etc/ssh/sshd_config.d/*.conf

# If you want to change the port on a SELinux system, you have to tell
# SELinux about this change.
# semanage port -a -t ssh_port_t -p tcp #PORTNUMBER
#
#Port 22
Port 22
Port 2022
#AddressFamily any
#ListenAddress 0.0.0.0
#ListenAddress ::

#HostKey /etc/ssh/ssh_host_rsa_key
#HostKey /etc/ssh/ssh_host_ecdsa_key
#HostKey /etc/ssh/ssh_host_ed25519_key

# Ciphers and keying
#RekeyLimit default none

# Logging
#SyslogFacility AUTH
#LogLevel INFO

# Authentication:

#LoginGraceTime 2m
PermitRootLogin no
AllowUsers vagrant
#StrictModes yes
#MaxAuthTries 6
#MaxSessions 10

#PubkeyAuthentication yes
                          [ Wrote 133 lines ]
^G Help      ^O Write Out   ^W Where Is    ^K Cut       ^T Execute
```

Рис. 10: Добавление белого списка пользователей

Перезапуск sshd

```
[root@server.dmmosharov.net ~]# systemctl restart sshd
[root@server.dmmosharov.net ~]#
```

Рис. 11: Перезапуск sshd

Провальная авторизация под своей учётной записью

```
[dmmosharov@server.dmmosharov.net ~]$ ssh dmmosharov@server.dmmosharov.net
dmmosharov@server.dmmosharov.net's password:
Permission denied, please try again.
dmmosharov@server.dmmosharov.net's password:
```

Рис. 12: Провальная авторизация под своей учётной записью

Добавление нового пользователя в белый

```
#LoginGraceTime 2m
PermitRootLogin no
AllowUsers vagrant dmmosharov
#StrictModes yes
#MaxAuthTries 6
#MaxSessions 10

#PubkeyAuthentication yes

# The default is to check both .ssh/authorized_keys and
# but this is overridden so installations will only che
                              [ Wrote 133 lines ]
^G Help      ^O Write Out  ^F Where Is   ^K Cut
^X Exit      ^R Read File  ^\ Replace    ^U Paste
```

Рис. 13: Добавление нового пользователя в белый

Успешная авторизация под своей учётной записью

```
[dmmosharov@server.dmmosharov.net ~]$ ssh dmmosharov@server.dmmosharov.net
dmmosharov@server.dmmosharov.net's password:
Activate the web console with: systemctl enable --now cockpit.socket

Last failed login: Fri Jan 30 23:36:52 UTC 2026 from 192.168.1.1 on ssh:notty
There were 2 failed login attempts since the last successful login.
Last login: Fri Jan 30 23:33:02 2026 from 192.168.1.1
[dmmosharov@server.dmmosharov.net ~]$
```

Рис. 14: Успешная авторизация под своей учётной записью

Добавление портов

```
# To modify the system-wide sshd configuration, create a  *.conf  file>
#  /etc/ssh/sshd_config.d/  which will be automatically included below
Include /etc/ssh/sshd_config.d/*.conf

# If you want to change the port on a SELinux system, you have to tell
# SELinux about this change.
# semanage port -a -t ssh_port_t -p tcp #PORTNUMBER
#
#Port 22
Port 22
Port 2022
#AddressFamily any
#ListenAddress 0.0.0.0
#ListenAddress ::

#HostKey /etc/ssh/ssh_host_rsa_key
#HostKey /etc/ssh/ssh_host_ecdsa_key
```

Рис. 15: Добавление портов

Проверка портов

```
[dmmosharov@server.dmmosharov.net ~]$ ssh dmmosharov@server.dmmosharov.net
dmmosharov@server.dmmosharov.net's password:
Activate the web console with: systemctl enable --now cockpit.socket

Last login: Fri Jan 30 23:36:59 2026 from 192.168.1.1
[dmmosharov@server.dmmosharov.net ~]$ sudo -i
[sudo] password for dmmosharov:
[root@server.dmmosharov.net ~]# logout
[dmmosharov@server.dmmosharov.net ~]$ sudo -i
[root@server.dmmosharov.net ~]# logout
[dmmosharov@server.dmmosharov.net ~]$
logout
Connection to server.dmmosharov.net closed.
[dmmosharov@server.dmmosharov.net ~]$ ssh -p2022 dmmosharov@server.dmmosharov.net
dmmosharov@server.dmmosharov.net's password:
Activate the web console with: systemctl enable --now cockpit.socket

Last login: Fri Jan 30 23:47:44 2026 from 192.168.1.1
[dmmosharov@server.dmmosharov.net ~]$ sudo -i
[sudo] password for dmmosharov:
[root@server.dmmosharov.net ~]#
logout
[dmmosharov@server.dmmosharov.net ~]$
logout
Connection to server.dmmosharov.net closed.
[dmmosharov@server.dmmosharov.net ~]$
```

Рис. 19: Проверка портов

Включение авторизации по ключу

```
  GNU nano 8.1                    /etc/ssh/sshd_config
# semanage port -a -t ssh_port_t -p tcp #PORTNUMBER
#
#Port 22
Port 22
Port 2022
#AddressFamily any
#ListenAddress 0.0.0.0
#ListenAddress ::

#HostKey /etc/ssh/ssh_host_rsa_key
#HostKey /etc/ssh/ssh_host_ecdsa_key
#HostKey /etc/ssh/ssh_host_ed25519_key

# Ciphers and keying
#RekeyLimit default none

# Logging
#SyslogFacility AUTH
#LogLevel INFO

# Authentication:

#LoginGraceTime 2m
PermitRootLogin no
AllowUsers vagrant demosharov
PubkeyAuthentication yes
#StrictModes yes
#MaxAuthTries 6
#MaxSessions 10

#PubkeyAuthentication yes

# The default is to check both .ssh/authorized_keys and .ssh/authorized
# but this is overridden so installations will only check .ssh/authori
AuthorizedKeysFile      .ssh/authorized_keys

#AuthorizedPrincipalsFile none

#AuthorizedKeysCommand none
                          [ Wrote 134 lines ]
^G Help      ^O Write Out ^W Where Is  ^K Cut     ^T Execute
^X Exit      ^R Read File ^\ Replace   ^U Paste   ^J Justify
```

Рис. 20: Включение авторизации по ключу

Перезапуск sshd

```
[root@server.dmmosharov.net ~]# systemctl restart sshd
[root@server.dmmosharov.net ~]#
```

Рис. 21: Перезапуск sshd

Формирование ключа для авторизации

```
root@client:~# su - dmmosharov
Last login: Fri Jan 30 23:11:50 UTC 2026 on pts/3
[dmmosharov@client.dmmosharov.net ~]$ ssh-keygen
Generating public/private ed25519 key pair.
Enter file in which to save the key (/home/dmmosharov/.ssh/id_ed25519):
Enter passphrase for "/home/dmmosharov/.ssh/id_ed25519" (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /home/dmmosharov/.ssh/id_ed25519
Your public key has been saved in /home/dmmosharov/.ssh/id_ed25519.pub
The key fingerprint is:
SHA256:wAxwDKIo0CEiSc2VklWXRcoCkJwxkCxUyiKbraOBM3E dmmosharov@client.dmmosharov.net
The key's randomart image is:
+--[ED25519 256]--+
|/%@X=o .+o       |
|@O*.++o..        |
|== . .+o         |
|o+.   ..         |
|+ E     S        |
|.+               |
|B                |
|.=               |
|.                |
+----[SHA256]-----+
[dmmosharov@client.dmmosharov.net ~]$ ssh-copy-id dmmosharov@server.dmmosharov.net
/usr/bin/ssh-copy-id: INFO: Source of key(s) to be installed: "/home/dmmosharov/.ssh/id_ed25519.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 t
he new keys

Number of key(s) added: 1

Now try logging into the machine, with: "ssh 'dmmosharov@server.dmmosharov.net'"
and check to make sure that only the key(s) you wanted were added.

[dmmosharov@client.dmmosharov.net ~]$
```

Рис. 22: Формирование ключа для авторизации

Подключение без пароля

```
[dmmosharov@client.dmmosharov.net ~]$ ssh dmmosharov@server.dmmosharov.net
Activate the web console with: systemctl enable --now cockpit.socket

Last login: Fri Jan 30 23:54:32 2026
[dmmosharov@server.dmmosharov.net ~]$
logout
Connection to server.dmmosharov.net closed.
[dmmosharov@client.dmmosharov.net ~]$
```

Рис. 23: Подключение без пароля

Список служб, использующих TCP

```
firefox   326857 327607 Backgro~P     dmmosharov  194u     IPv4            4843388       0t0       TCP cl
ient.dmmosharov.net:45216->163.181.0.230:https (ESTABLISHED)
firefox   326857 327815 FSBroker3     dmmosharov   58u     IPv4            4977688       0t0       TCP cl
ient.dmmosharov.net:50952->93.243.107.34.bc.googleusercontent.com:https (ESTABLISHED)
firefox   326857 327815 FSBroker3     dmmosharov   97u     IPv4            4858973       0t0       TCP cl
ient.dmmosharov.net:53608->163.181.0.230:https (ESTABLISHED)
firefox   326857 327815 FSBroker3     dmmosharov  166u     IPv4            4845702       0t0       TCP cl
ient.dmmosharov.net:45196->163.181.0.230:https (ESTABLISHED)
firefox   326857 327815 FSBroker3     dmmosharov  194u     IPv4            4843388       0t0       TCP cl
ient.dmmosharov.net:45216->163.181.0.230:https (ESTABLISHED)
firefox   326857 327819 FSBroker3     dmmosharov   58u     IPv4            4977688       0t0       TCP cl
ient.dmmosharov.net:50952->93.243.107.34.bc.googleusercontent.com:https (ESTABLISHED)
firefox   326857 327819 FSBroker3     dmmosharov   97u     IPv4            4858973       0t0       TCP cl
ient.dmmosharov.net:53608->163.181.0.230:https (ESTABLISHED)
firefox   326857 327819 FSBroker3     dmmosharov  166u     IPv4            4845702       0t0       TCP cl
ient.dmmosharov.net:45196->163.181.0.230:https (ESTABLISHED)
firefox   326857 327819 FSBroker3     dmmosharov  194u     IPv4            4843388       0t0       TCP cl
ient.dmmosharov.net:45216->163.181.0.230:https (ESTABLISHED)
firefox   326857 328054 DOM\x20Wo     dmmosharov   58u     IPv4            4977688       0t0       TCP cl
ient.dmmosharov.net:50952->93.243.107.34.bc.googleusercontent.com:https (ESTABLISHED)
firefox   326857 328054 DOM\x20Wo     dmmosharov   97u     IPv4            4858973       0t0       TCP cl
ient.dmmosharov.net:53608->163.181.0.230:https (ESTABLISHED)
firefox   326857 328054 DOM\x20Wo     dmmosharov  166u     IPv4            4845702       0t0       TCP cl
ient.dmmosharov.net:45196->163.181.0.230:https (ESTABLISHED)
firefox   326857 328054 DOM\x20Wo     dmmosharov  194u     IPv4            4843388       0t0       TCP cl
ient.dmmosharov.net:45216->163.181.0.230:https (ESTABLISHED)
firefox   326857 328055 threaded-     dmmosharov   58u     IPv4            4977688       0t0       TCP cl
```

Рис. 24: Список служб, использующих TCP

Перенаправление порта

```
[dmmosharov@client.dmmosharov.net ~]$ ssh -fNL 8080:localhost:80 dmmosharov@server.dmmosharov.net
[dmmosharov@client.dmmosharov.net ~]$ lsof | grep TCP
lsof: WARNING: can't stat() fuse.gvfsd-fuse file system /run/user/1000/gvfs
      Output information may be incomplete.
lsof: WARNING: can't stat() fuse.portal file system /run/user/1000/doc
      Output information may be incomplete.
lsof: WARNING: can't stat() fuse.gvfsd-fuse file system /run/user/0/gvfs
      Output information may be incomplete.
firefox   326857                      dmmosharov   58u     IPv4            4977688       0t0       TCP cl
ient.dmmosharov.net:50952->93.243.107.34.bc.googleusercontent.com:https (ESTABLISHED)
firefox   326857                      dmmosharov   97u     IPv4            4858973       0t0       TCP cl
ient.dmmosharov.net:53608->163.181.0.230:https (ESTABLISHED)
firefox   326857                      dmmosharov  166u     IPv4            4845702       0t0       TCP cl
ient.dmmosharov.net:45196->163.181.0.230:https (ESTABLISHED)
firefox   326857                      dmmosharov  194u     IPv4            4843388       0t0       TCP cl
ient.dmmosharov.net:45216->163.181.0.230:https (ESTABLISHED)
firefox   326857 326877 AsyncSi~l     dmmosharov   58u     IPv4            4977688       0t0       TCP cl
ient.dmmosharov.net:50952->93.243.107.34.bc.googleusercontent.com:https (ESTABLISHED)
firefox   326857 326877 AsyncSi~l     dmmosharov   97u     IPv4            4858973       0t0       TCP cl
```

Рис. 25: Перенаправление порта

Список служб

Рис. 26: Список служб

Запуск консольных утилит по ssh

```
[dmmosharov@client.dmmosharov.net ~]$ ssh dmmosharov@server.dmmosharov.net hostname
server.dmmosharov.net
[dmmosharov@client.dmmosharov.net ~]$ ssh dmmosharov@server.dmmosharov.net ls -Al
total 56
-rw-------.  1 dmmosharov dmmosharov  863 Jan 30 23:55 .bash_history
-rw-r--r--.  1 dmmosharov dmmosharov   18 Oct 29  2024 .bash_logout
-rw-r--r--.  1 dmmosharov dmmosharov  144 Oct 29  2024 .bash_profile
-rw-r--r--.  1 dmmosharov dmmosharov  603 Nov 25 19:31 .bashrc
drwx------. 12 dmmosharov dmmosharov 4096 Dec 16 23:53 .cache
drwx------. 11 dmmosharov dmmosharov 4096 Dec 17 02:02 .config
drwxr-xr-x.  2 dmmosharov dmmosharov    6 Nov 25 19:31 Desktop
drwxr-xr-x.  2 dmmosharov dmmosharov    6 Nov 25 19:31 Documents
drwxr-xr-x.  2 dmmosharov dmmosharov   46 Jan 20 16:40 Downloads
drwx------.  4 dmmosharov dmmosharov   32 Nov 25 19:31 .local
drwx------.  5 dmmosharov dmmosharov 4096 Jan 30 21:42 Maildir
drwxr-xr-x.  5 dmmosharov dmmosharov   54 Dec 16 22:38 .mozilla
drwxr-xr-x.  2 dmmosharov dmmosharov    6 Nov 25 19:31 Music
drwxr-xr-x.  3 dmmosharov dmmosharov   25 Dec 17 17:46 Pictures
drwxr-xr-x.  2 dmmosharov dmmosharov    6 Nov 25 19:31 Public
drwx------.  2 dmmosharov dmmosharov   71 Jan 30 23:26 .ssh
drwxr-xr-x.  2 dmmosharov dmmosharov    6 Nov 25 19:31 Templates
-rw-r-----.  1 dmmosharov dmmosharov    6 Jan 23 15:56 .vboxclient-clipboard-tty2-control.pid
-rw-r-----.  1 dmmosharov dmmosharov    7 Jan 31 00:05 .vboxclient-clipboard-tty2-service.pid
-rw-r-----.  1 dmmosharov dmmosharov    6 Jan 23 15:56 .vboxclient-draganddrop-tty2-control.pid
-rw-r-----.  1 dmmosharov dmmosharov    6 Jan 23 15:56 .vboxclient-hostversion-tty2-control.pid
-rw-r-----.  1 dmmosharov dmmosharov    6 Jan 23 15:56 .vboxclient-seamless-tty2-control.pid
-rw-r-----.  1 dmmosharov dmmosharov    6 Jan 23 15:56 .vboxclient-vmsvga-session-tty2-control.pid
-rw-r-----.  1 dmmosharov dmmosharov    6 Jan 23 15:56 .vboxclient-vmsvga-session-tty2-service.pid
drwxr-xr-x.  2 dmmosharov dmmosharov    6 Nov 25 19:31 Videos
[dmmosharov@client.dmmosharov.net ~]$ ssh dmmosharov@server.dmmosharov.net MAIL=~/Maildir/ mail
s-nail version v14.9.24.  Type `?' for help
/home/dmmosharov/Maildir: 3 messages 2 unread
    1 Denis Mosharov       2026-01-29 21:41   18/656   "test                    "
►U  2 Super User           2026-01-30 21:12   21/833   "LMTP test              "
 U  3 Denis Mosharov       2026-01-30 21:42   21/828   "lab10test              "
```

Рис. 28: Запуск консольных утилит по ssh

Включение форвардинга иксов

```
  GNU nano 8.1              /etc/ssh/sshd_config
# SELinux about this change.
# semanage port -a -t ssh_port_t -p tcp #PORTNUMBER
#
#Port 22
Port 22
Port 2022
#AddressFamily any
#ListenAddress 0.0.0.0
#ListenAddress ::

#HostKey /etc/ssh/ssh_host_rsa_key
#HostKey /etc/ssh/ssh_host_ecdsa_key
#HostKey /etc/ssh/ssh_host_ed25519_key

# Ciphers and keying
#RekeyLimit default none

# Logging
#SyslogFacility AUTH
#LogLevel INFO

# Authentication:

#LoginGraceTime 2m
PermitRootLogin no
AllowUsers vagrant dmmosharov
PubkeyAuthentication yes
X11Forwarding yes
#StrictModes yes
#MaxAuthTries 6
#MaxSessions 10

#PubkeyAuthentication yes

# The default is to check both .ssh/authorized_keys and .ssh/authorized
# but this is overridden so installations will only check .ssh/authori
AuthorizedKeysFile      .ssh/authorized_keys

#AuthorizedPrincipalsFile none

                        [ Wrote 135 lines ]
^G Help      ^O Write Out ^W Where Is  ^K Cut       ^T Execute
^X Exit      ^R Read File ^\ Replace   ^U Paste     ^J Justify
```

Рис. 29: Включение форвардинга иксов

Перезапуск sshd

```
[root@server.dmmosharov.net ~]# systemctl restart sshd
```

Рис. 30: Перезапуск sshd

Запуск графического приложения по ssh

```
Error: no DISPLAY environment variable specified
[dmmosharov@client.dmmosharov.net ~]$ ssh -YC dmmosharov@server.dmmosharov.net firefox
```

Рис. 31: Запуск графического приложения по ssh

Результат запуска графического приложения по ssh

Рис. 32: Результат запуска графического приложения по ssh

Сохранение в vagrant

```
[root@server.dmmosharov.net ~]# cd /vagrant/provision/server
[root@server.dmmosharov.net server]# mkdir -p /vagrant/provision/server
/ssh/etc/ssh
[root@server.dmmosharov.net server]# cp -R /etc/ssh/sshd_config /vagran
t/provision/server/ssh/etc/ssh/
[root@server.dmmosharov.net server]# cd /vagrant/provision/server
[root@server.dmmosharov.net server]# touch ssh.sh
[root@server.dmmosharov.net server]# chmod +x ssh.sh
[root@server.dmmosharov.net server]# nano ssh.sh
```

Рис. 33: Сохранение в vagrant

ssh.sh

```
  GNU nano 8.1                    ssh.sh
#!/bin/bash
echo "Provisioning script $0"
echo "Copy configuration files"
cp -R /vagrant/provision/server/ssh/etc/* /etc
restorecon -vR /etc
echo "Configure firewall"
firewall-cmd --add-port=2022/tcp
firewall-cmd --add-port=2022/tcp --permanent
echo "Tuning SELinux"
semanage port -a -t ssh_port_t -p tcp 2022
echo "Restart sshd service"
systemctl restart sshd
```

Рис. 34: ssh.sh

Vagrantfile

```
                    path: "provision/server/firewall.sh"

  server.vm.provision "server mail",
                    type: "shell",
                    preserve_order: true,
                    path: "provision/server/mail.sh"

  server.vm.provision "server ssh",
                    type: "shell",
                    preserve_order: true,
                    path: "provision/server/ssh.sh"
end


## Client configuration
```

Рис. 35: Vagrantfile

Выводы

В результате выполнения лабораторной работы были получены навыки настройки ssh, форвардинга через него и настройки авторизации