

# Лабораторная работа №8

Тема «Настройка SMTP-сервера»

по дисциплине «Администрирование сетевых подсистем»

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«27» ноября 2023г.

### **Цель работы:**

Приобретение практических навыков по установке и конфигурированию SMTP-сервера.

## Задание

1. Установить на виртуальной машине server SMTP-сервер postfix.
2. Сделать первоначальную настройку postfix при помощи утилиты postconf, задав отправку писем не на локальный хост, а на сервер в домене.
3. Проверить отправку почты с сервера и клиента.
4. Сконфигурировать Postfix для работы в домене. Проверить отправку почты с сервера и клиента.
5. Написать скрипт для Vagrant, фиксирующий действия по установке и настройке Postfix во внутреннем окружении виртуальной машины server. Соответствующим образом внести изменения в Vagrantfile.

# Выполнение работы

## Установка Postfix

### Установка необходимых пакетов

```
[root@server.mrshcherbak.net services]# dnf -y install postfix
Last metadata expiration check: 0:32:39 ago on Thu 23 Nov 2023 09:48:45 PM UTC.
Dependencies resolved.
=====
Package                Architecture      Version           Repository        Size
=====
Installing:
postfix                x86_64            2:3.5.9-24.el9    appstream         1.4 M

Transaction Summary
=====
Install 1 Package

Total download size: 1.4 M
Installed size: 4.4 M
Downloading Packages:
postfix-3.5.9-24.el9.x86_64.rpm                                1.7 MB/s | 1.4 MB    00:00
-----
Total                                                                1.0 MB/s | 1.4 MB    00:01
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
  Preparing                :
  Running scriptlet: postfix-2:3.5.9-24.el9.x86_64                1/1
  Installing              : postfix-2:3.5.9-24.el9.x86_64                1/1
  Running scriptlet: postfix-2:3.5.9-24.el9.x86_64                1/1
  Verifying                : postfix-2:3.5.9-24.el9.x86_64                1/1

Installed:
postfix-2:3.5.9-24.el9.x86_64

Complete!
[root@server.mrshcherbak.net services]# dnf -y install s-nail
Last metadata expiration check: 0:33:12 ago on Thu 23 Nov 2023 09:48:45 PM UTC.
Dependencies resolved.
=====
Package                Architecture      Version           Repository        Size
=====
Installing:
s-nail                 x86_64            14.9.22-6.el9     appstream         621 k

Transaction Summary
=====
Install 1 Package

Total download size: 621 k
```

```
[root@server.mrshcherbak.net services]# firewall-cmd --add-service=smtp
success
[root@server.mrshcherbak.net services]# firewall-cmd --add-service=smtp --permanent
success
[root@server.mrshcherbak.net services]# firewall-cmd --list-services
cockpit dhcp dhcpv6-client dns http https smtp ssh
[root@server.mrshcherbak.net services]# restorecon -vR /etc
Relabeled /etc/sysconfig/network-scripts/ifcfg-eth1 from unconfined_u:object_r:user_tmp_t:s0 to unconfined_u:object_r:net_conf_t:s0
[root@server.mrshcherbak.net services]# systemctl enable postfix
Created symlink /etc/systemd/system/multi-user.target.wants/postfix.service → /usr/lib/systemd/system/postfix.service.
[root@server.mrshcherbak.net services]# systemctl start postfix
[root@server.mrshcherbak.net services]#
```

# Изменение параметров Postfix с помощью postconf

## Просмотр списка текущих настроек Postfix

```
[root@server.mrshcherbak.net services]# postconf
2bounce_notice_recipient = postmaster
access_map_defer_code = 450
access_map_reject_code = 554
address_verify_cache_cleanup_interval = 12h
address_verify_default_transport = $default_transport
address_verify_local_transport = $local_transport
address_verify_map = btree:$data_directory/verify_cache
address_verify_negative_cache = yes
address_verify_negative_expire_time = 3d
address_verify_negative_refresh_time = 3h
address_verify_pending_request_limit = 5000
address_verify_poll_count = ${stress?{1}:{3}}
address_verify_poll_delay = 3s
address_verify_positive_expire_time = 31d
address_verify_positive_refresh_time = 7d
address_verify_relay_transport = $relay_transport
address_verify_relayhost = $relayhost
address_verify_sender = $double_bounce_sender
address_verify_sender_dependent_default_transport_maps = $sender_dependent_default_transport_maps
address_verify_sender_dependent_relayhost_maps = $sender_dependent_relayhost_maps
address_verify_sender_ttl = 0s
address_verify_service_name = verify
address_verify_transport_maps = $transport_maps
address_verify_virtual_transport = $virtual_transport
alias_database = hash:/etc/aliases
alias_maps = hash:/etc/aliases
allow_mail_to_commands = alias, forward
allow_mail_to_files = alias, forward
allow_min_user = no
allow_percent_hack = yes
allow_srv_lookup_fallback = no
allow_untrusted_routing = no
alternate_config_directories =
always_add_missing_headers = no
always_bcc =
anvil_rate_time_unit = 60s
anvil_status_update_time = 600s
append_at_myorigin = yes
append_dot_mydomain = ${compatibility_level} < {1} ? {yes} : {no}
application_event_drain_time = 100s
```

## Просмотр текущих значений параметров myorigin и mydomain

```
[root@server.mrshcherbak.net services]# postconf myorigin
myorigin = $myhostname
[root@server.mrshcherbak.net services]# postconf mydomain
mydomain = mrshcherbak.net
```

## Замена значения параметра myorigin

```
[root@server.mrshcherbak.net services]# postconf -e 'myorigin = $mydomain'
[root@server.mrshcherbak.net services]# postconf myorigin
myorigin = $mydomain
[root@server.mrshcherbak.net services]# █
```

```
[root@server.mrshcherbak.net services]# postfix check
[root@server.mrshcherbak.net services]# systemctl reload postfix
[root@server.mrshcherbak.net services]# postconf -n
alias_database = hash:/etc/aliases
alias_maps = hash:/etc/aliases
command_directory = /usr/sbin
compatibility_level = 2
daemon_directory = /usr/libexec/postfix
data_directory = /var/lib/postfix
debug_peer_level = 2
debugger_command = PATH=/bin:/usr/bin:/usr/local/bin:/usr/X11R6/bin ddd $daemon_directory/$process_name $p
rocess_id & sleep 5
html_directory = no
inet_interfaces = localhost
inet_protocols = all
mail_owner = postfix
mailq_path = /usr/bin/mailq.postfix
manpage_directory = /usr/share/man
meta_directory = /etc/postfix
mydestination = $myhostname, localhost.$mydomain, localhost
myorigin = $mydomain
newaliases_path = /usr/bin/newaliases.postfix
queue_directory = /var/spool/postfix
readme_directory = /usr/share/doc/postfix/README_FILES
sample_directory = /usr/share/doc/postfix/samples
sendmail_path = /usr/sbin/sendmail.postfix
setgid_group = postdrop
shlib_directory = /usr/lib64/postfix
smtp_tls_CAfile = /etc/pki/tls/certs/ca-bundle.crt
smtp_tls_CApith = /etc/pki/tls/certs
smtp_tls_security_level = may
smtpd_tls_cert_file = /etc/pki/tls/certs/postfix.pem
smtpd_tls_key_file = /etc/pki/tls/private/postfix.key
smtpd_tls_security_level = may
unknown_local_recipient_reject_code = 550
[root@server.mrshcherbak.net services]#
```

Задала жёстко значение домена, отключила IPv6 в списке разрешённых в работе Postfix протоколов и оставила только IPv4

```
[root@server.mrshcherbak.net services]# postconf -e 'mydomain = mrshcherbak.net'
[root@server.mrshcherbak.net services]# postconf inet_protocols
inet_protocols = all
[root@server.mrshcherbak.net services]# postconf -e 'inet_protocols = ipv4'
[root@server.mrshcherbak.net services]# postfix check
[root@server.mrshcherbak.net services]# systemctl reload postfix
[root@server.mrshcherbak.net services]#
```

# Проверка работы Postfix

```
[mrshcherbak@server.mrshcherbak.net ~]$ echo . | mail -s test1 mrshcherbak@server.mrshcherbak.net
You have new mail in /var/spool/mail/mrshcherbak
[mrshcherbak@server.mrshcherbak.net ~]$
```

```
[root@server.mrshcherbak.net ~]# tail -f /var/log/maillog
Nov 23 22:39:37 server postfix/pickup[10645]: 2B92E101AF7B: uid=1001 from=<mrshcherbak>
Nov 23 22:39:37 server postfix/cleanup[10743]: 2B92E101AF7B: message-id=<20231123223937.2B92E101AF7B@server.mrshcherbak.net>
Nov 23 22:39:37 server postfix/qmgr[10646]: 2B92E101AF7B: from=<mrshcherbak@mrshcherbak.net>, size=352, nrcpt=1 (queue active)
Nov 23 22:39:37 server postfix/local[10749]: 2B92E101AF7B: to=<mrshcherbak@server.mrshcherbak.net>, relay=local, delay=0.07, delays=0.04/0.03/0/0, dsn=2.0.0, status=sent (delivered to mailbox)
Nov 23 22:39:37 server postfix/qmgr[10646]: 2B92E101AF7B: removed
Nov 23 22:40:56 server postfix/pickup[10645]: 9846E105DDF6: uid=1001 from=<mrshcherbak>
Nov 23 22:40:56 server postfix/cleanup[10743]: 9846E105DDF6: message-id=<20231123224056.9846E105DDF6@server.mrshcherbak.net>
Nov 23 22:40:56 server postfix/qmgr[10646]: 9846E105DDF6: from=<mrshcherbak@mrshcherbak.net>, size=352, nrcpt=1 (queue active)
Nov 23 22:40:56 server postfix/local[10749]: 9846E105DDF6: to=<mrshcherbak@server.mrshcherbak.net>, relay=local, delay=0.02, delays=0.01/0/0/0, dsn=2.0.0, status=sent (delivered to mailbox)
Nov 23 22:40:56 server postfix/qmgr[10646]: 9846E105DDF6: removed
```

Содержимое файла  
/var/spool/mail/mrshcherbak

```
mc [mrshcherbak@server.mrshcherbak.net]:/var/spool/mail
mc [mrshcherbak@server.mrshcherbak.net]:/v... x root@server:~ x
/var/spool/mail/mrshcherbak 1087/1088 99%
From mrshcherbak@mrshcherbak.net Thu Nov 23 22:39:37 2023
Return-Path: <mrshcherbak@mrshcherbak.net>
X-Original-To: mrshcherbak@server.mrshcherbak.net
Delivered-To: mrshcherbak@server.mrshcherbak.net
Received: by server.mrshcherbak.net (Postfix, from userid 1001)
        id 2B92E101AF7B; Thu, 23 Nov 2023 22:39:37 +0000 (UTC)
Date: Thu, 23 Nov 2023 22:39:37 +0000
To: mrshcherbak@server.mrshcherbak.net
Subject: test1
User-Agent: s-naill v14.9.22
Message-Id: <20231123223937.2B92E101AF7B@server.mrshcherbak.net>
From: mrshcherbak@mrshcherbak.net

.
From mrshcherbak@mrshcherbak.net Thu Nov 23 22:40:56 2023
Return-Path: <mrshcherbak@mrshcherbak.net>
X-Original-To: mrshcherbak@server.mrshcherbak.net
Delivered-To: mrshcherbak@server.mrshcherbak.net
Received: by server.mrshcherbak.net (Postfix, from userid 1001)
        id 9846E105DDF6; Thu, 23 Nov 2023 22:40:56 +0000 (UTC)
Date: Thu, 23 Nov 2023 22:40:56 +0000
To: mrshcherbak@server.mrshcherbak.net
Subject: test1
User-Agent: s-naill v14.9.22
Message-Id: <20231123224056.9846E105DDF6@server.mrshcherbak.net>
From: mrshcherbak@mrshcherbak.net

1Help 2UnWrap 3Quit 4Hex 5Goto 6 7Search 8Raw 9Format 10Quit
```

## Установка необходимых для работы пакетов

```
root@client:~
[mrshcherbak@client.mrshcherbak.net ~]$ sudo -i
[sudo] password for mrshcherbak:
[root@client.mrshcherbak.net ~]# dnf -y install postfix
Last metadata expiration check: 0:10:03 ago on Thu 23 Nov 2023 10:35:05 PM UTC.
Dependencies resolved.
=====
Package                        Architecture      Version           Repository        Size
=====
Installing:
postfix                        x86_64            2:3.5.9-24.el9    appstream         1.4 M
Transaction Summary
=====
Install 1 Package

Total download size: 1.4 M
Installed size: 4.4 M
Downloading Packages:
postfix-3.5.9-24.el9.x86_64.rpm                                1.8 MB/s | 1.4 MB  00:00
-----
Total                                                                1.0 MB/s | 1.4 MB  00:01
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
  Preparing      : postfix-2:3.5.9-24.el9.x86_64                1/1
  Running scriptlet: postfix-2:3.5.9-24.el9.x86_64                1/1
  Installing      : postfix-2:3.5.9-24.el9.x86_64                1/1
  Running scriptlet: postfix-2:3.5.9-24.el9.x86_64                1/1
  Verifying       : postfix-2:3.5.9-24.el9.x86_64                1/1

Installed:
postfix-2:3.5.9-24.el9.x86_64

Complete!
[root@client.mrshcherbak.net ~]# dnf -y install s-nail
Last metadata expiration check: 0:11:13 ago on Thu 23 Nov 2023 10:35:05 PM UTC.
Dependencies resolved.
=====
Package                        Architecture      Version           Repository        Size
=====
Installing:
s-nail                        x86_64            14.9.22-6.el9     appstream         621 k
```

```
[root@client.mrshcherbak.net ~]# postconf inet_protocols
inet_protocols = all
[root@client.mrshcherbak.net ~]# postconf -e 'inet_protocols = ipv4'
[root@client.mrshcherbak.net ~]# postconf inet_protocols
inet_protocols = ipv4
[root@client.mrshcherbak.net ~]# systemctl enable postfix
Created symlink /etc/systemd/system/multi-user.target.wants/postfix.service → /usr/lib/systemd/system/postfix.service.
[root@client.mrshcherbak.net ~]# systemctl start postfix
```

```
[mrshcherbak@client.mrshcherbak.net ~]$ echo . | mail -s test1 mrshcherbak@client.mrshcherbak.net
```



```
[root@server.mrshcherbak.net ~]# postconf inet_interfaces
inet_interfaces = localhost
[root@server.mrshcherbak.net ~]# postconf mynetworks
mynetworks = 127.0.0.0/8
[root@server.mrshcherbak.net ~]# postconf -e 'inet_interfaces = all'
[root@server.mrshcherbak.net ~]# postconf -e 'mynetworks = 127.0.0.0/8, 192.168.0.0/16'
[root@server.mrshcherbak.net ~]# postfix check
[root@server.mrshcherbak.net ~]# systemctl reload postfix
[root@server.mrshcherbak.net ~]# systemctl stop postfix
[root@server.mrshcherbak.net ~]# systemctl start postfix
[root@server.mrshcherbak.net ~]#
```

## Повторная отправка сообщения с клиента

```
[mrshcherbak@client.mrshcherbak.net mail]$ echo . | mail -s test1 mrshcherbak@server.mrshcherbak.net
You have new mail in /var/spool/mail/mrshcherbak
```

## Просмотр мониторинга почтовой службы

```
mrshcherbak@client:/var/spool/mail  x  root@client:~  x  root@server:~  x
Nov 23 23:10:42 client postfix/pickup[44223]: AEE03186762F: uid=1001 from=<mrshcherbak>
Nov 23 23:10:42 client postfix/cleanup[44470]: AEE03186762F: message-id=<20231123231042.AEE03186762F@client.mrshcherbak.net>
Nov 23 23:10:42 client postfix/qmgr[44224]: AEE03186762F: from=<mrshcherbak@client.mrshcherbak.net>, size=359, nrcpt=1 (queue active)
Nov 23 23:10:42 client postfix/smtp[44476]: AEE03186762F: to=<mrshcherbak@server.mrshcherbak.net>, relay=server.mrshcherbak.net[192.168.1.1]:25, delay=0.23, delays=0.04
/0.11/0.05/0.03, dsn=2.0.0, status=sent (250 2.0.0 Ok: queued as DCEBE101AF68)
Nov 23 23:10:42 client postfix/qmgr[44224]: AEE03186762F: removed
Nov 23 23:11:03 client postfix/pickup[44223]: AFC49186762F: uid=1001 from=<mrshcherbak>
Nov 23 23:11:03 client postfix/cleanup[44470]: AFC49186762F: message-id=<20231123231103.AFC49186762F@client.mrshcherbak.net>
Nov 23 23:11:03 client postfix/qmgr[44224]: AFC49186762F: from=<mrshcherbak@client.mrshcherbak.net>, size=359, nrcpt=1 (queue active)
Nov 23 23:11:03 client postfix/smtp[44476]: AFC49186762F: to=<mrshcherbak@server.mrshcherbak.net>, relay=server.mrshcherbak.net[192.168.1.1]:25, delay=0.04, delays=0.01
/0/0.02/0.01, dsn=2.0.0, status=sent (250 2.0.0 Ok: queued as B4785101AF68)
Nov 23 23:11:03 client postfix/qmgr[44224]: AFC49186762F: removed
Nov 23 23:12:35 client postfix/pickup[44223]: 03E40186762F: uid=1001 from=<mrshcherbak>
Nov 23 23:12:35 client postfix/cleanup[44470]: 03E40186762F: message-id=<20231123231235.03E40186762F@client.mrshcherbak.net>
Nov 23 23:12:35 client postfix/qmgr[44224]: 03E40186762F: from=<mrshcherbak@client.mrshcherbak.net>, size=359, nrcpt=1 (queue active)
Nov 23 23:12:35 client postfix/smtp[44476]: 03E40186762F: to=<mrshcherbak@server.mrshcherbak.net>, relay=server.mrshcherbak.net[192.168.1.1]:25, delay=0.05, delays=0.01
/0/0.02/0.01, dsn=2.0.0, status=sent (250 2.0.0 Ok: queued as 0A34A101AF68)
Nov 23 23:12:35 client postfix/qmgr[44224]: 03E40186762F: removed
Nov 23 23:12:39 client postfix/pickup[44223]: B4512186762F: uid=1001 from=<mrshcherbak>
Nov 23 23:12:39 client postfix/cleanup[44470]: B4512186762F: message-id=<20231123231239.B4512186762F@client.mrshcherbak.net>
Nov 23 23:12:39 client postfix/qmgr[44224]: B4512186762F: from=<mrshcherbak@client.mrshcherbak.net>, size=359, nrcpt=1 (queue active)
Nov 23 23:12:39 client postfix/smtp[44476]: B4512186762F: to=<mrshcherbak@server.mrshcherbak.net>, relay=server.mrshcherbak.net[192.168.1.1]:25, delay=0.04, delays=0.01
/0/0.02/0.01, dsn=2.0.0, status=sent (250 2.0.0 Ok: queued as B9917101AF68)
Nov 23 23:12:39 client postfix/qmgr[44224]: B4512186762F: removed
Nov 23 23:13:36 client postfix/pickup[44223]: 343D2186762F: uid=1001 from=<mrshcherbak>
Nov 23 23:13:36 client postfix/cleanup[44470]: 343D2186762F: message-id=<20231123231336.343D2186762F@client.mrshcherbak.net>
Nov 23 23:13:36 client postfix/qmgr[44224]: 343D2186762F: from=<mrshcherbak@client.mrshcherbak.net>, size=352, nrcpt=1 (queue active)
Nov 23 23:13:36 client postfix/smtp[44476]: 343D2186762F: to=<mrshcherbak@mrshcherbak.net>, relay=mrshcherbak.net[192.168.1.1]:25, delay=0.04, delays=0.01/0.02/0.01,
dsn=2.0.0, status=sent (250 2.0.0 Ok: queued as 39399101AF68)
Nov 23 23:13:36 client postfix/qmgr[44224]: 343D2186762F: removed
```

# Конфигурация Postfix для домена

```
[mrshcherbak@client.mrshcherbak.net mail]$ echo . | mail -s test2 mrshcherbak@mrshcherbak.net
```

Для настройки возможности отправки сообщений не на конкретный узел сети, а на доменный адрес прописала MX-запись с указанием имени почтового сервера mail.mrshcherbak.net в файле прямой и обратной DNS-зоны.

```
mc [root@server.mrshcherbak.net]:/var/named/maste... x
/var/named/master/fz/mrshcherbak.net
$ORIGIN .
$TTL 86400          ; 1 day
mrshcherbak.net     IN SOA  mrshcherbak.net. server.mrshcherbak.net. (
    2023111208 ; serial
    86400      ; refresh (1 day)
    3600       ; retry (1 hour)
    604800     ; expire (1 week)
    10800      ; minimum (3 hours)
)
                     NS     mrshcherbak.net.
                     A      192.168.1.1
                     MX 10  mail.mrshcherbak.net.
$ORIGIN mrshcherbak.net.
dhcp                A      192.168.1.1
ns                  A      192.168.1.1
server              A      192.168.1.1
www                 A      192.168.1.1
mail                A      192.168.1.1
```

```
mc [root@server.mrshcherbak.net]:/var/named/maste... x root@serv
/var/named/master/rz/192.168.1
$ORIGIN .
$TTL 86400          ; 1 day
1.168.192.in-addr.arpa IN SOA  1.168.192.in-addr.arpa. server.mrshcherbak.net. (
    2023111208 ; serial
    86400      ; refresh (1 day)
    3600       ; retry (1 hour)
    604800     ; expire (1 week)
    10800      ; minimum (3 hours)
)
                     NS     1.168.192.in-addr.arpa.
                     A      192.168.1.1
                     PTR    server.mrshcherbak.net.
                     MX 10  mail.mrshcherbak.net.
$ORIGIN 1.168.192.in-addr.arpa.
$TTL 300            ; 5 minutes
1                   PTR    server.mrshcherbak.net.
1                   PTR    ns.mrshcherbak.net.
1                   PTR    dhcp.mrshcherbak.net.
1                   PTR    www.mrshcherbak.net.
1                   PTR    mail.mrshcherbak.net.
```

```
[root@server.mrshcherbak.net fz]# postconf -e 'mydestination = $myhostname, localhost.$mydomain, localhost, $mydomain'
[root@server.mrshcherbak.net fz]# postfix check
[root@server.mrshcherbak.net fz]# systemctl reload postfix
[root@server.mrshcherbak.net fz]# restorecon -vR /etc
[root@server.mrshcherbak.net fz]# restorecon -vR /var/named
[root@server.mrshcherbak.net fz]# systemctl restart named
[root@server.mrshcherbak.net fz]# postqueue -f
[root@server.mrshcherbak.net fz]#
```

## Отправка почты с клиента на доменный адрес

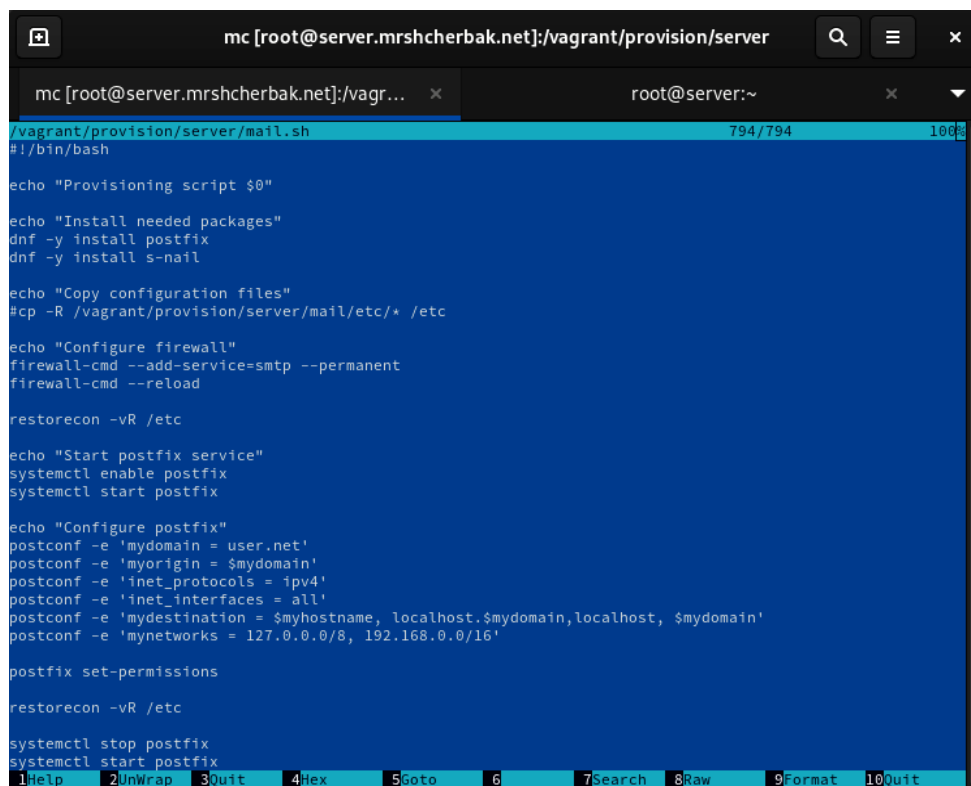
```
[mrshcherbak@client.mrshcherbak.net mail]$ postqueue -p
Mail queue is empty
You have new mail in /var/spool/mail/mrshcherbak
[mrshcherbak@client.mrshcherbak.net mail]$ echo . | mail -s test2 mrshcherbak@mrshcherbak.net
[mrshcherbak@client.mrshcherbak.net mail]$
```

```
root@client:~
mrshcherbak@client:/var/spool/mail
Nov 23 23:30:11 client postfix/cleanup[44590]: 03B82186762F: message-id=<20231123233011.03B82186762F@client.mrshcherbak.net>
Nov 23 23:30:11 client postfix/qmgr[44224]: 03B82186762F: from=<mrshcherbak@client.mrshcherbak.net>, size=352, nrcpt=1 (queue active)
Nov 23 23:30:11 client postfix/smtp[44596]: 03B82186762F: to=<mrshcherbak@mrshcherbak.net>, relay=mail.mrshcherbak.net[192.168.1.1]:25, delay=0.26, delays=0.05/0.09/0.09/0.03, dsn=2.0.0, status=sent (250 2.0.0 Ok: queued as 37E3B101AF6C)
Nov 23 23:30:11 client postfix/qmgr[44224]: 03B82186762F: removed
Nov 23 23:30:19 client postfix/pickup[44223]: D64DF186762F: uid=1001 from=<mrshcherbak>
Nov 23 23:30:19 client postfix/cleanup[44590]: D64DF186762F: message-id=<20231123233019.D64DF186762F@client.mrshcherbak.net>
Nov 23 23:30:19 client postfix/qmgr[44224]: D64DF186762F: from=<mrshcherbak@client.mrshcherbak.net>, size=352, nrcpt=1 (queue active)
Nov 23 23:30:19 client postfix/smtp[44596]: D64DF186762F: to=<mrshcherbak@mrshcherbak.net>, relay=mail.mrshcherbak.net[192.168.1.1]:25, delay=0.05, delays=0.01/0.0/0.02/0.01, dsn=2.0.0, status=sent (250 2.0.0 Ok: queued as DBE26101AF6C)
Nov 23 23:30:19 client postfix/qmgr[44224]: D64DF186762F: removed
^[[A^[[A^[[A
Nov 23 23:30:59 client postfix/pickup[44223]: 27919186761A: uid=1001 from=<mrshcherbak>
Nov 23 23:30:59 client postfix/cleanup[44590]: 27919186761A: message-id=<20231123233059.27919186761A@client.mrshcherbak.net>
Nov 23 23:30:59 client postfix/qmgr[44224]: 27919186761A: from=<mrshcherbak@client.mrshcherbak.net>, size=359, nrcpt=1 (queue active)
Nov 23 23:30:59 client postfix/smtp[44596]: 27919186761A: to=<mrshcherbak@server.mrshcherbak.net>, relay=server.mrshcherbak.net[192.168.1.1]:25, delay=0.04, delays=0.01/0.0/0.02/0.01, dsn=2.0.0, status=sent (250 2.0.0 Ok: queued as 2B8CB101AF6C)
Nov 23 23:30:59 client postfix/qmgr[44224]: 27919186761A: removed
Nov 23 23:31:07 client postfix/pickup[44223]: 64CA8186761A: uid=1001 from=<mrshcherbak>
Nov 23 23:31:07 client postfix/cleanup[44590]: 64CA8186761A: message-id=<20231123233107.64CA8186761A@client.mrshcherbak.net>
Nov 23 23:31:07 client postfix/qmgr[44224]: 64CA8186761A: from=<mrshcherbak@client.mrshcherbak.net>, size=359, nrcpt=1 (queue active)
Nov 23 23:31:07 client postfix/local[44627]: 64CA8186761A: to=<mrshcherbak@client.mrshcherbak.net>, relay=local, delay=0.05, delays=0.01/0.03/0.0/0.01, dsn=2.0.0, status=sent (delivered to mailbox)
Nov 23 23:31:07 client postfix/qmgr[44224]: 64CA8186761A: removed
Nov 23 23:31:24 client postfix/pickup[44223]: 038BB186761A: uid=1001 from=<mrshcherbak>
Nov 23 23:31:24 client postfix/cleanup[44590]: 038BB186761A: message-id=<20231123233124.038BB186761A@client.mrshcherbak.net>
Nov 23 23:31:24 client postfix/qmgr[44224]: 038BB186761A: from=<mrshcherbak@client.mrshcherbak.net>, size=352, nrcpt=1 (queue active)
Nov 23 23:31:24 client postfix/smtp[44596]: 038BB186761A: to=<mrshcherbak@mrshcherbak.net>, relay=mail.mrshcherbak.net[192.168.1.1]:25, delay=0.05, delays=0.02/0.0/0.02/0.01, dsn=2.0.0, status=sent (250 2.0.0 Ok: queued as 08B65101AF6C)
Nov 23 23:31:24 client postfix/qmgr[44224]: 038BB186761A: removed
```

# Внесение изменений в настройки внутреннего окружения виртуальной машины

```
[root@server.mrshcherbak.net fz]# cd /vagrant/provision/server/dns/var/named
[root@server.mrshcherbak.net named]# cp -R /var/named/* /vagrant/provision/server/dns/var/named
cp: overwrite '/vagrant/provision/server/dns/var/named/data/named.run'? y
cp: overwrite '/vagrant/provision/server/dns/var/named/dynamic/managed-keys.bind'? y
cp: overwrite '/vagrant/provision/server/dns/var/named/dynamic/managed-keys.bind.jnl'? y
cp: overwrite '/vagrant/provision/server/dns/var/named/master/fz/mrshcherbak.net.jnl'? y
cp: overwrite '/vagrant/provision/server/dns/var/named/master/fz/mrshcherbak.net'? y
cp: overwrite '/vagrant/provision/server/dns/var/named/master/rz/192.168.1.jnl'? y
cp: overwrite '/vagrant/provision/server/dns/var/named/master/rz/192.168.1'? y
cp: overwrite '/vagrant/provision/server/dns/var/named/named.ca'? y
cp: overwrite '/vagrant/provision/server/dns/var/named/named.empty'? y
cp: overwrite '/vagrant/provision/server/dns/var/named/named.localhost'? y
cp: overwrite '/vagrant/provision/server/dns/var/named/named.loopback'? y
[root@server.mrshcherbak.net named]# cd /vagrant/provision/server
[root@server.mrshcherbak.net server]# touch mail.sh
[root@server.mrshcherbak.net server]# chmod +x mail.sh
[root@server.mrshcherbak.net server]#
```

Содержимое файла  
/vagrant/provision/server/mail.sh



The screenshot shows a terminal window titled "mc [root@server.mrshcherbak.net]:/vagrant/provision/server". The terminal displays the execution of the script /vagrant/provision/server/mail.sh. The script performs several tasks: it sets the shell to /bin/bash, echoes the script name, installs postfix and s-nail, copies configuration files from /vagrant/provision/server/mail/etc/\* to /etc, configures the firewall to allow SMTP, reloads the firewall, restores /etc, starts the postfix service, configures postfix with specific settings (mydomain, myorigin, inet\_protocols, inet\_interfaces, mydestination, mynetworks), sets permissions, and finally stops and starts postfix. The terminal output is as follows:

```
mc [root@server.mrshcherbak.net]:/vagr... x root@server:~ x
/vagrant/provision/server/mail.sh 794/794 100%
#!/bin/bash

echo "Provisioning script $0"

echo "Install needed packages"
dnf -y install postfix
dnf -y install s-nail

echo "Copy configuration files"
#cp -R /vagrant/provision/server/mail/etc/* /etc

echo "Configure firewall"
firewall-cmd --add-service=smtp --permanent
firewall-cmd --reload

restorecon -vR /etc

echo "Start postfix service"
systemctl enable postfix
systemctl start postfix

echo "Configure postfix"
postconf -e 'mydomain = user.net'
postconf -e 'myorigin = $mydomain'
postconf -e 'inet_protocols = ipv4'
postconf -e 'inet_interfaces = all'
postconf -e 'mydestination = $myhostname, localhost.$mydomain, localhost, $mydomain'
postconf -e 'mynetworks = 127.0.0.0/8, 192.168.0.0/16'

postfix set-permissions

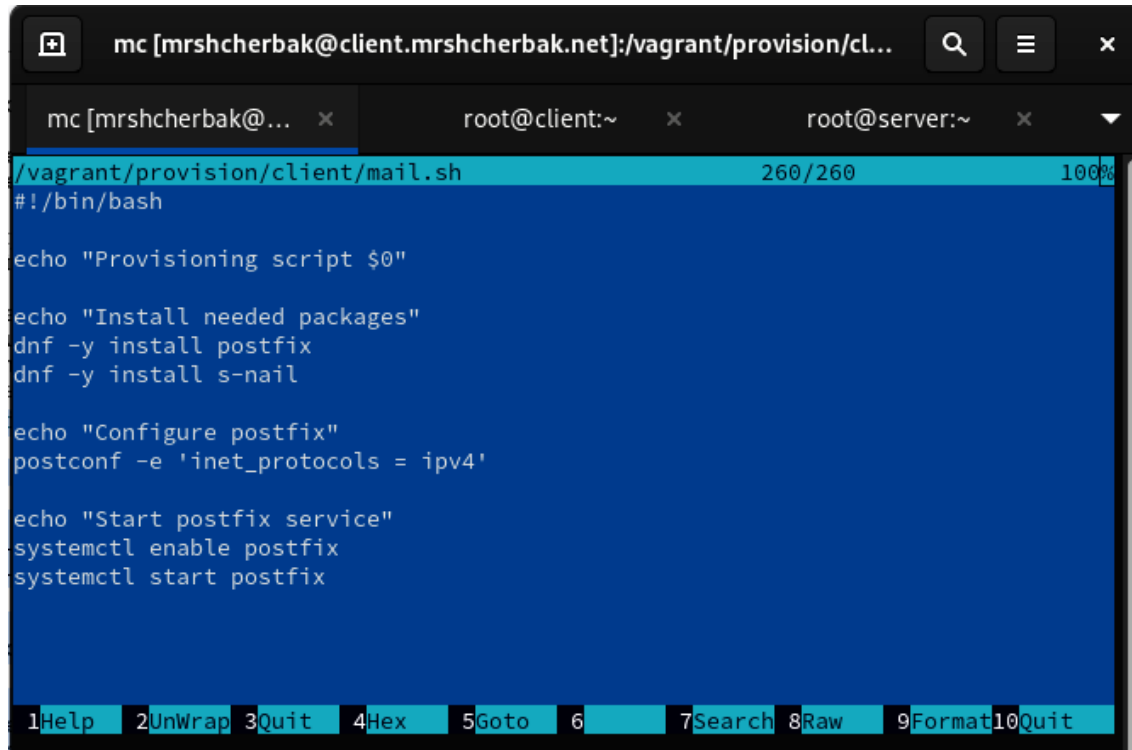
restorecon -vR /etc

systemctl stop postfix
systemctl start postfix
```

At the bottom of the terminal, there is a navigation bar with the following options: 1Help, 2UnWrap, 3Quit, 4Hex, 5Goto, 6, 7Search, 8Raw, 9Format, 10Quit.

```
[mrshcherbak@client.mrshcherbak.net mail]$ cd /vagrant/provision/client
[mrshcherbak@client.mrshcherbak.net client]$ touch mail.sh
[mrshcherbak@client.mrshcherbak.net client]$ chmod +x mail.sh
[mrshcherbak@client.mrshcherbak.net client]$ mc
```

Содержимое файла /vagrant/provision/client/mail.sh



```
mc [mrshcherbak@client.mrshcherbak.net]:/vagrant/provision/cl...
/vagrant/provision/client/mail.sh 260/260 100%
#!/bin/bash

echo "Provisioning script $0"

echo "Install needed packages"
dnf -y install postfix
dnf -y install s-nail

echo "Configure postfix"
postconf -e 'inet_protocols = ipv4'

echo "Start postfix service"
systemctl enable postfix
systemctl start postfix

1Help 2UnWrap 3Quit 4Hex 5Goto 6 7Search 8Raw 9Format 10Quit
```

```
*C:\Work\mrshcherbak\vagrant\Vagrantfile - Notepad++
Файл Правка Поиск Вид Кодировки Синтаксисы Опции Инструменты Макросы Запуск
Vagrantfile
49         type: "shell",
50         preserve_order: true,
51         path: "provision/server/dhcp.sh"
52
53     server.vm.provision "server http",
54         type: "shell",
55         preserve_order: true,
56         path: "provision/server/http.sh"
57
58     server.vm.provision "server mysql",
59         type: "shell",
60         preserve_order: true,
61         path: "provision/server/mysql.sh"
62
63     server.vm.provision "server firewall",
64         type: "shell",
65         preserve_order: true,
66         path: "provision/server/firewall.sh"
67
68     server.vm.provision "server mail",
69         type: "shell",
70         preserve_order: true,
71         path: "provision/server/mail.sh"
72
73     server.vm.provider :virtualbox do |v|
74         v.linked_clone = true
75         # Customize the amount of memory on the VM
76         v.memory = 1024
77         v.cpus = 1
78         v.name = "server"
```

```
*C:\Work\mrshcherbak\vagrant\Vagrantfile - Notepad++
Файл Правка Поиск Вид Кодировки Синтаксисы Опции Инструменты Макросы Запуск Плагины Вкл
Vagrantfile
88     end
89
90     ## Client configuration
91     config.vm.define "client", autostart: false do |client|
92         client.vm.box = "rocky9"
93         client.vm.hostname = 'client'
94
95         client.vm.boot_timeout = 1440
96
97         client.ssh.insert_key = false
98         client.ssh.username = 'vagrant'
99         client.ssh.password = 'vagrant'
100
101         client.vm.network :private_network,
102             type: "dhcp",
103             virtualbox____intnet: true
104
105         client.vm.provision "client dummy",
106             type: "shell",
107             preserve_order: true,
108             path: "provision/client/01-dummy.sh"
109
110         client.vm.provision "client routing",
111             type: "shell",
112             preserve_order: true,
113             run: "always",
114             path: "provision/client/01-routing.sh"
115
116         client.vm.provision "client mail",
117             type: "shell",
118             preserve_order: true,
119             path: "provision/client/mail.sh"
120
121         client.vm.provider :virtualbox do |v|
122             v.linked_clone = true
123             # Customize the amount of memory on the VM
```

**Вывод:** таким образом, в ходе выполнения л/р №8 я приобрела практические навыки по установке и конфигурированию SMTP-сервера.