Лабораторная работа №8

Тема «Настройка SMTP-сервера»

по дисциплине «Администрирование сетевых подсистем»

Выполнил: Щербак Маргарита Романовна

Студент группы: НПИбд-02-21

«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        :                                                             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@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_CApath = /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

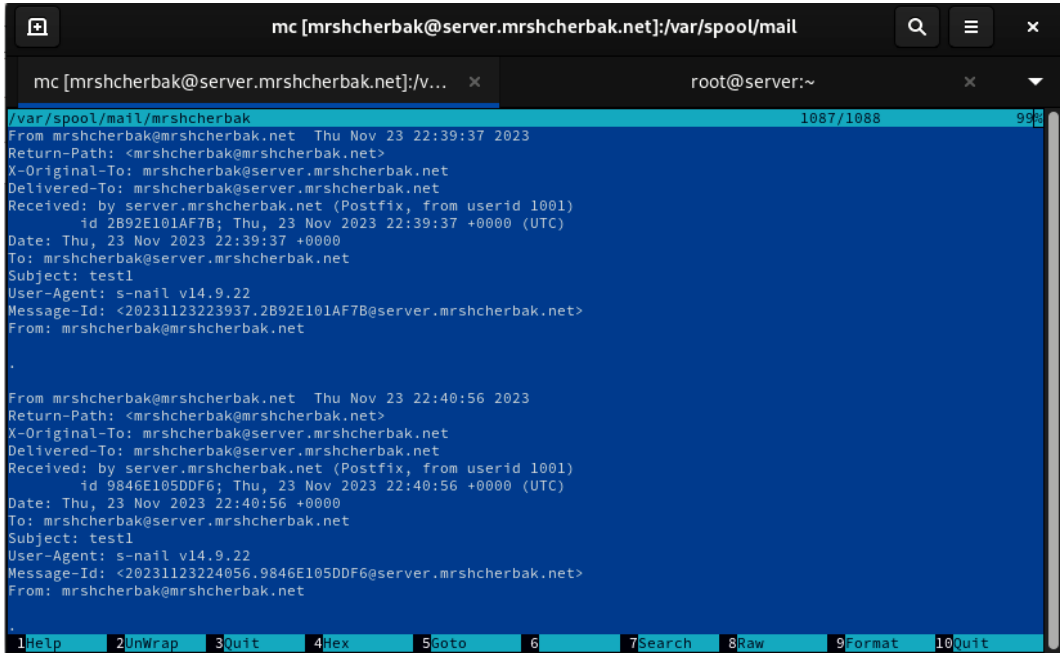
```
[root@server.mrshcherbak.net services]# postconf -e 'mydomain = mrshcherbak.net'
[root@server.mrshcherbak.net services]# postconf inet_protocols
inet_protocols = all
[root@server.mrshcherbak.net services]# postconf -e 'inet_protocols = ipv4'
[root@server.mrshcherbak.net services]# postfix check
[root@server.mrshcherbak.net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



Установка необходимых для работы пакетов

root@client:~ | root@server:~

```
[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        :                                                                                                      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 | root@client:~ | root@server:~

```
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 B47B5101AF68)
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=0.01/0/0.02/0.01,
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...

```
/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... 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 = $myhostname, localhost.$mydoma
in, 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:~

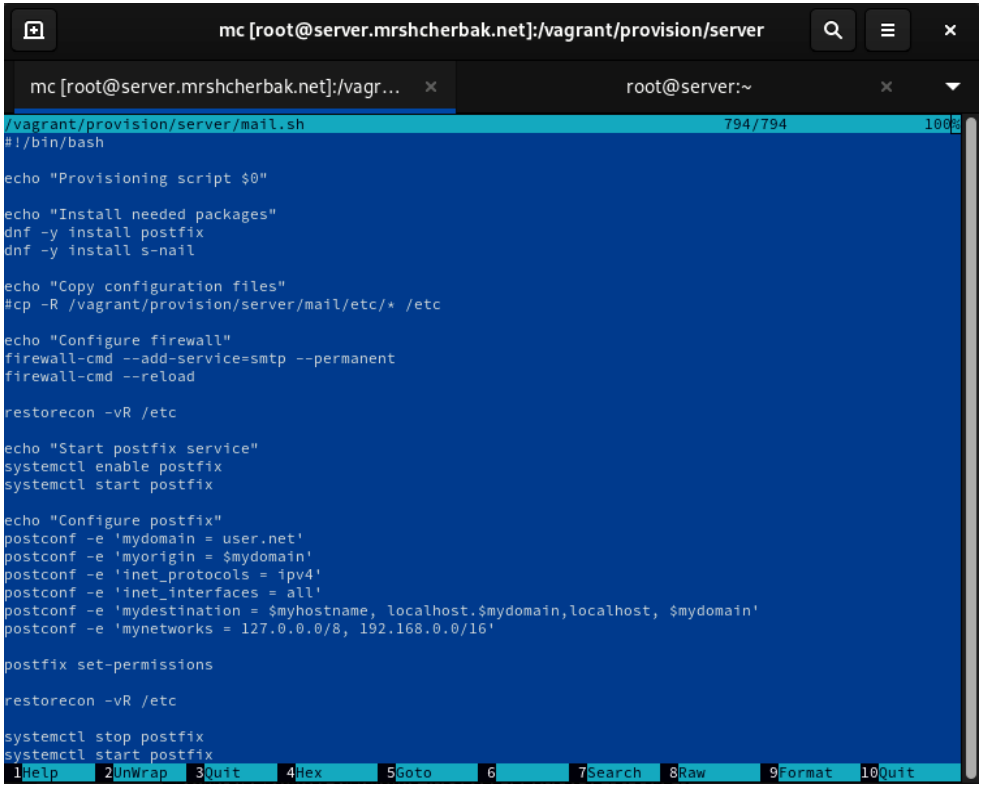
mrshcherbak@client:/var/spool/mail | root@client:~ | root@server:~

```
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=0.01/0/0.02/0.01, 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=0.01/0/0.02/0.01, dsn=2.0.0, status=sent (250 2.0.0 Ok: queued as 2BBCB101AF6C)
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=0.01/0.03/0/0.01, 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=0.02/0/0.02/0.01, 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

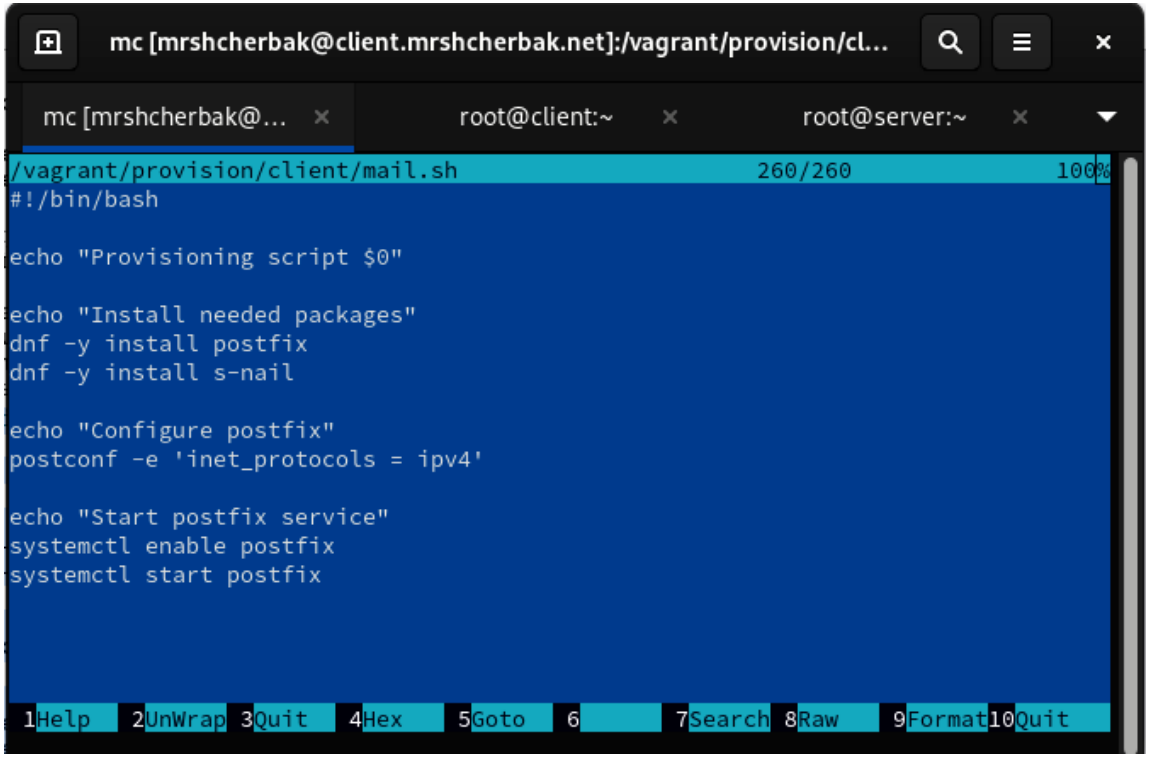
```
[root@server.mrshcherbak.net fz]# cd /vagrant/provision/server/dns/var/named
[root@server.mrshcherbak.net named]# cp -R /var/named/* /vagrant/provision/server/dns/var/named
cp: overwrite '/vagrant/provision/server/dns/var/named/data/named.run'? y
cp: overwrite '/vagrant/provision/server/dns/var/named/dynamic/managed-keys.bind'? 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]#
```

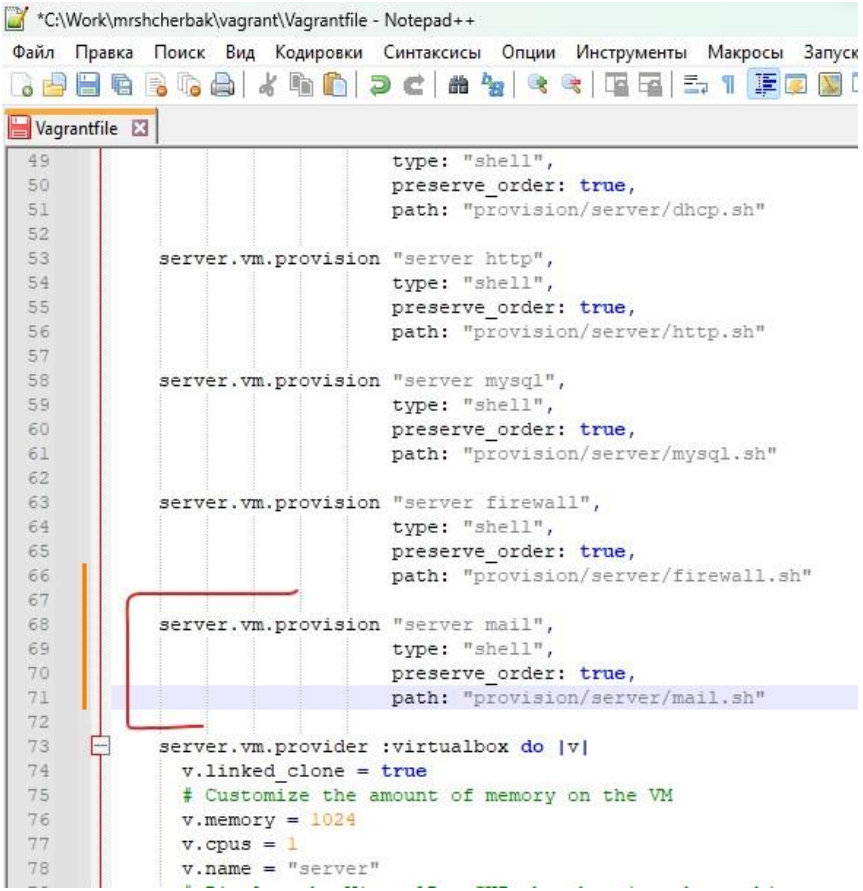
Содержимое файла
/vagrant/provision/server/mail.sh

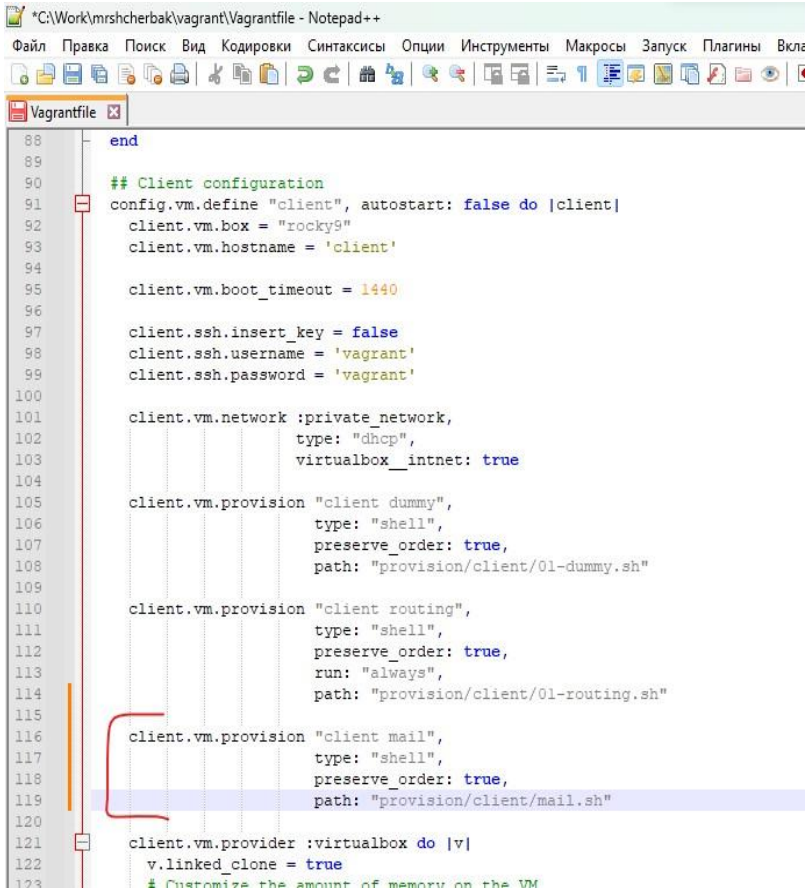


```
[mrshcherbak@client.mrshcherbak.net mail]$ cd /vagrant/provision/client
[mrshcherbak@client.mrshcherbak.net client]$ touch mail.sh
[mrshcherbak@client.mrshcherbak.net client]$ chmod +x mail.sh
[mrshcherbak@client.mrshcherbak.net client]$ mc
```

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







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