

Лабораторная работа №8

Настройка SMTP-сервера

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Установка Postfix

```
root@server:~  
[ismakhorin@server.ismakhorin.net ~]$ sudo -i  
[sudo] password for ismakhorin:  
[root@server.ismakhorin.net ~]# dnf -y install postfix  
Last metadata expiration check: 3:50:00 ago on Thu 16 Nov 2023 12:26:49 PM UTC.  
Dependencies resolved.  
=====
```

| Package | Architecture | Version | Repository | Size |
|---------|--------------|---------|------------|------|
|---------|--------------|---------|------------|------|

```
=====
```

Installing:

| | | | | |
|---------|--------|----------------|-----------|-------|
| postfix | x86_64 | 2:3.5.9-19.el9 | appstream | 1.4 M |
|---------|--------|----------------|-----------|-------|

Transaction Summary

```
=====
```

Install 1 Package

Total download size: 1.4 M
Installed size: 4.4 M
Downloading Packages:

| | | |
|---------------------------------|-------------------|-------|
| postfix-3.5.9-19.el9.x86_64.rpm | 2.5 MB/s 1.4 MB | 00:00 |
|---------------------------------|-------------------|-------|

```
-----
```

| | | |
|-------|-------------------|-------|
| Total | 920 kB/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-2:3.5.9-19.el9.x86_64 | | 1/1 |

```
-----
```

Рис. 1.1. Открытие режима суперпользователя и установка пакета postfix.

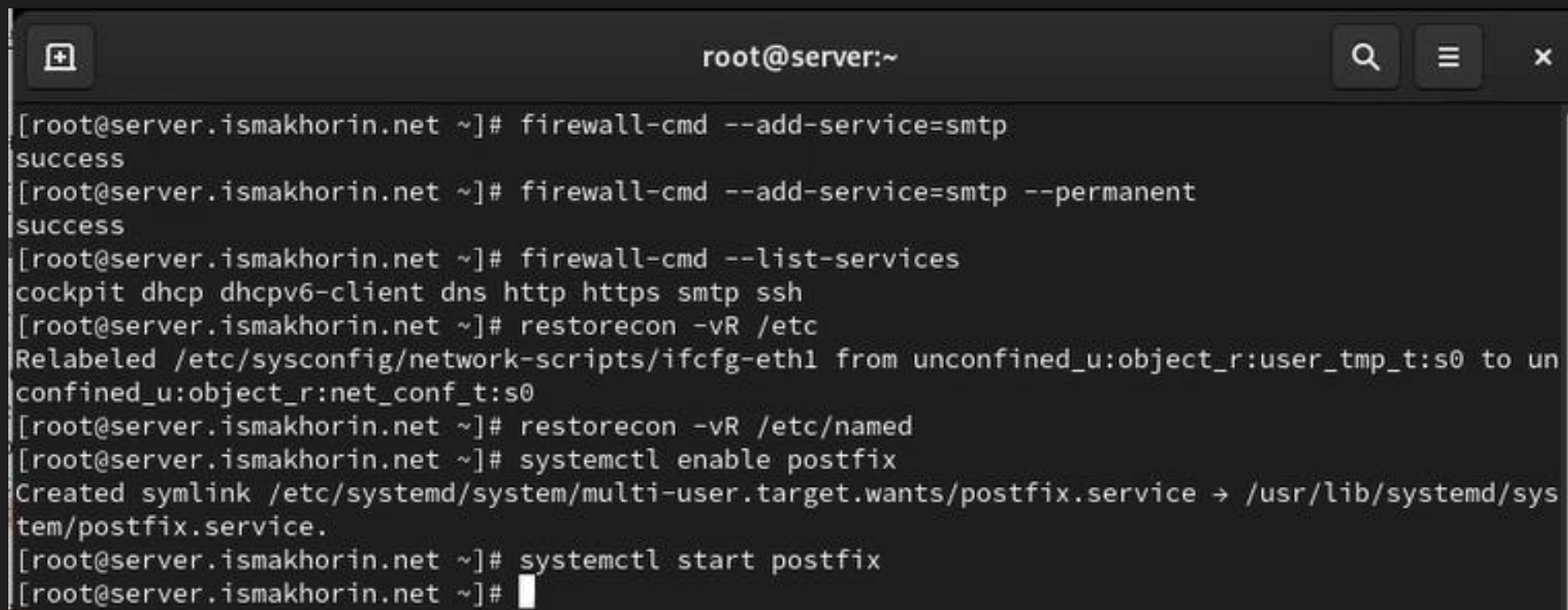
Установка Postfix

```
[root@server.ismakhorin.net ~]# dnf -y install s-nail
Last metadata expiration check: 3:50:31 ago on Thu 16 Nov 2023 12:26:49 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
Installed size: 1.1 M
Downloading Packages:
s-nail-14.9.22-6.el9.x86_64.rpm                                763 kB/s | 621 kB    00:00
-----
Total                                                            372 kB/s | 621 kB    00:01
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
```

Рис. 1.2. Установка пакета s-nail.

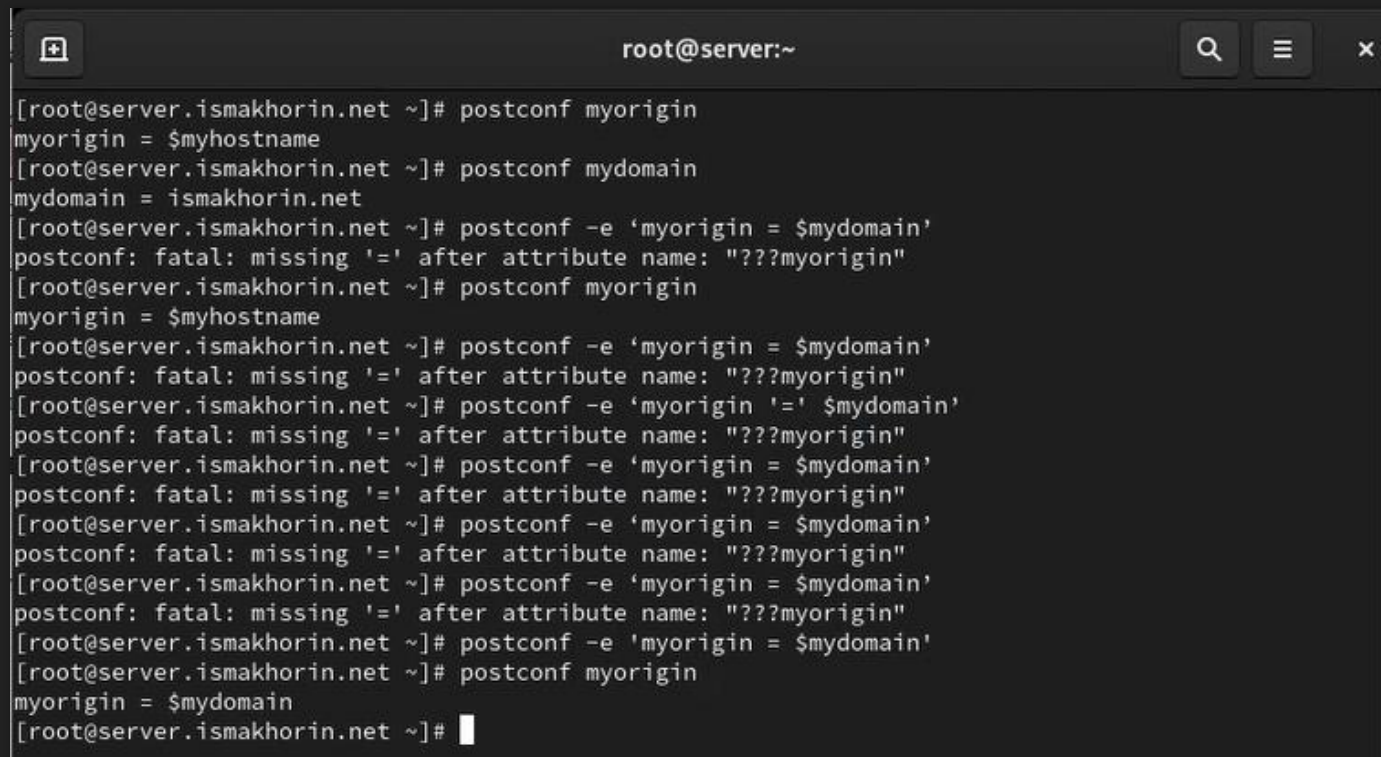
Установка Postfix



```
root@server:~  
[root@server.ismakhorin.net ~]# firewall-cmd --add-service=smtp  
success  
[root@server.ismakhorin.net ~]# firewall-cmd --add-service=smtp --permanent  
success  
[root@server.ismakhorin.net ~]# firewall-cmd --list-services  
cockpit dhcp dhcpv6-client dns http https smtp ssh  
[root@server.ismakhorin.net ~]# 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.ismakhorin.net ~]# restorecon -vR /etc/named  
[root@server.ismakhorin.net ~]# systemctl enable postfix  
Created symlink /etc/systemd/system/multi-user.target.wants/postfix.service → /usr/lib/systemd/system/postfix.service.  
[root@server.ismakhorin.net ~]# systemctl start postfix  
[root@server.ismakhorin.net ~]#
```

Рис. 1.3. Конфигурирование межсетевого экрана, разрешив работать службе протокола SMTP. Восстановление контекста безопасности в SELinux и запуск Postfix.

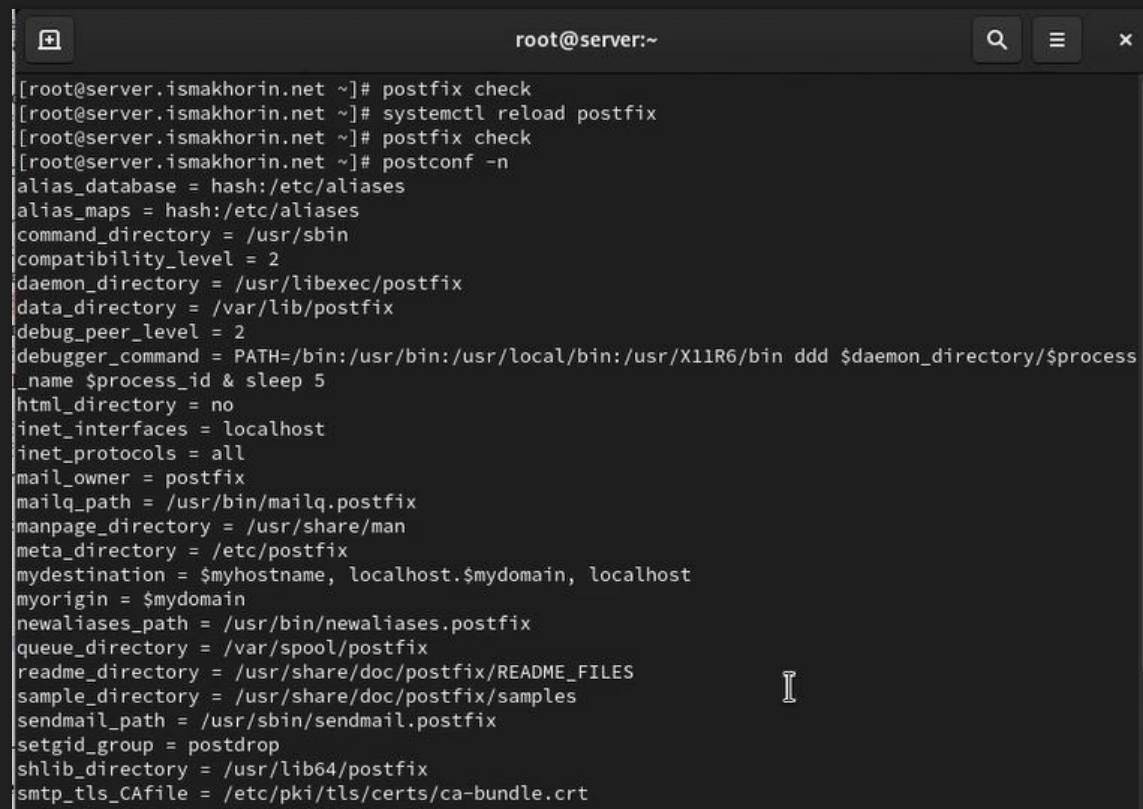
Изменение параметров Postfix с помощью postconf

A terminal window titled 'root@server:~' with search, menu, and close icons in the title bar. The terminal shows a series of commands to view and modify Postfix configuration. The 'postconf myorigin' command is used multiple times to show the current value of the 'myorigin' parameter, which is initially '\$myhostname'. The 'postconf mydomain' command shows the value of 'mydomain' as 'ismakhorin.net'. Several attempts are made to use 'postconf -e' to change 'myorigin' to '\$mydomain', but each fails with the error 'postconf: fatal: missing '=' after attribute name: "??myorigin"'. Finally, the command 'postconf -e 'myorigin' '=' \$mydomain' is used successfully to change the value. The terminal ends with the command 'postconf myorigin' showing the new value '\$mydomain'.

```
[root@server.ismakhorin.net ~]# postconf myorigin
myorigin = $myhostname
[root@server.ismakhorin.net ~]# postconf mydomain
mydomain = ismakhorin.net
[root@server.ismakhorin.net ~]# postconf -e 'myorigin = $mydomain'
postconf: fatal: missing '=' after attribute name: "??myorigin"
[root@server.ismakhorin.net ~]# postconf myorigin
myorigin = $myhostname
[root@server.ismakhorin.net ~]# postconf -e 'myorigin = $mydomain'
postconf: fatal: missing '=' after attribute name: "??myorigin"
[root@server.ismakhorin.net ~]# postconf -e 'myorigin =' $mydomain'
postconf: fatal: missing '=' after attribute name: "??myorigin"
[root@server.ismakhorin.net ~]# postconf -e 'myorigin = $mydomain'
postconf: fatal: missing '=' after attribute name: "??myorigin"
[root@server.ismakhorin.net ~]# postconf -e 'myorigin = $mydomain'
postconf: fatal: missing '=' after attribute name: "??myorigin"
[root@server.ismakhorin.net ~]# postconf -e 'myorigin =' $mydomain'
postconf: fatal: missing '=' after attribute name: "??myorigin"
[root@server.ismakhorin.net ~]# postconf -e 'myorigin = $mydomain'
[root@server.ismakhorin.net ~]# postconf myorigin
myorigin = $mydomain
[root@server.ismakhorin.net ~]#
```

Рис. 2.1. Просмотр списка текущих настроек Postfix, текущего значения параметра `myorigin` и текущего значения параметра `mydomain`. Замена значения параметра `myorigin` на значение параметра `mydomain` и выполнение проверки.

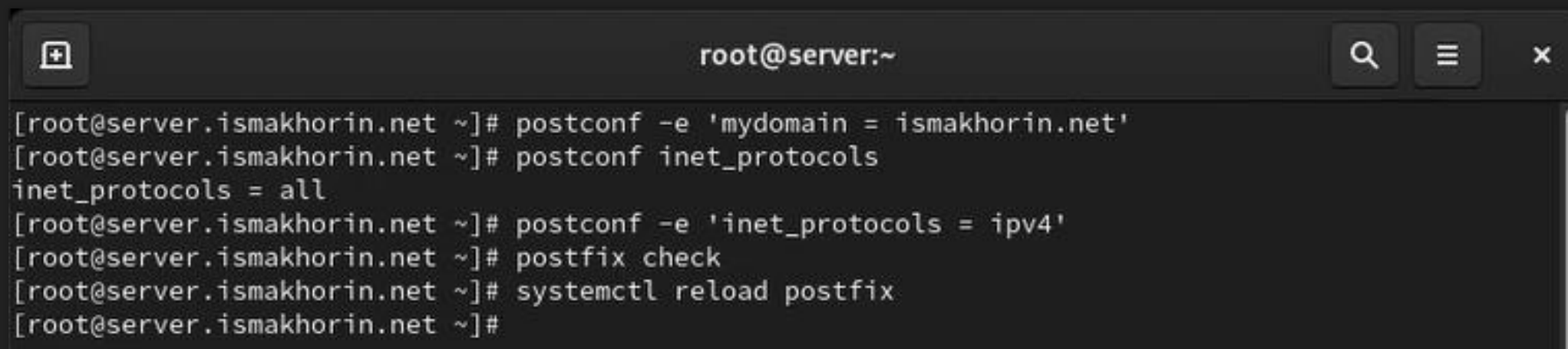
Изменение параметров Postfix с помощью postconf



```
root@server:~  
[root@server.ismakhorin.net ~]# postfix check  
[root@server.ismakhorin.net ~]# systemctl reload postfix  
[root@server.ismakhorin.net ~]# postfix check  
[root@server.ismakhorin.net ~]# 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 $process_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
```

Рис. 2.2. Проверка корректности содержания конфигурационного файла main.cf, перезагрузка конфигурационных файлов Postfix и просмотр всех параметров с значением, отличным от значения по умолчанию.

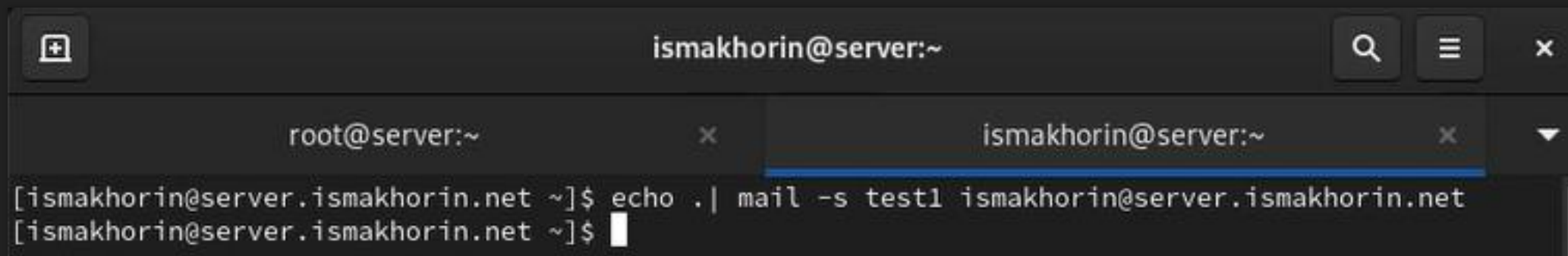
Изменение параметров Postfix с помощью postconf

A terminal window with a dark background and light text. The title bar shows 'root@server:~' and standard window controls. The terminal content shows a series of commands and their outputs for configuring Postfix.

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

Рис. 2.3. Задаём жёстко значение домена, отключение IPv6 в списке разрешённых в работе Postfix протоколов и оставление только IPv4, перезагрузка конфигурации Postfix.

Проверка работы Postfix

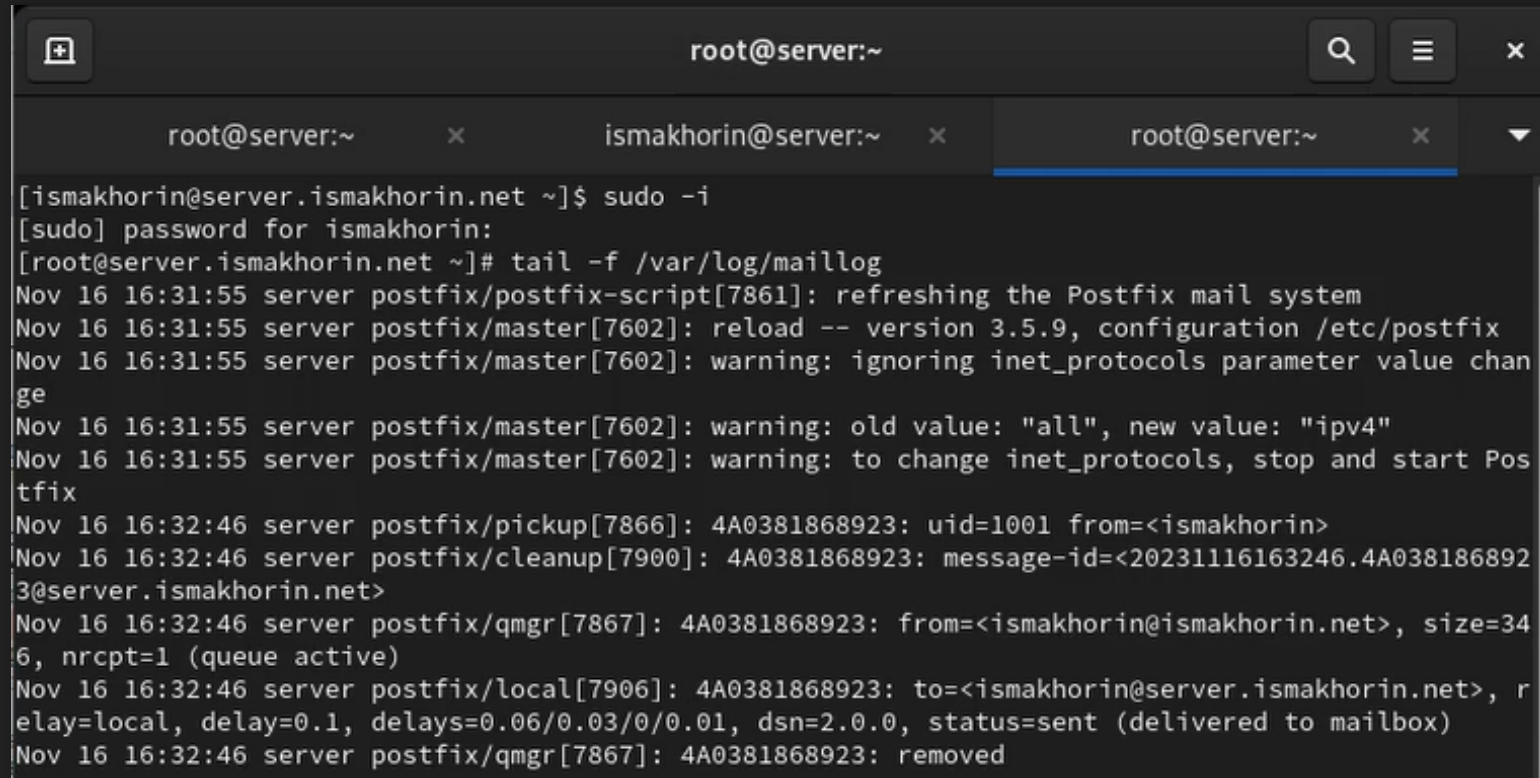


The image shows a terminal window with a dark background. The title bar at the top reads 'ismakhorin@server:~'. Below the title bar, there are two tabs: 'root@server:~' and 'ismakhorin@server:~'. The 'ismakhorin@server:~' tab is selected and highlighted with a blue underline. The terminal content shows the following commands and output:

```
[ismakhorin@server.ismakhorin.net ~]$ echo . | mail -s test1 ismakhorin@server.ismakhorin.net  
[ismakhorin@server.ismakhorin.net ~]$
```

Рис. 3.1. Отправка на сервере под учётной записью пользователя себе письма, используя утилиту mail.

Проверка работы Postfix



The image shows a terminal window with a dark theme. The title bar at the top reads 'root@server:~'. Below the title bar, there are three tabs: 'root@server:~', 'ismakhorin@server:~', and 'root@server:~'. The active tab is the third one. The terminal content shows the following commands and output:

```
[ismakhorin@server.ismakhorin.net ~]$ sudo -i
[sudo] password for ismakhorin:
[root@server.ismakhorin.net ~]# tail -f /var/log/maillog
Nov 16 16:31:55 server postfix/postfix-script[7861]: refreshing the Postfix mail system
Nov 16 16:31:55 server postfix/master[7602]: reload -- version 3.5.9, configuration /etc/postfix
Nov 16 16:31:55 server postfix/master[7602]: warning: ignoring inet_protocols parameter value change
Nov 16 16:31:55 server postfix/master[7602]: warning: old value: "all", new value: "ipv4"
Nov 16 16:31:55 server postfix/master[7602]: warning: to change inet_protocols, stop and start Postfix
Nov 16 16:32:46 server postfix/pickup[7866]: 4A0381868923: uid=1001 from=<ismakhorin>
Nov 16 16:32:46 server postfix/cleanup[7900]: 4A0381868923: message-id=<20231116163246.4A0381868923@server.ismakhorin.net>
Nov 16 16:32:46 server postfix/qmgr[7867]: 4A0381868923: from=<ismakhorin@ismakhorin.net>, size=346, nrcpt=1 (queue active)
Nov 16 16:32:46 server postfix/local[7906]: 4A0381868923: to=<ismakhorin@server.ismakhorin.net>, relay=local, delay=0.1, delays=0.06/0.03/0/0.01, dsn=2.0.0, status=sent (delivered to mailbox)
Nov 16 16:32:46 server postfix/qmgr[7867]: 4A0381868923: removed
```

Рис. 3.2. Запуск на втором терминале мониторинга работы почтовой службы и просмотр действий с сообщением.

Проверка работы Postfix

```
root@client:~  
[ismakhorin@client.ismakhorin.net ~]$ sudo -i  
[sudo] password for ismakhorin:  
[root@client.ismakhorin.net ~]# dnf -y install postfix  
Rocky Linux 9 - BaseOS 3.2 kB/s | 4.1 kB 00:01  
Rocky Linux 9 - AppStream 4.7 kB/s | 4.5 kB 00:00  
Rocky Linux 9 - Extras 4.2 kB/s | 2.9 kB 00:00  
Dependencies resolved.  
=====
```

| Package | Architecture | Version | Repository | Size |
|---------|--------------|---------|------------|------|
|---------|--------------|---------|------------|------|

```
=====
```

Installing:

| | | | | |
|---------|--------|----------------|-----------|-------|
| postfix | x86_64 | 2:3.5.9-19.el9 | appstream | 1.4 M |
|---------|--------|----------------|-----------|-------|

Transaction Summary

```
=====
```

Install 1 Package

Total download size: 1.4 M
Installed size: 4.4 M
Downloading Packages:

| | | |
|---------------------------------|-------------------|-------|
| postfix-3.5.9-19.el9.x86_64.rpm | 3.0 MB/s 1.4 MB | 00:00 |
|---------------------------------|-------------------|-------|

```
-----
```

| | | |
|-------|-------------------|-------|
| Total | 1.1 MB/s 1.4 MB | 00:01 |
|-------|-------------------|-------|

```
-----
```

Running transaction check
Transaction check succeeded.
Running transaction test

Рис. 3.3. Установка на клиенте необходимого пакета postfix.

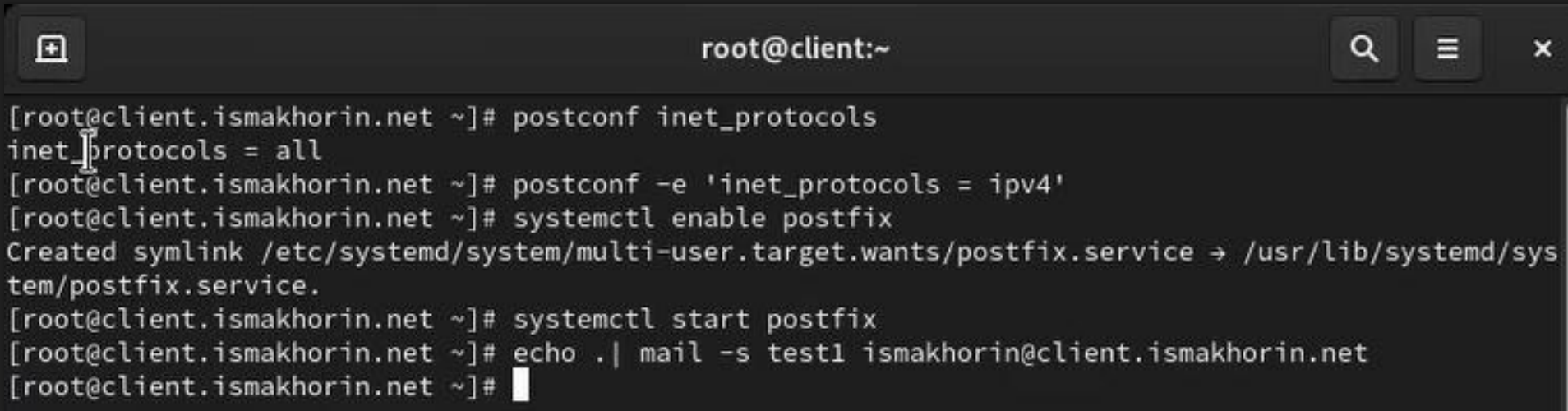
Проверка работы Postfix

```
[root@client.ismakhorin.net ~]# dnf -y install s-nail
Last metadata expiration check: 0:00:31 ago on Thu 16 Nov 2023 04:37:50 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
Installed size: 1.1 M
Downloading Packages:
s-nail-14.9.22-6.el9.x86_64.rpm          1.6 MB/s | 621 kB    00:00
-----
Total                                     807 kB/s | 621 kB    00:00
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
  Preparing      :                                1/1
```

Рис. 3.4. Установка на клиенте необходимого пакета s-nail.

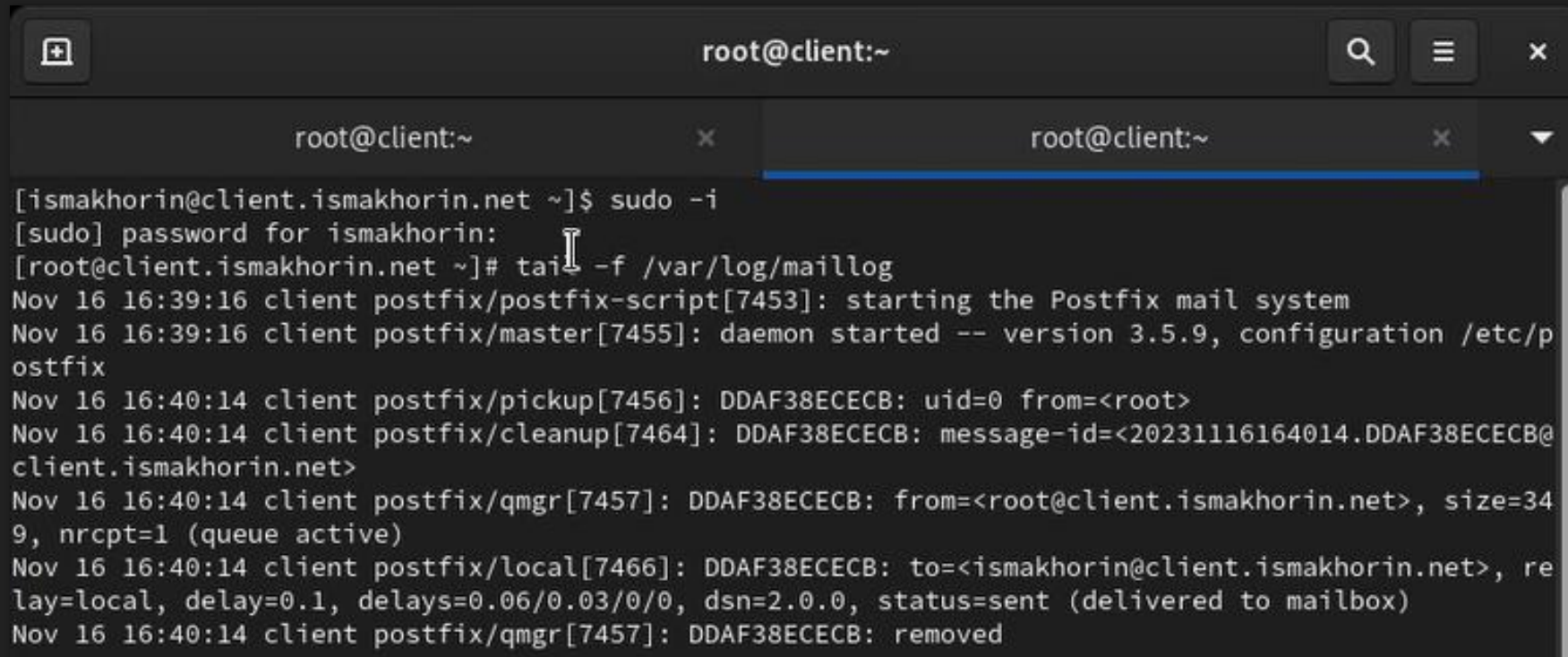
Проверка работы Postfix



```
root@client:~  
[root@client.ismakhorin.net ~]# postconf inet_protocols  
inet_protocols = all  
[root@client.ismakhorin.net ~]# postconf -e 'inet_protocols = ipv4'  
[root@client.ismakhorin.net ~]# systemctl enable postfix  
Created symlink /etc/systemd/system/multi-user.target.wants/postfix.service → /usr/lib/systemd/system/postfix.service.  
[root@client.ismakhorin.net ~]# systemctl start postfix  
[root@client.ismakhorin.net ~]# echo . | mail -s test1 ismakhorin@client.ismakhorin.net  
[root@client.ismakhorin.net ~]#
```

Рис. 3.5. Отключение IPv6 в списке разрешённых в работе Postfix протоколов (только IPv4), запуск на клиенте Postfix. Отправка себе второго письма, используя утилиту mail.

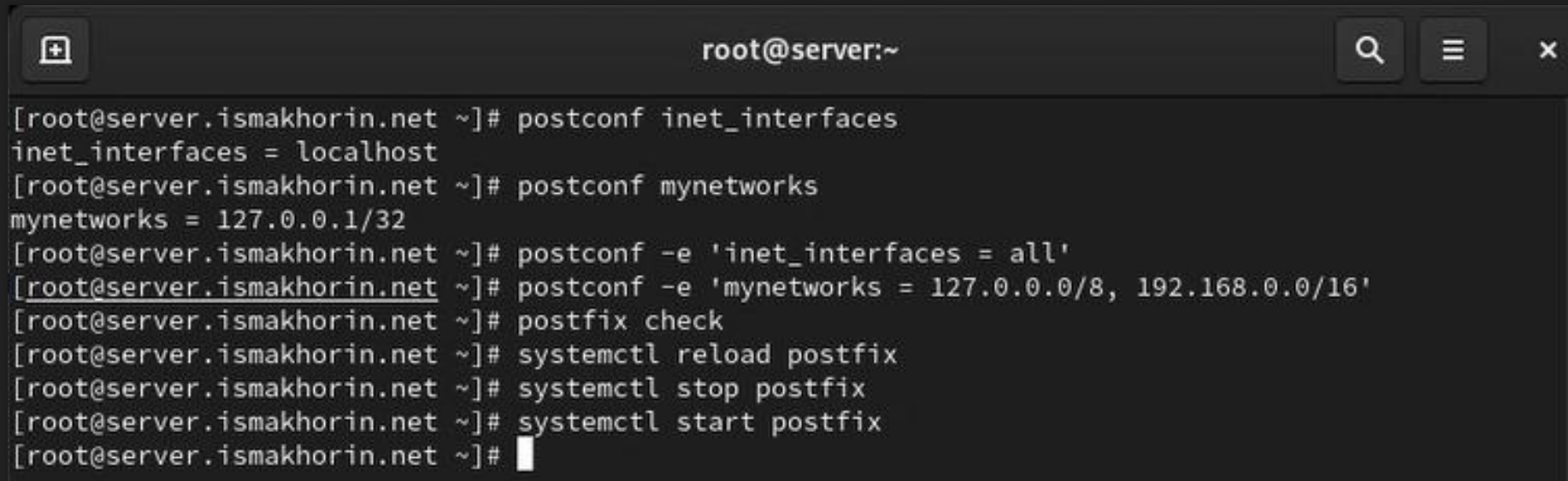
Проверка работы Postfix

A terminal window with a dark background and light text. The title bar shows 'root@client:~' and search, menu, and close icons. The terminal content shows a user switching to root via 'sudo -i', then running 'tail -f /var/log/maillog'. The output shows Postfix starting at 16:39:16, followed by log entries at 16:40:14 for a pickup, cleanup, and local delivery of an email from root@client.ismakhorin.net to ismakhorin@client.ismakhorin.net.

```
root@client:~  
[ismakhorin@client.ismakhorin.net ~]$ sudo -i  
[sudo] password for ismakhorin:  
[root@client.ismakhorin.net ~]# tail -f /var/log/maillog  
Nov 16 16:39:16 client postfix/postfix-script[7453]: starting the Postfix mail system  
Nov 16 16:39:16 client postfix/master[7455]: daemon started -- version 3.5.9, configuration /etc/p  
ostfix  
Nov 16 16:40:14 client postfix/pickup[7456]: DDAF38ECECB: uid=0 from=<root>  
Nov 16 16:40:14 client postfix/cleanup[7464]: DDAF38ECECB: message-id=<20231116164014.DDAF38ECECB@  
client.ismakhorin.net>  
Nov 16 16:40:14 client postfix/qmgr[7457]: DDAF38ECECB: from=<root@client.ismakhorin.net>, size=34  
9, nrcpt=1 (queue active)  
Nov 16 16:40:14 client postfix/local[7466]: DDAF38ECECB: to=<ismakhorin@client.ismakhorin.net>, re  
lay=local, delay=0.1, delays=0.06/0.03/0/0, dsn=2.0.0, status=sent (delivered to mailbox)  
Nov 16 16:40:14 client postfix/qmgr[7457]: DDAF38ECECB: removed
```

Рис. 3.6. Запуск мониторинга работы почтовой службы.

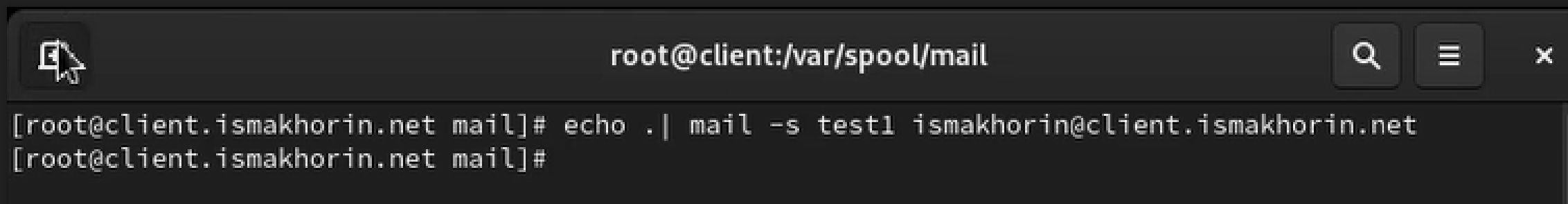
Проверка работы Postfix



```
root@server:~  
[root@server.ismakhorin.net ~]# postconf inet_interfaces  
inet_interfaces = localhost  
[root@server.ismakhorin.net ~]# postconf mynetworks  
mynetworks = 127.0.0.1/32  
[root@server.ismakhorin.net ~]# postconf -e 'inet_interfaces = all'  
[root@server.ismakhorin.net ~]# postconf -e 'mynetworks = 127.0.0.0/8, 192.168.0.0/16'  
[root@server.ismakhorin.net ~]# postfix check  
[root@server.ismakhorin.net ~]# systemctl reload postfix  
[root@server.ismakhorin.net ~]# systemctl stop postfix  
[root@server.ismakhorin.net ~]# systemctl start postfix  
[root@server.ismakhorin.net ~]#
```

Рис. 3.7. В конфигурации Postfix на сервере посмотрим значения параметров сетевых интерфейсов `inet_interfaces` и сетевых адресов `mynetworks`, разрешение Postfix прослушивать соединения не только с локального узла, но и с других интерфейсов сети. Добавление адреса внутренней сети. Перегрузка конфигурации Postfix и перезапуск Postfix.

Проверка работы Postfix

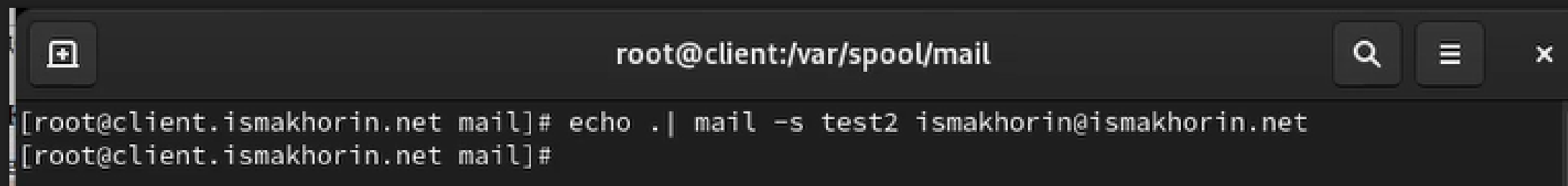


A terminal window with a dark background. The title bar at the top shows a mouse cursor icon on the left, the text 'root@client:/var/spool/mail' in the center, and search, menu, and close icons on the right. The terminal content shows a shell prompt '[root@client.ismakhorin.net mail]#' followed by the command 'echo .| mail -s test1 ismakhorin@client.ismakhorin.net' and the prompt again on the next line.

```
root@client:/var/spool/mail  
[root@client.ismakhorin.net mail]# echo .| mail -s test1 ismakhorin@client.ismakhorin.net  
[root@client.ismakhorin.net mail]#
```

Рис. 3.8. Повторная отправка сообщения с клиента.

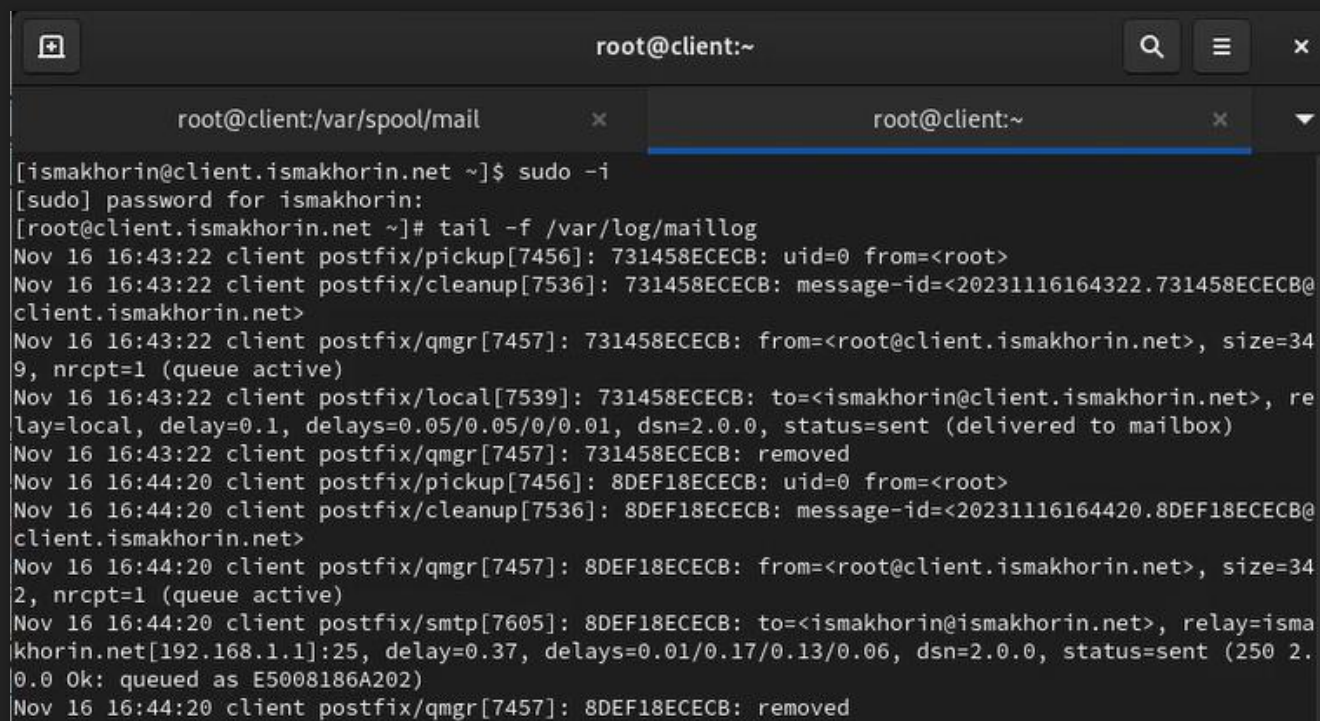
Конфигурация Postfix для домена

A terminal window with a dark background. The title bar shows a window icon, the text 'root@client:/var/spool/mail', and search, menu, and close buttons. The terminal content shows a shell prompt '[root@client.ismakhorin.net mail]#', followed by the command 'echo .| mail -s test2 ismakhorin@ismakhorin.net', and then the prompt again.

```
root@client:/var/spool/mail  
[root@client.ismakhorin.net mail]# echo .| mail -s test2 ismakhorin@ismakhorin.net  
[root@client.ismakhorin.net mail]#
```

Рис. 4.1. Отправка с клиента письма на свой доменный адрес.

Конфигурация Postfix для домена



The image shows a terminal window with a dark theme. The title bar indicates the user is root@client:~. There are two tabs: 'root@client:/var/spool/mail' and 'root@client:~'. The active tab is 'root@client:~'. The terminal content shows a user 'ismakhorin' at 'client.ismakhorin.net' running 'sudo -i' to become root. Then, the root user runs 'tail -f /var/log/maillog' to monitor the mail log. The log output shows several Postfix events: a pickup of a message from root (uid=0) at 16:43:22, a cleanup of that message (message-id=<20231116164322.731458ECECB@client.ismakhorin.net>), a qmgr processing the message (size=349, nrcpt=1), a local delivery to 'ismakhorin@client.ismakhorin.net' (status=sent), and a subsequent pickup and cleanup of a new message (uid=0, message-id=<20231116164420.8DEF18ECECB@client.ismakhorin.net>). The log also shows a qmgr processing this new message (size=342, nrcpt=1) and an smtp transaction (status=sent) to 'ismakhorin@ismakhorin.net' via relay=ismakhorin.net[192.168.1.1]:25.

```
root@client:~  
[ismakhorin@client.ismakhorin.net ~]$ sudo -i  
[sudo] password for ismakhorin:  
[root@client.ismakhorin.net ~]# tail -f /var/log/maillog  
Nov 16 16:43:22 client postfix/pickup[7456]: 731458ECECB: uid=0 from=<root>  
Nov 16 16:43:22 client postfix/cleanup[7536]: 731458ECECB: message-id=<20231116164322.731458ECECB@  
client.ismakhorin.net>  
Nov 16 16:43:22 client postfix/qmgr[7457]: 731458ECECB: from=<root@client.ismakhorin.net>, size=34  
9, nrcpt=1 (queue active)  
Nov 16 16:43:22 client postfix/local[7539]: 731458ECECB: to=<ismakhorin@client.ismakhorin.net>, re  
lay=local, delay=0.1, delays=0.05/0.05/0/0.01, dsn=2.0.0, status=sent (delivered to mailbox)  
Nov 16 16:43:22 client postfix/qmgr[7457]: 731458ECECB: removed  
Nov 16 16:44:20 client postfix/pickup[7456]: 8DEF18ECECB: uid=0 from=<root>  
Nov 16 16:44:20 client postfix/cleanup[7536]: 8DEF18ECECB: message-id=<20231116164420.8DEF18ECECB@  
client.ismakhorin.net>  
Nov 16 16:44:20 client postfix/qmgr[7457]: 8DEF18ECECB: from=<root@client.ismakhorin.net>, size=34  
2, nrcpt=1 (queue active)  
Nov 16 16:44:20 client postfix/smtp[7605]: 8DEF18ECECB: to=<ismakhorin@ismakhorin.net>, relay=isma  
khorin.net[192.168.1.1]:25, delay=0.37, delays=0.01/0.17/0.13/0.06, dsn=2.0.0, status=sent (250 2.  
0.0 Ok: queued as E5008186A202)  
Nov 16 16:44:20 client postfix/qmgr[7457]: 8DEF18ECECB: removed
```

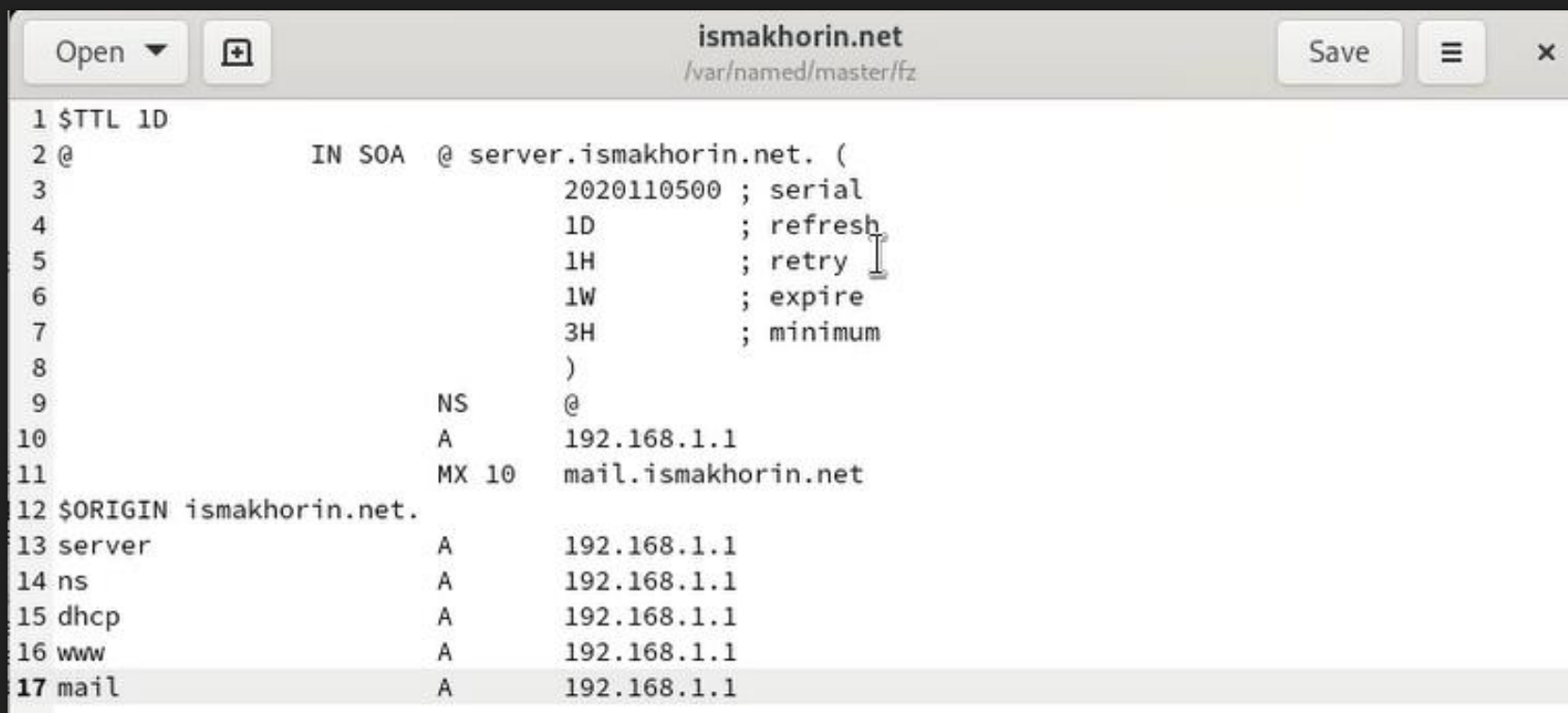
Рис. 4.2. Запуск мониторинга работы почтовой службы.

Конфигурация Postfix для домена

```
[root@client.ismakhorin.net mail]# postqueue -p  
Mail queue is empty  
[root@client.ismakhorin.net mail]# █
```

Рис. 4.3. Просмотр сообщений, ожидающих в очереди на отправление.

Конфигурация Postfix для домена



```
1 $TTL 1D
2 @                IN SOA  @ server.ismakhorin.net. (
3                  2020110500 ; serial
4                  1D        ; refresh
5                  1H        ; retry
6                  1W        ; expire
7                  3H        ; minimum
8                  )
9                  NS       @
10                 A        192.168.1.1
11                 MX 10    mail.ismakhorin.net
12 $ORIGIN ismakhorin.net.
13 server          A        192.168.1.1
14 ns              A        192.168.1.1
15 dhcp            A        192.168.1.1
16 www             A        192.168.1.1
17 mail            A        192.168.1.1
```

Рис. 4.4. Запись MX-записи с указанием имени почтового сервера mail.ismakhorin.net в файле прямой DNS-зоны.

Конфигурация Postfix для домена



```
1 $TTL 1D
2 @                IN SOA  @ server.ismakhorin.net. (
3                  2020110500 ; serial
4                  1D        ; refresh
5                  1H        ; retry
6                  1W        ; expire
7                  3H        ; minimum
8                  )
9                  NS       @
10                 A        192.168.1.1
11                 PTR      server.ismakhorin.net.
12                 MX 10    mail.ismakhorin.net.
13 $ORIGIN 1.168.192.in-addr.arpa.
14 1                PTR      server.ismakhorin.net.
15 1                PTR      ns.ismakhorin.net.
16 1                PTR      dhcp.ismakhorin.net.
17 1                PTR      www.ismakhorin.net
18 1                PTR      mail.ismakhorin.net.
```

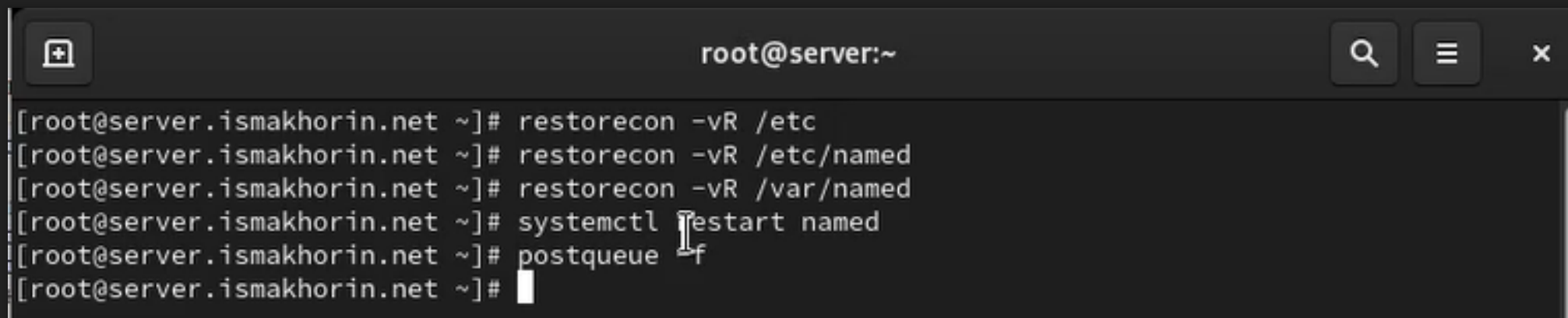
Рис. 4.5. Запись MX-записи с указанием имени почтового сервера mail.ismakhorin.net в файле обратной DNS-зоны.

Конфигурация Postfix для домена

```
[root@client.ismakhorin.net mail]# postconf -e 'mydestination = $myhostname, localhost.$mydomain,  
localhost, $mydomain'
```

Рис. 4.6. Добавление в конфигурации Postfix домена в список элементов сети, для которых данный сервер является конечной точкой доставки почты.

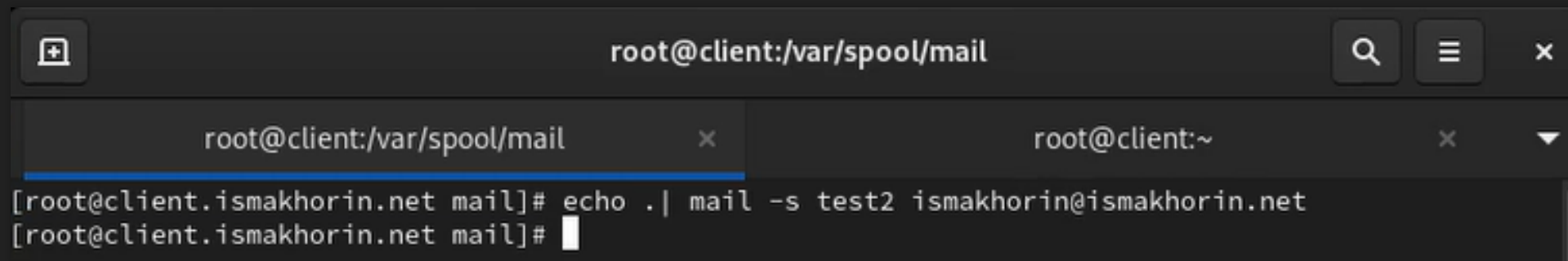
Конфигурация Postfix для домена



```
root@server:~  
[root@server.ismakhorin.net ~]# restorecon -vR /etc  
[root@server.ismakhorin.net ~]# restorecon -vR /etc/named  
[root@server.ismakhorin.net ~]# restorecon -vR /var/named  
[root@server.ismakhorin.net ~]# systemctl restart named  
[root@server.ismakhorin.net ~]# postqueue -f  
[root@server.ismakhorin.net ~]#
```

Рис. 4.7. Восстановление контекста безопасности в SELinux, перезапуск DNS и попытка отправки сообщений, находящихся в очереди на отправку.

Конфигурация Postfix для домена

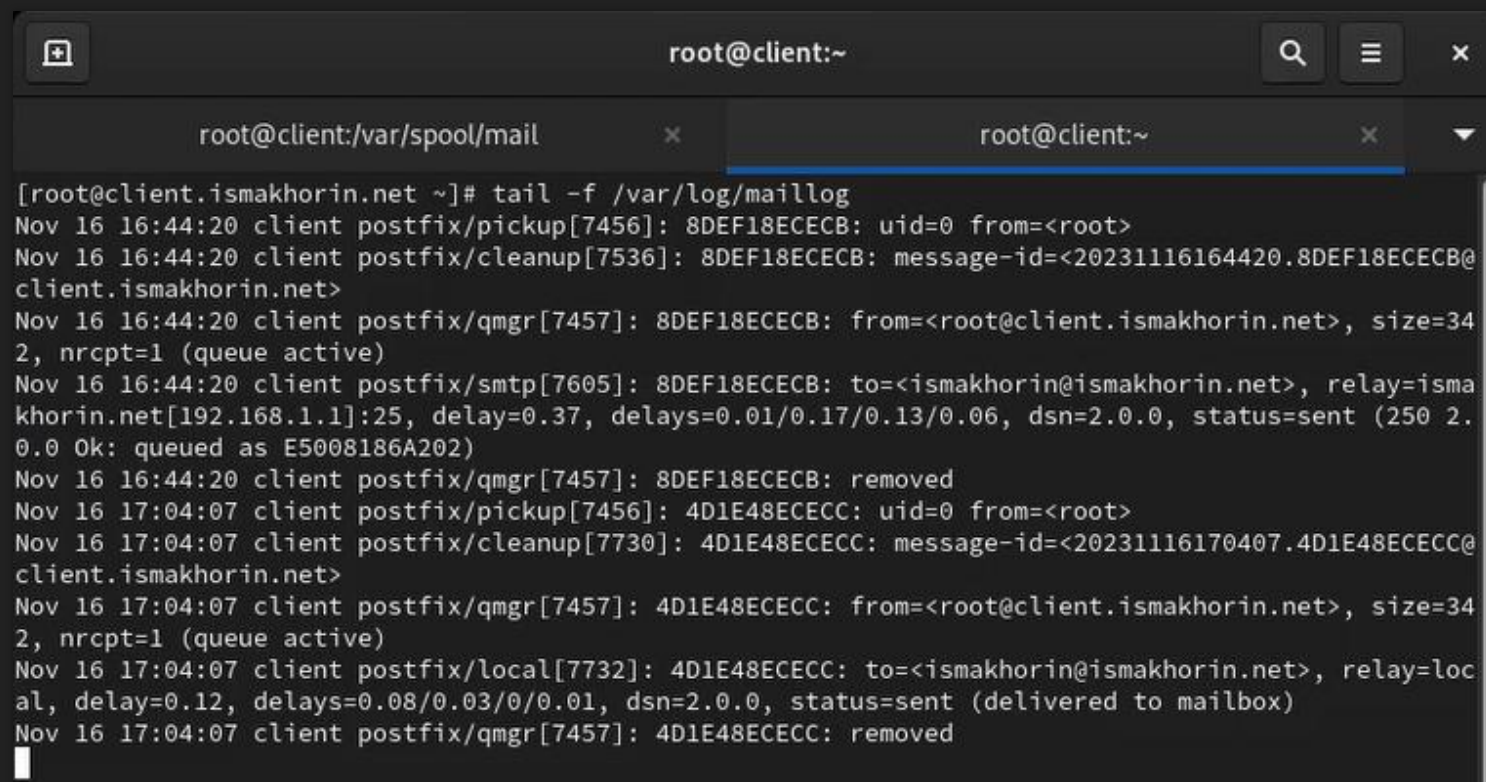


A terminal window with a dark background. The title bar shows 'root@client:/var/spool/mail' and standard window controls. Below the title bar, there are two tabs: 'root@client:/var/spool/mail' (selected) and 'root@client:~'. The terminal content shows a mail command being executed in a mail delivery agent context.

```
root@client:/var/spool/mail  
[root@client.ismakhorin.net mail]# echo .| mail -s test2 ismakhorin@ismakhorin.net  
[root@client.ismakhorin.net mail]#
```

Рис. 4.8. Проверка отправки почты с клиента на доменный адрес.

Конфигурация Postfix для домена

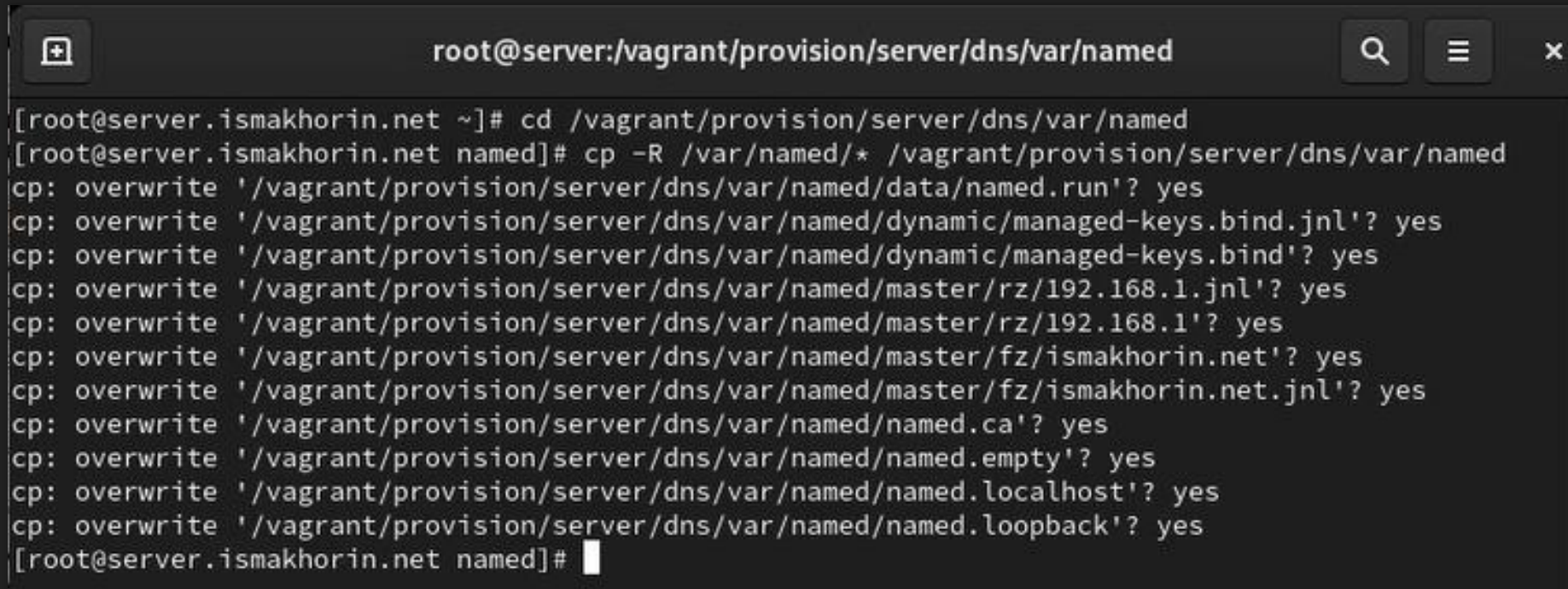


A terminal window titled 'root@client:~' with a search icon, menu icon, and close button. It contains two tabs: 'root@client:/var/spool/mail' and 'root@client:~'. The active tab shows the output of the command 'tail -f /var/log/maillog'. The log entries show a sequence of mail processing events for a message from root@client.ismakhorin.net to ismakhorin@ismakhorin.net, including pickup, cleanup, queueing, and delivery to the mailbox.

```
[root@client.ismakhorin.net ~]# tail -f /var/log/maillog
Nov 16 16:44:20 client postfix/pickup[7456]: 8DEF18ECECB: uid=0 from=<root>
Nov 16 16:44:20 client postfix/cleanup[7536]: 8DEF18ECECB: message-id=<20231116164420.8DEF18ECECB@client.ismakhorin.net>
Nov 16 16:44:20 client postfix/qmgr[7457]: 8DEF18ECECB: from=<root@client.ismakhorin.net>, size=342, nrcpt=1 (queue active)
Nov 16 16:44:20 client postfix/smtp[7605]: 8DEF18ECECB: to=<ismakhorin@ismakhorin.net>, relay=ismakhorin.net[192.168.1.1]:25, delay=0.37, delays=0.01/0.17/0.13/0.06, dsn=2.0.0, status=sent (250 2.0.0 Ok: queued as E5008186A202)
Nov 16 16:44:20 client postfix/qmgr[7457]: 8DEF18ECECB: removed
Nov 16 17:04:07 client postfix/pickup[7456]: 4D1E48ECECC: uid=0 from=<root>
Nov 16 17:04:07 client postfix/cleanup[7730]: 4D1E48ECECC: message-id=<20231116170407.4D1E48ECECC@client.ismakhorin.net>
Nov 16 17:04:07 client postfix/qmgr[7457]: 4D1E48ECECC: from=<root@client.ismakhorin.net>, size=342, nrcpt=1 (queue active)
Nov 16 17:04:07 client postfix/local[7732]: 4D1E48ECECC: to=<ismakhorin@ismakhorin.net>, relay=local, delay=0.12, delays=0.08/0.03/0/0.01, dsn=2.0.0, status=sent (delivered to mailbox)
Nov 16 17:04:07 client postfix/qmgr[7457]: 4D1E48ECECC: removed
```

Рис. 4.9. Проверка отправки почты с клиента на доменный адрес.

Внесение изменений в настройки внутреннего окружения виртуальной машины

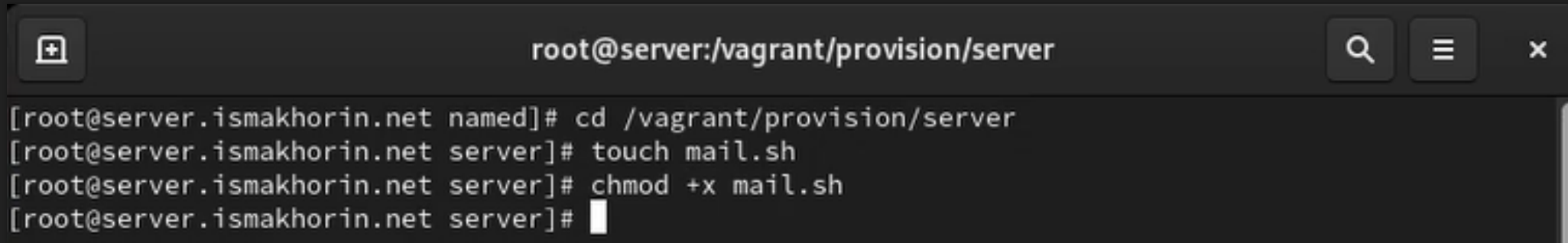


```
root@server:/vagrant/provision/server/dns/var/named

[root@server.ismakhorin.net ~]# cd /vagrant/provision/server/dns/var/named
[root@server.ismakhorin.net named]# cp -R /var/named/* /vagrant/provision/server/dns/var/named
cp: overwrite '/vagrant/provision/server/dns/var/named/data/named.run'? yes
cp: overwrite '/vagrant/provision/server/dns/var/named/dynamic/managed-keys.bind.jnl'? yes
cp: overwrite '/vagrant/provision/server/dns/var/named/dynamic/managed-keys.bind'? yes
cp: overwrite '/vagrant/provision/server/dns/var/named/master/rz/192.168.1.jnl'? yes
cp: overwrite '/vagrant/provision/server/dns/var/named/master/rz/192.168.1'? yes
cp: overwrite '/vagrant/provision/server/dns/var/named/master/fz/ismakhorin.net'? yes
cp: overwrite '/vagrant/provision/server/dns/var/named/master/fz/ismakhorin.net.jnl'? yes
cp: overwrite '/vagrant/provision/server/dns/var/named/named.ca'? yes
cp: overwrite '/vagrant/provision/server/dns/var/named/named.empty'? yes
cp: overwrite '/vagrant/provision/server/dns/var/named/named.localhost'? yes
cp: overwrite '/vagrant/provision/server/dns/var/named/named.loopback'? yes
[root@server.ismakhorin.net named]#
```

Рис. 5.1. Переход в каталог `/vagrant/provision/server/` на виртуальной машине `server` для внесения изменений в настройки внутреннего окружения. Замена конфигурационных файлов DNS-сервера.

Внесение изменений в настройки внутреннего окружения виртуальной машины

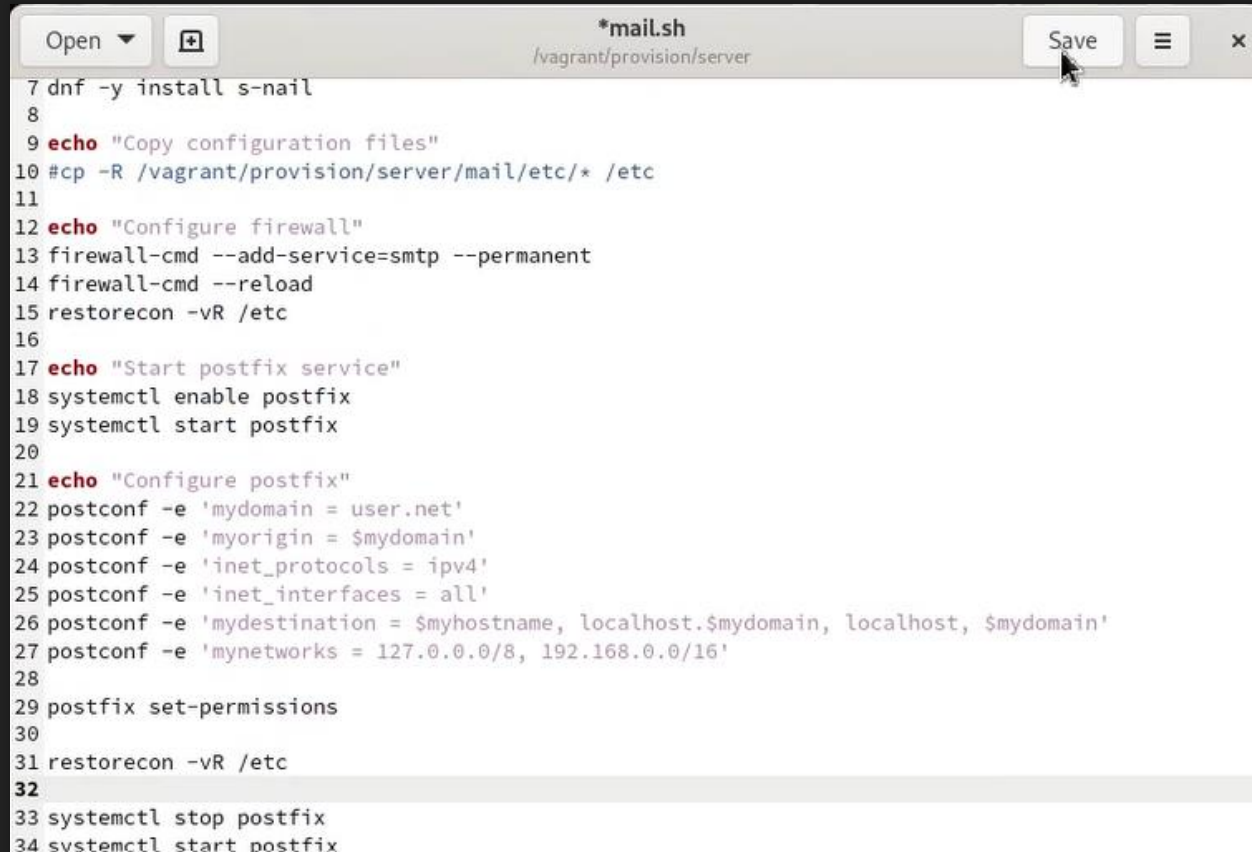
A terminal window with a dark background. The title bar shows a window icon, the text 'root@server:/vagrant/provision/server', and search, menu, and close buttons. The terminal content shows a sequence of commands: changing directory to /vagrant/provision/server, creating a file mail.sh, and setting permissions. The prompt changes from 'named' to 'server' after the directory change.

```
root@server:/vagrant/provision/server

[root@server.ismakhorin.net named]# cd /vagrant/provision/server
[root@server.ismakhorin.net server]# touch mail.sh
[root@server.ismakhorin.net server]# chmod +x mail.sh
[root@server.ismakhorin.net server]#
```

Рис. 5.2. Создание исполняемого файла mail.sh.

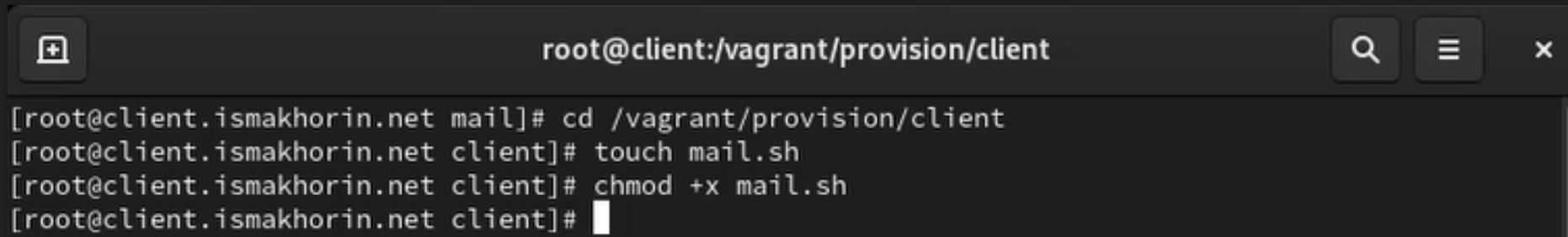
Внесение изменений в настройки внутреннего окружения виртуальной машины



```
Open ▾ [icon] *mail.sh /vagrant/provision/server Save [menu] x
7 dnf -y install s-nail
8
9 echo "Copy configuration files"
10 #cp -R /vagrant/provision/server/mail/etc/* /etc
11
12 echo "Configure firewall"
13 firewall-cmd --add-service=smtp --permanent
14 firewall-cmd --reload
15 restorecon -vR /etc
16
17 echo "Start postfix service"
18 systemctl enable postfix
19 systemctl start postfix
20
21 echo "Configure postfix"
22 postconf -e 'mydomain = user.net'
23 postconf -e 'myorigin = $mydomain'
24 postconf -e 'inet_protocols = ipv4'
25 postconf -e 'inet_interfaces = all'
26 postconf -e 'mydestination = $myhostname, localhost.$mydomain, localhost, $mydomain'
27 postconf -e 'mynetworks = 127.0.0.0/8, 192.168.0.0/16'
28
29 postfix set-permissions
30
31 restorecon -vR /etc
32
33 systemctl stop postfix
34 systemctl start postfix
```

Рис. 5.3. Открытие файла на редактирование и добавление скрипта.

Внесение изменений в настройки внутреннего окружения виртуальной машины

A terminal window with a dark background. The title bar shows a window icon, the text 'root@client:/vagrant/provision/client', and search, menu, and close buttons. The terminal content shows a sequence of commands and their outputs.

```
root@client:/vagrant/provision/client
[root@client.ismakhorin.net mail]# cd /vagrant/provision/client
[root@client.ismakhorin.net client]# touch mail.sh
[root@client.ismakhorin.net client]# chmod +x mail.sh
[root@client.ismakhorin.net client]#
```

Рис. 5.4. Переход в каталог `/vagrant/provision/client/` на виртуальной машине `client` для внесения изменений в настройки внутреннего окружения. Создание исполняемого файла `mail.sh`.

Внесение изменений в настройки внутреннего окружения виртуальной машины



The image shows a text editor window with a title bar that includes 'mail.sh' and the file path '/vagrant/provision/client'. The editor contains a shell script with 14 lines of code. Line 12, which is 'echo "Start postfix service"', is highlighted with a light gray background. The script includes commands for installing postfix and s-nail, configuring postfix for IPv4, and enabling and starting the postfix service.

```
1 #!/bin/bash
2
3 echo "Provisioning script $0"
4
5 echo "Install needed packages"
6 dnf -y install postfix
7 dnf -y install s-nail
8
9 echo "Configure postfix"
10 postconf -e 'inet_protocols = ipv4'
11
12 echo "Start postfix service"
13 systemctl enable postfix
14 systemctl start postfix
```

Рис. 5.5. Открытие файла на редактирование и добавление скрипта.

Внесение изменений в настройки внутреннего окружения виртуальной машины

```
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"
79     # Display the VirtualBox GUI when booting the machine
80     v.gui = true
81     # Set the video memory to 12Mb
```

Рис. 5.6. Добавление записи в Vagrantfile в разделе конфигураций для сервера.

Внесение изменений в настройки внутреннего окружения виртуальной машины

```
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
124     v.memory = 1024
125     v.cpus = 1
126     v.name = "client"
127     # Display the VirtualBox GUI when booting the machine
128     v.gui = true
129     # Set the video memory to 12Mb
130     v.customize ["modifyvm", :id, "--vram", "12"]
```

Рис. 5.7. Добавление записи в Vagrantfile в разделе конфигураций для клиента.

ВЫВОД

- В ходе выполнения лабораторной работы были получены навыки по установке и конфигурированию SMTPсервера.

Спасибо за внимание!