

# Лабораторная работа №10

## Расширенные настройки SMTP-сервера

---

Беличева Д.М.

Российский университет дружбы народов, Москва, Россия

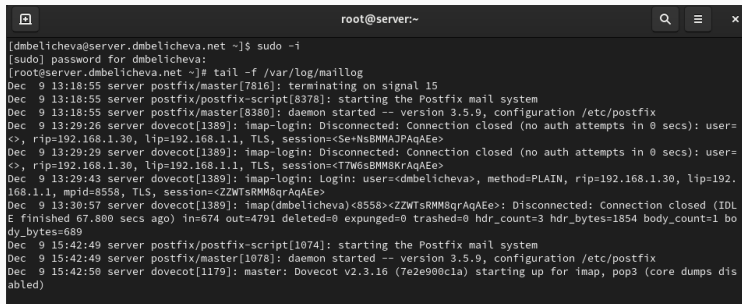
Приобрести практические навыки по конфигурированию SMTP-сервера в части настройки аутентификации.

1. Настроить Dovecot для работы с LMTP.
2. Настроить аутентификацию посредством SASL на SMTP-сервере.
3. Настроить работу SMTP-сервера поверх TLS.
4. Скорректировать скрипт для Vagrant, фиксирующий действия расширенной настройки SMTP-сервера во внутреннем окружении виртуальной машины server.

## Выполнение лабораторной работы

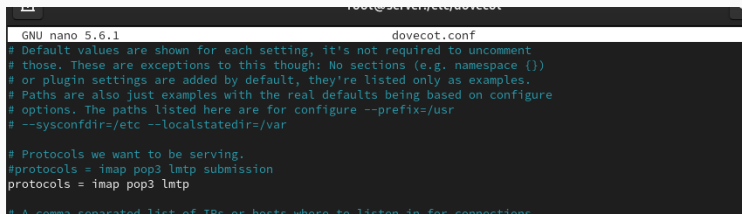
---

# Настройка LMTP в Dovecot

A terminal window titled 'root@server:~' with search, menu, and close icons. It shows the execution of 'sudo -i' and 'tail -f /var/log/maillog'. The log output shows Postfix and Dovecot processes starting and handling an IMAP login for 'dmbelicheva' at 15:42:50.

```
root@server:~  
[dmbelicheva@server.dmbelicheva.net ~]$ sudo -i  
[sudo] password for dmbelicheva:  
[root@server.dmbelicheva.net ~]# tail -f /var/log/maillog  
Dec  9 13:18:55 server postfix/master[7816]: terminating on signal 15  
Dec  9 13:18:55 server postfix/postfix-script[8378]: starting the Postfix mail system  
Dec  9 13:18:55 server postfix/master[8380]: daemon started -- version 3.5.9, configuration /etc/postfix  
Dec  9 13:29:26 server dovecot[1389]: imap-login: Disconnected: Connection closed (no auth attempts in 0 secs): user=  
<>, rip=192.168.1.30, lip=192.168.1.1, TLS, session=<Se+NsBMMAJPAqAEe>  
Dec  9 13:29:29 server dovecot[1389]: imap-login: Disconnected: Connection closed (no auth attempts in 0 secs): user=  
<>, rip=192.168.1.30, lip=192.168.1.1, TLS, session=<T7W6sBMM8KraqAEe>  
Dec  9 13:29:43 server dovecot[1389]: imap-login: Login: user=<dmbelicheva>, method=PLAIN, rip=192.168.1.30, lip=192.  
168.1.1, mpid=8558, TLS, session=<ZZWTsRMM8qrAqAEe>  
Dec  9 13:30:57 server dovecot[1389]: imap(dmbelicheva)<8558><ZZWTsRMM8qrAqAEe>: Disconnected: Connection closed (IDL  
E finished 67.800 secs ago) in=674 out=4791 deleted=0 expunged=0 trashed=0 hdr_count=3 hdr_bytes=1854 body_count=1 bo  
dy_bytes=689  
Dec  9 15:42:49 server postfix/postfix-script[1074]: starting the Postfix mail system  
Dec  9 15:42:49 server postfix/master[1078]: daemon started -- version 3.5.9, configuration /etc/postfix  
Dec  9 15:42:50 server dovecot[1179]: master: Dovecot v2.3.16 (7e2e900c1a) starting up for imap, pop3 (core dumps dis  
abled)
```

Рис. 1: Мониторинг работы почтовой службы



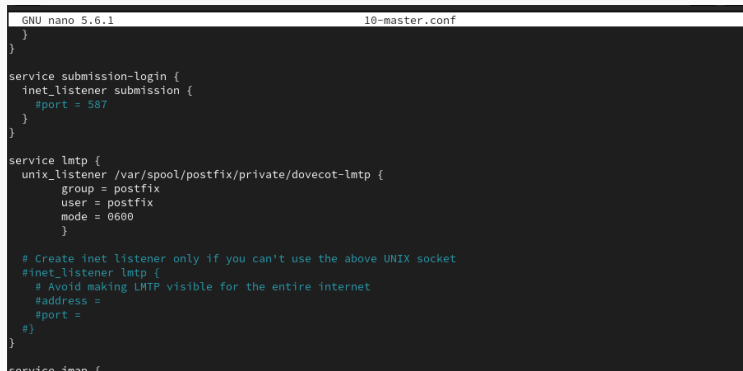
```
root@server:~/etc/dovecot
GNU nano 5.6.1 dovecot.conf
# Default values are shown for each setting, it's not required to uncomment
# those. These are exceptions to this though: No sections (e.g. namespace {})
# or plugin settings are added by default, they're listed only as examples.
# Paths are also just examples with the real defaults being based on configure
# options. The paths listed here are for configure --prefix=/usr
# --sysconfdir=/etc --localstatedir=/var

# Protocols we want to be serving.
#protocols = imap pop3 lmtp submission
protocols = imap pop3 lmtp

# A comma separated list of IPs or hosts where to listen in for connections
```

Рис. 2: Редактирование файла

# Настройка LMTP в Dovecot



```
GNU nano 5.6.1                                10-master.conf
}
}
service submission-login {
  inet_listener submission {
    #port = 587
  }
}

service lmtp {
  unix_listener /var/spool/postfix/private/dovecot-lmtp {
    group = postfix
    user = postfix
    mode = 0600
  }

  # Create inet listener only if you can't use the above UNIX socket
  #inet_listener lmtp {
    # Avoid making LMTP visible for the entire internet
    #address =
    #port =
  }
}

service imap {
```

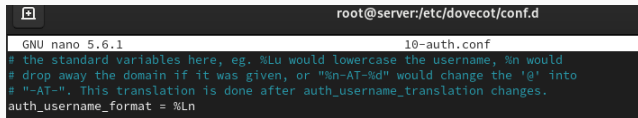
Рис. 3: Редактирование файла

Переопределим в Postfix с помощью `postconf` передачу сообщений не на прямую, а через заданный unix-сокеты: `postconf -e 'mailbox_transport = lmtp:unix:private/dovecot-lmtp'`



В файле `/etc/dovecot/conf.d/10-auth.conf` зададим формат имени пользователя для аутентификации в форме логина пользователя без указания домена:

```
auth_username_format = %Ln
```



```
root@server:/etc/dovecot/conf.d
GNU nano 5.6.1 10-auth.conf
# the standard variables here, eg. %Lu would lowercase the username, %n would
# drop away the domain if it was given, or "%n-AT-%d" would change the '@' into
# "-AT-". This translation is done after auth_username_translation changes.
auth_username_format = %Ln
```

Рис. 4: Редактирование файла

Перезапустим Postfix и Dovecot.

Из-под учётной записи своего пользователя отправим письмо с клиента: `echo ./ mail -s "LMTP test" dmbelicheva@dmbelicheva.net`

На сервере посмотрим почтовый ящик пользователя: `MAIL=~/Maildir/ mail`

Там оказалось пусто, потому что письмо не было доставлено в связи с какими-то проблемами.

## Настройка SMTP-аутентификации

В файле `/etc/dovecot/conf.d/10-master.conf` определим службу аутентификации пользователей:

A screenshot of a terminal window with a dark background. The title bar at the top shows 'GNU nano 5.6.1' on the left and '10-master.conf' on the right. The terminal displays the configuration for the 'auth' service. It starts with 'service auth {' followed by several commented lines explaining the 'auth\_socket\_path' and permissions. Then, it defines a 'unix\_listener' for '/var/spool/postfix/private/auth' with 'group = postfix', 'user = postfix', and 'mode = 0660'. Finally, it defines another 'unix\_listener' for 'auth-userdb' with 'mode = 0666', 'user = dovecot', and a commented-out '#group =' line. The configuration ends with a closing brace '}' and a cursor is visible at the end of the last line.

```
GNU nano 5.6.1                                10-master.conf
service auth {
  # auth_socket_path points to this userdb socket by default. It's typically
  # used by dovecot-lda, doveadm, possibly imap process, etc. Users that have
  # full permissions to this socket are able to get a list of all usernames and
  # get the results of everyone's userdb lookups.
  #
  # The default 0666 mode allows anyone to connect to the socket, but the
  # userdb lookups will succeed only if the userdb returns an "uid" field that
  # matches the caller process's UID. Also if caller's uid or gid matches the
  # socket's uid or gid the lookup succeeds. Anything else causes a failure.
  #
  # To give the caller full permissions to lookup all users, set the mode to
  # something else than 0666 and Dovecot lets the kernel enforce the
  # permissions (e.g. 0777 allows everyone full permissions).
  unix_listener /var/spool/postfix/private/auth {
    group = postfix
    user = postfix
    mode = 0660
  }
  unix_listener auth-userdb {
    mode = 0666
    user = dovecot
    #group =
  }
```

Рис. 5: Редактирование файла

```
[root@server.dmbelicheva.net conf.d]# postconf -e 'smtpd_sasl_type = dovecot'
[root@server.dmbelicheva.net conf.d]# postconf -e 'smtpd_sasl_path = private/auth'
[root@server.dmbelicheva.net conf.d]# postconf -e 'smtpd_recipient_restrictions = reject_unknown_recipient_domain, permit_mynetworks, reject_non_fqdn_recipient, reject_unauth_destination, reject_unverified_recipient, permit'
[root@server.dmbelicheva.net conf.d]# postconf -e 'mynetworks = 127.0.0.0/8'
```

Рис. 6: Команды postconf

```
# =====
smtp      inet  n       -       n       -       -       smtpd
#smtpd    inet  n       -       n       -       1       postfix/smtpd
#smtpd    pass  -       -       n       -       -       smtpd
#dnsblog  unix  -       -       n       -       0       dnsblog
#tlsproxy unix  -       -       n       -       0       tlsproxy
#submission inet n      -       n       -       -       smtpd
#  -o syslog_name=postfix/submission
#  -o smtpd_tls_security_level=encrypt
#  -o smtpd_sasl_auth_enable=yes
#  -o smtpd_tls_auth_only=yes
#  -o smtpd_reject_unlisted_recipient=no
#  -o smtpd_client_restrictions=$mua_client_restrictions
#  -o smtpd_helo_restrictions=$mua_helo_restrictions
#  -o smtpd_sender_restrictions=$mua_sender_restrictions
#  -o smtpd_recipient_restrictions=reject_non_fqdn_recipient,reject_unknown_recipient_domain,permit_sasl_authenticated,reject
#  -o smtpd_relay_restrictions=permit_sasl_authenticated,reject
#  -o milter_macro_daemon_name=ORIGINATING
#smtps    inet  n       -       n       -       -       smtpd
#  -o syslog_name=postfix/smtps
#  -o smtpd_tls_wrappermode=yes
#  -o smtpd_sasl_auth_enable=yes
```

Рис. 7: Редактирование файла

Перезапустим Postfix и Dovecot:

```
systemctl restart postfix
```

```
systemctl restart dovecot
```

На клиенте установим telnet: `dnf -y install telnet`

На клиенте получим строку для аутентификации, вместо username указав логин вашего пользователя, а вместо password указав пароль этого пользователя: `printf 'username\x00username\x00password' | base64`

Подключимся на клиенте к SMTP-серверу посредством telnet: `telnet server.dmbelicheva.net 25`

```
[root@client.dmbelicheva.net ~]# dnf -y install telnet
Last metadata expiration check: 1:43:48 ago on Sat 09 Dec 2023 02:58:02 PM UTC.
Package telnet-1:0.17-85.el9.x86_64 is already installed.
Dependencies resolved.
Nothing to do.
Complete!
[root@client.dmbelicheva.net ~]# printf 'dmbelicheva\x00dmbelicheva\x00123456' | base64
ZG1iZWxpY2hldmEAMTIzNDU2
[root@client.dmbelicheva.net ~]# telnet server.dmbelicheva.net 25
telnet: server.dmbelicheva.net: Name or service not known
server.dmbelicheva.net: Unknown host
[root@client.dmbelicheva.net ~]# telnet server.dmbelicheva.net 25
```

Рис. 8: Получение строки для аутентификации и подключение через telnet



```
[root@server.dmbelicheva.net postfix]# cp /etc/pki/dovecot/certs/dovecot.pem /etc/pki/tls/certs
[root@server.dmbelicheva.net postfix]# cp /etc/pki/dovecot/private/dovecot.pem /etc/pki/tls/private
[root@server.dmbelicheva.net postfix]# postconf -e 'smtpd_tls_cert_file=/etc/pki/tls/certs/dovecot.pem'
[root@server.dmbelicheva.net postfix]# postconf -e 'smtpd_tls_key_file=/etc/pki/tls/private/dovecot.pem'
[root@server.dmbelicheva.net postfix]# postconf -e 'smtpd_tls_session_cache_database = btree:/var/lib/postfix/smtpd_scache'
[root@server.dmbelicheva.net postfix]# postconf -e 'smtpd_tls_security_level = may'
[root@server.dmbelicheva.net postfix]# postconf -e 'smtp_tls_security_level = may'
```

Рис. 9: Настройка SMTP over TLS

# Настройка SMTP over TLS

```
# Postfix master process configuration file. For details on the format
# of the file, see the master(5) manual page (command: "man 5 master" or
# on-line: http://www.postfix.org/master.5.html).
#
# Do not forget to execute "postfix reload" after editing this file.
#
# =====
# service type private unpriv chroot wakeup maxproc command + args
#          (yes)   (yes)   (no)   (never) (100)
# =====
smtp      inet  n       -       n       -       -       smtpd
#smtp     inet  n       -       n       -       1       postscreen
#smtpd    pass  -       -       n       -       -       smtpd
#dnsblog  unix  -       -       n       -       0       dnsblog
#tlsproxy unix  -       -       n       -       0       tlsproxy
submission inet n       -       n       -       -       smtpd
# -o syslog_name=postfix/submission
# -o smtpd_tls_security_level=encrypt
# -o smtpd_sasl_auth_enable=yes
# -o smtpd_tls_auth_only=yes
# -o smtpd_reject_unlisted_recipient=no
# -o smtpd_client_restrictions=$mua_client_restrictions
# -o smtpd_helo_restrictions=$mua_helo_restrictions
# -o smtpd_sender_restrictions=$mua_sender_restrictions
# -o smtpd_recipient_restrictions=reject_non_fqdn_recipient, reject_unknown_recipient_domain, permit_sasl_authenticated, reject
# -o smtpd_relay_restrictions=permit_sasl_authenticated, reject
# -o milter_macro_daemon_name=ORIGINATING
```

Рис. 10: Редактирование файла

Настроим межсетевой экран, разрешив работать службе smtp-submission:

```
[root@server.dmbelicheva.net postfix]# firewall-cmd --get-services
RH-Satellite-6 RH-Satellite-6-capsule afp amanda-client amanda-k5-client amqp amqps apcupsd audit ausweisapp2 bacula bacu
la-client bb bgp bitcoin bitcoin-rpc bitcoin-testnet bitcoin-testnet-rpc bittorrent-lsd ceph ceph-mon cfengine checkmk-ag
ent cockpit collectd condor-collector cratedb ctdb dhcp dhcpv6 dhcpv6-client distcc dns dns-over-tls docker-registry dock
er-swarm dropbox-lansync elasticsearch etcd-client etcd-server finger foreman foreman-proxy freeipa-4 freeipa-ldap freeip
a-ldaps freeipa-replication freeipa-trust ftp galera ganglia-client ganglia-master git gpsd grafana gre high-availability
http http3 https ident imap imaps ipfs ipp ipp-client ipsec irc ircs iscsi-target isns jellyfin jenkins kadmin kdeconnec
t kerberos kibana klogin kpasswd kprop kshell kube-api kube-apiserver kube-control-plane kube-control-plane-secure kube-c
ontroller-manager kube-controller-manager-secure kube-nodeport-services kube-scheduler kube-scheduler-secure kube-worker
kubelet kubelet-readonly kubelet-worker ldap ldaps libvirt libvirt-tls lightning-network llmnr llmnr-tcp llmnr-udp manage
sieve matrix mdns memcache minidlna mongodb mosh mountd mqtt mqtt-tls ms-wbt mssql murmur mysql nbd netbios-ns netdata-da
shboard nfs nfs3 nmea-0183 nrpe ntp nut openvpn ovirt-imageio ovirt-storageconsole ovirt-vmconsole plex pmcd pmproxy pmwe
bapi pmwebapis pop3 pop3s postgresql proxy proxy-dhcp ps3netstrv ptp pulseaudio puppp
etmaster quassel radius rdp redis redis-sentinel rpc-bind rquotad rsh rsyncd rtsp salt-master samba samba-client samba-dc
sane sip sips slp smtp smtp-submission smtps snmp snmptls snmptls-trap snmptrap spideroak-lansync spotify-sync squid ssd
p ssh ssh-custom steam-streaming svdrp svn syncthing syncthing-gui synergy syslog syslog-tls telnet tentacle tftp tile38
tinc tor-socks transmission-client upnp-client vdsa vnc-server wbem-http wbem-https wireguard ws-discovery ws-discovery-c
lient ws-discovery-tcp ws-discovery-udp wsmann wsmans xdmcp xmpp-bosh xmpp-client xmpp-local xmpp-server zabbix-agent zabb
ix-server zerotier
[root@server.dmbelicheva.net postfix]# firewall-cmd --add-service=smtp-submission
success
[root@server.dmbelicheva.net postfix]# firewall-cmd --add-service=smtp-submission --permanent
success
[root@server.dmbelicheva.net postfix]# firewall-cmd --reload
success
[root@server.dmbelicheva.net postfix]# systemctl restart postfix
[root@server.dmbelicheva.net postfix]#
```

Рис. 11: Настройка межсетевого экрана

```
[root@client.dmbelicheva.net ~]# openssl s_client -starttls smtp -crlf -connect server.dmbelicheva.net:587
80AB28FA5D7F0000:error:10080002:BIIO routines:BIIO_lookup_ex:system lib:crypto/bio/bio_addr.c:738:Name or service not known
connect:errno=0
[root@client.dmbelicheva.net ~]#
```

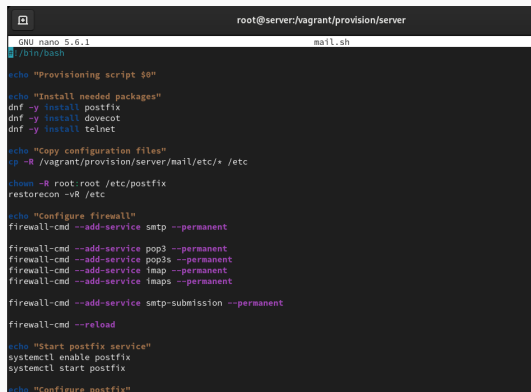
Рис. 12: openssl

# Внесение изменений в настройки внутреннего окружения виртуальной машины

```
[root@server.dmbelicheva.net postfix]# cd /vagrant/provision/server
[root@server.dmbelicheva.net server]# cp -R /etc/dovecot/dovecot.conf /vagrant/provision/server/mail/etc/dovecot/
cp: overwrite '/vagrant/provision/server/mail/etc/dovecot/dovecot.conf'? y
[root@server.dmbelicheva.net server]# cp -R /etc/dovecot/conf.d/10-master.conf /vagrant/provision/server/mail/etc/dovecot/
/conf.d/
[root@server.dmbelicheva.net server]# cp -R /etc/dovecot/conf.d/10-auth.conf /vagrant/provision/server/mail/etc/dovecot/c
onf.d/
cp: overwrite '/vagrant/provision/server/mail/etc/dovecot/conf.d/10-auth.conf'? y
[root@server.dmbelicheva.net server]# cp -R /etc/postfix/master.cf /vagrant/provision/server/mail/etc/postfix/
cp: failed to access '/vagrant/provision/server/mail/etc/postfix/': Not a directory
[root@server.dmbelicheva.net server]# cp -R /etc/postfix/master.cf /vagrant/provision/server/mail/etc/postfix
cp: overwrite '/vagrant/provision/server/mail/etc/postfix'? y
[root@server.dmbelicheva.net server]#
```

Рис. 13: Внесение изменений в настройки внутреннего окружения виртуальной машины

# Внесение изменений в настройки внутреннего окружения виртуальной машины



```
root@server:/vagrant/provision/server
GNU nano 5.6.1 mail.sh
#!/bin/bash

echo "Provisioning script $@"

echo "Install needed packages"
dnf -y install postfix
dnf -y install dovecot
dnf -y install telnet

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

chown -R root:root /etc/postfix
restorecon -vR /etc

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

firewall-cmd --add-service pop3 --permanent
firewall-cmd --add-service pop3s --permanent
firewall-cmd --add-service imap --permanent
firewall-cmd --add-service imaps --permanent

firewall-cmd --add-service smtp-submission --permanent

firewall-cmd --reload

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

echo "Configure postfix"
```

Рис. 14: Редактирование файла

# Внесение изменений в настройки внутреннего окружения виртуальной машины



```
root@client:/vagrant/provision/client
GNU nano 5.6.1 mail.sh
#!/bin/bash

echo "Provisioning script $0"

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

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

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

Рис. 15: Редактирование файла

В процессе выполнения данной лабораторной работы я приобрела практические навыки по конфигурированию SMTP-сервера в части настройки аутентификации.