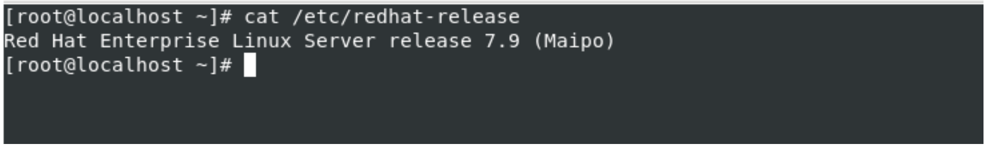
Scenario: Setting UP a Mail Server on Red Hat Enterprise Linux 7

Background: I am a system administrator for a medium-sized company that needs to set up an internal mail server to handle company emails efficiently. My company prefers Red Hat Enterprise Linux due to its robust security features, stability, and enterprise-level support. Now I implement a secure and reliable mail server solution using RHEL.

Step 1:A new server was provisioned with **Red Hat Enterprise Linux 7.9** installed. The system specifications are as follows:

Resource	Allocation	
CPU	2 Core	lscpu
RAM	2 GB	free -h
Disk	30 GB	df –h

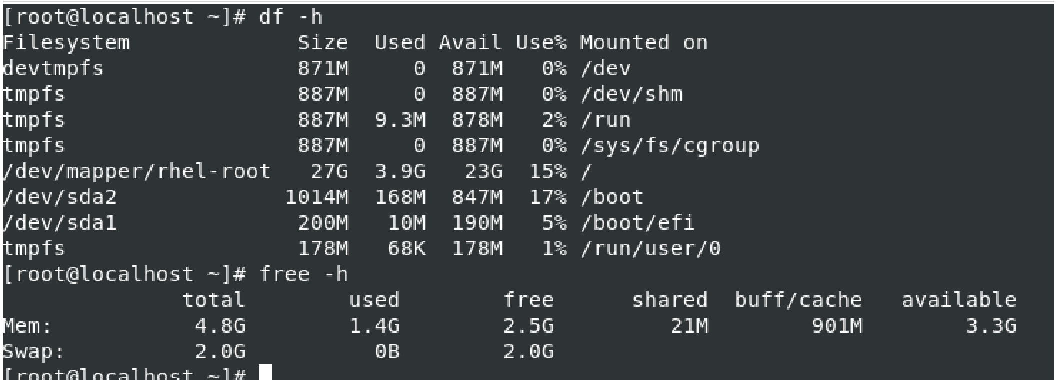
`cat /etc/redhat-release` → Displays the Red Hat OS version



```
[root@localhost ~]# cat /etc/redhat-release
Red Hat Enterprise Linux Server release 7.9 (Maipo)
[root@localhost ~]#
```

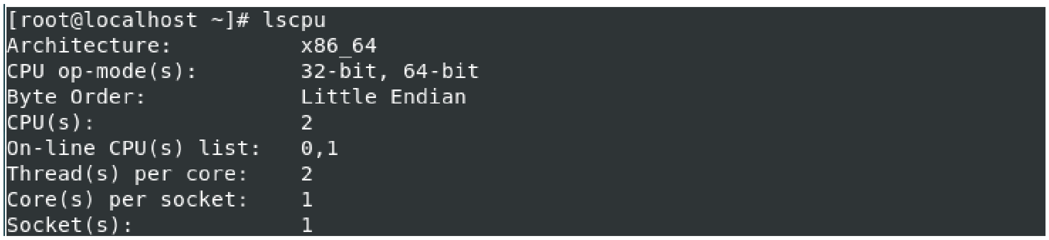
`df -h` → Shows available disk space in a human-readable format

- **`free -h`** → Displays memory (RAM) usage in a human-readable format



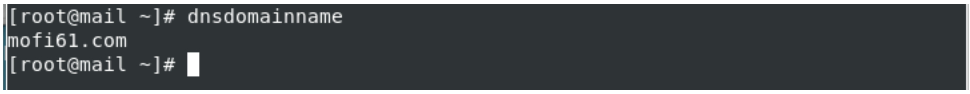
```
[root@localhost ~]# df -h
Filesystem             Size  Used Avail Use% Mounted on
devtmpfs               871M     0  871M   0% /dev
tmpfs                  887M     0  887M   0% /dev/shm
tmpfs                  887M  9.3M  878M   2% /run
tmpfs                  887M     0  887M   0% /sys/fs/cgroup
/dev/mapper/rhel-root   27G  3.9G   23G  15% /
/dev/sda2             1014M  168M  847M  17% /boot
/dev/sda1              200M   10M  190M   5% /boot/efi
tmpfs                  178M   68K  178M   1% /run/user/0
[root@localhost ~]# free -h
              total        used        free      shared  buff/cache   available
Mem:           4.8G        1.4G        2.5G         21M        901M        3.3G
Swap:          2.0G          0B        2.0G
[root@localhost ~]#
```

`lscpu` → Provides detailed information about the CPU



```
[root@localhost ~]# lscpu
Architecture:          x86_64
CPU op-mode(s):        32-bit, 64-bit
Byte Order:            Little Endian
CPU(s):                2
On-line CPU(s) list:   0,1
Thread(s) per core:    2
Core(s) per socket:    1
Socket(s):             1
```

- **`dnsdomainname`** – Check the domain name portion of the FQDN



```
[root@mail ~]# dnsdomainname
mofi61.com
[root@mail ~]#
```

Step 2: Mail Server Software Selection and Purpose

To implement the mail server, the following components were chosen and configured based on their reliability, performance, and compatibility with **Red Hat Enterprise Linux 7.9**:

Postfix was used as the **MTA (Mail Transfer Agent)** to handle the **sending and receiving of emails** over the network. It is known for its simplicity, security, and performance.

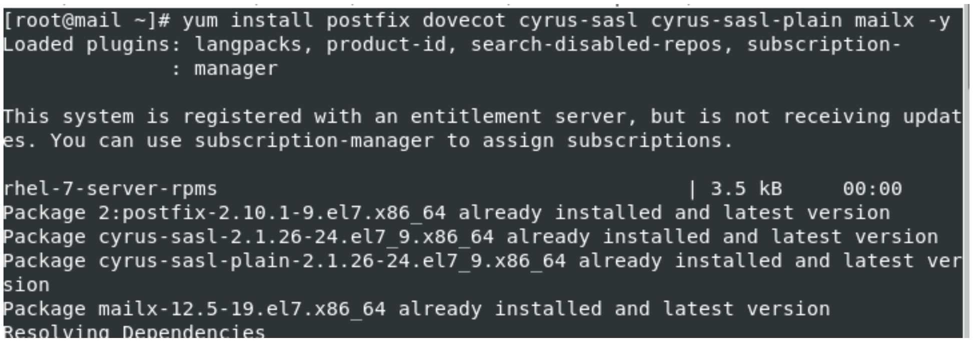
Dovecot was configured as the **MDA (Mail Delivery Agent)** as well as the **IMAP/POP3 server**. It enables users to **securely access their mailboxes** using email clients (Thunderbird, Outlook) .

Both **Postfix** and **Dovecot** were configured under the domain: **mail.mofi61.com** supporitn TLS encryption and authentication.

Step 3: Installing Postfix, Dovecot, and Required Packages

To begin the mail server setup, essential software packages were installed using the **YUM package manager** on the RHEL server.
yum Installed commands yum install postfix dovecot cyrus-sasl cyrus-sasl-plain mailx –y

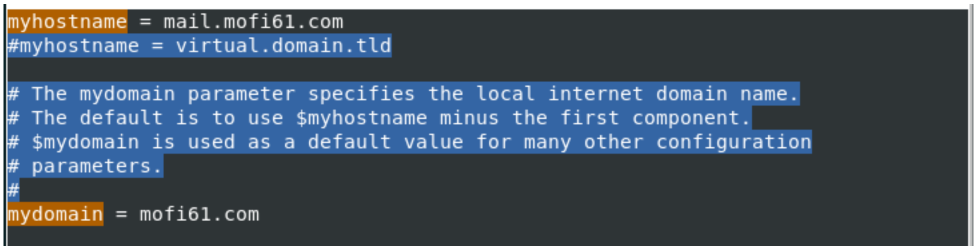
Package	Description
postfix	The core **Mail Transfer Agent (MTA)** responsible for sending and receiving emails.
dovecot	Acts as the **Mail Delivery Agent (MDA)** and **IMAP/POP3 server** for mailbox access.
cyrus-sasl	Provides a library and framework for **SASL (Simple Authentication and Security Layer)**, used to handle authentication and encryption.
cyrus-sasl-plain	A plugin for Cyrus SASL to enable plain text authentication, commonly used with Postfix for SMTP AUTH.
mailx	A simple command-line utility used to send and test emails from the terminal. Helpful for verifying server functionality.
-y	Automatically confirms all prompts during installation, allowing a seamless package install process.



```
[root@mail ~]# yum install postfix dovecot cyrus-sasl cyrus-sasl-plain mailx -y
Loaded plugins: langpacks, product-id, search-disabled-repos, subscription-
              : manager

This system is registered with an entitlement server, but is not receiving updat
es. You can use subscription-manager to assign subscriptions.

rhel-7-server-rpms                                       | 3.5 kB     00:00
Package 2:postfix-2.10.1-9.el7.x86_64 already installed and latest version
Package cyrus-sasl-2.1.26-24.el7_9.x86_64 already installed and latest version
Package cyrus-sasl-plain-2.1.26-24.el7_9.x86_64 already installed and latest ver
sion
Package mailx-12.5-19.el7.x86_64 already installed and latest version
Resolving Dependencies
```

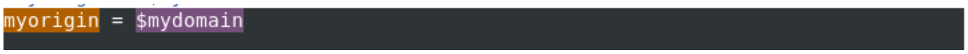
Step 4: For mail server settings, such as domain name, relay options, and security features edit postfix configuration files. **vim /etc/postfix/main.cf** in this file add below this lines and unmarked some hash.

.



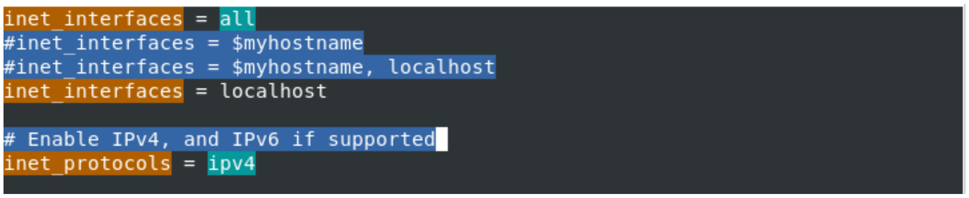
```
myhostname = mail.mofi61.com
#myhostname = virtual.domain.tld

# The mydomain parameter specifies the local internet domain name.
# The default is to use $myhostname minus the first component.
# $mydomain is used as a default value for many other configuration
# parameters.
#
mydomain = mofi61.com
```

Here, myhostname belongs to server hostname (**mail.mofi61.com**) and mydomain name belongs to dnsdomainname (**mofi61.com**) This line means outgoing mail will show sender as **user@mofi61.com.**



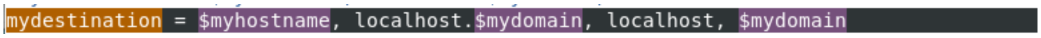
```
myorigin = $mydomain
```

inet_protocols = ipv4 it uses only ipv4 addresses



```
inet_interfaces = all
#inet_interfaces = $myhostname
#inet_interfaces = $myhostname, localhost
inet_interfaces = localhost

# Enable IPv4, and IPv6 if supported
inet_protocols = ipv4
```

Accepts mail for local delivery to **mail.mofi61.com.**

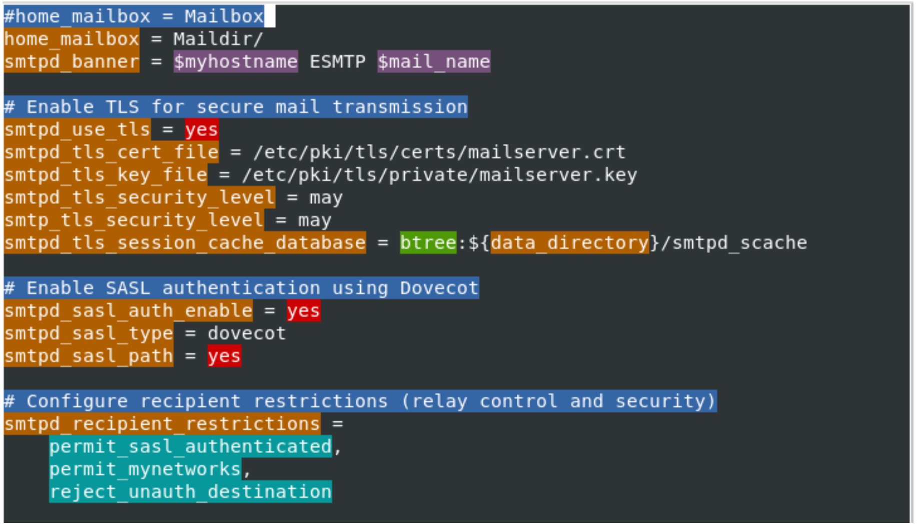


```
mydestination = $myhostname, localhost.$mydomain, localhost, $mydomain
```

smtpd_use_tls = yes Enable TLS encryption.

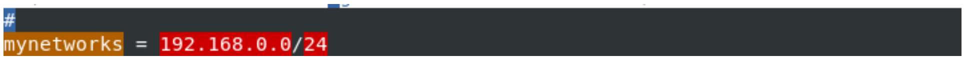
smtpd_tls_cert_file = **/etc/pki/tls/certs/mailserver.crt** path for SSL certificate.

smtpd_tls_key_file = **/etc/pki/tls/private/mailserver.key** Path for private key



```
#home_mailbox = Mailbox
home_mailbox = Maildir/
smtpd_banner = $myhostname ESMTP $mail_name

# Enable TLS for secure mail transmission
smtpd_use_tls = yes
smtpd_tls_cert_file = /etc/pki/tls/certs/mailserver.crt
smtpd_tls_key_file = /etc/pki/tls/private/mailserver.key
smtpd_tls_security_level = may
smtp_tls_security_level = may
smtpd_tls_session_cache_database = btree:${data_directory}/smtpd_scache

# Enable SASL authentication using Dovecot
smtpd_sasl_auth_enable = yes
smtpd_sasl_type = dovecot
smtpd_sasl_path = yes

# Configure recipient restrictions (relay control and security)
smtpd_recipient_restrictions =
    permit_sasl_authenticated,
    permit_mynetworks,
    reject_unauth_destination
```

Trust only localhost to rely mail without authentication



```
#
mynetworks = 192.168.0.0/24
```

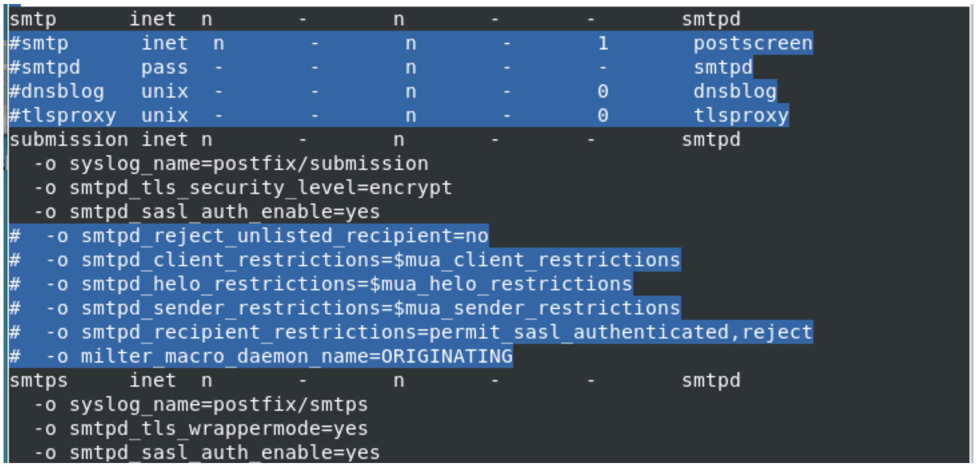
To allow smtps port in postfix maste.cf file to run postfix with SSL add this lines or uncomment vim **/etc/postfix/master.cf**

Smtp inet n - n - - smptd

smtpd (this line enables the SMTP over SSL on port 465, often used by older clients or when strict SSL is required)

submission inet n - n - -

smtpd (enable SMTP submission service on **port 587**, uses STARTTLS to upgrade the connection to secure TLS after it starts)



```
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_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=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
```

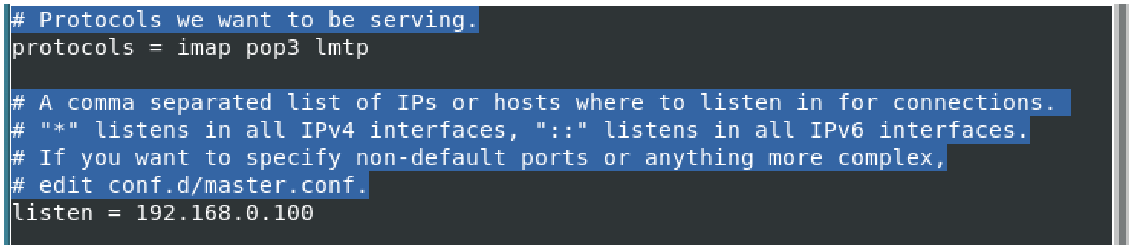
Step 5: To enable secure mail delivery and access for users, Dovecot must be configured properly.

This involves editing several configuration files under **/etc/dovecot/**:

Edit the main configuration file to enable services like IMAP and POP3:

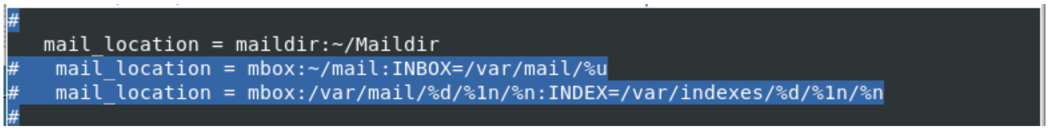
vim /etc/dovecot/dovecot.conf

This file enables protocols like **IMAP** and **POP3** for secure mail access



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

# A comma separated list of IPs or hosts where to listen in for connections.
# "*" listens in all IPv4 interfaces, "::" listens in all IPv6 interfaces.
# If you want to specify non-default ports or anything more complex,
# edit conf.d/master.conf.
listen = 192.168.0.100
```

vim /etc/dovecot/conf.d/10-mail.conf - specifies mail location

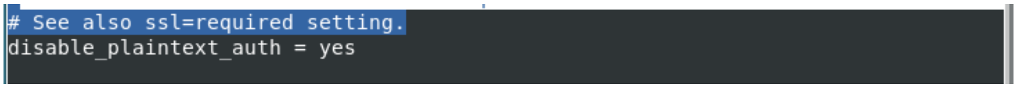


```
#
   mail_location = maildir:~/Maildir
#   mail_location = mbox:~/mail:INBOX=/var/mail/%u
#   mail_location = mbox:/var/mail/%d/%1n/%n:INDEX=/var/indexes/%d/%1n/%n
#
```

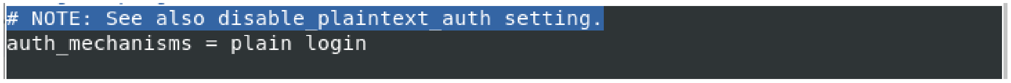
To configure authentication for Dovecot, edit the following file:

vim /etc/dovecot/conf.d/10-auth.conf

This file enables authentication methods and specifies whether Dovecot should use **system users** or **virtual users**.



```
# See also ssl=required setting.
disable_plaintext_auth = yes
```

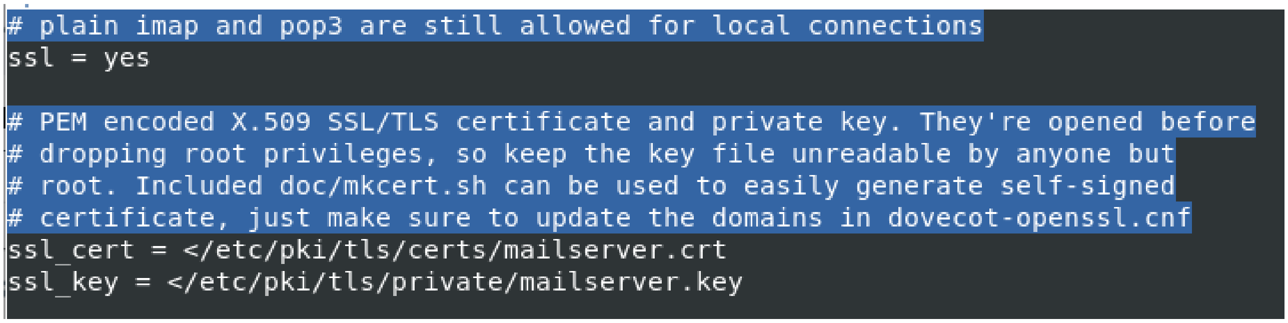


```
# NOTE: See also disable_plaintext_auth setting.
auth_mechanisms = plain login
```

To configure SSL/TLS settings for secure email access, edit the following file:

vim /etc/dovecot/conf.d/10-ssl.conf

This file is used to configure **SSL/TLS settings** for secure email access using **certificates** and **private keys**

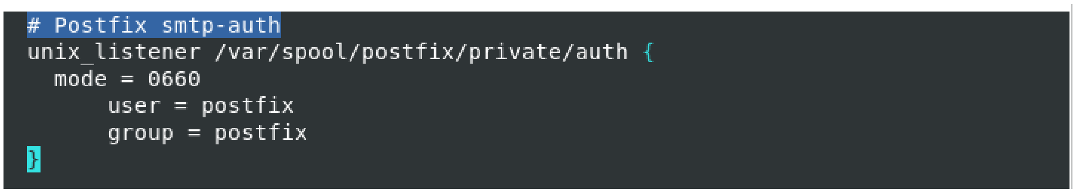


```
# plain imap and pop3 are still allowed for local connections
ssl = yes

# PEM encoded X.509 SSL/TLS certificate and private key. They're opened before
# dropping root privileges, so keep the key file unreadable by anyone but
# root. Included doc/mkcert.sh can be used to easily generate self-signed
# certificate, just make sure to update the domains in dovecot-openssl.cnf
ssl_cert = </etc/pki/tls/certs/mailserver.crt
ssl_key = </etc/pki/tls/private/mailserver.key
```

To define how Dovecot services are run and controlled, edit the following file:

vim /etc/dovecot/conf.d/10-master.conf

This file defines how **Dovecot services** (like **IMAP**, **POP3**, and **authentication**) are run and controlled.



```
# Postfix smtp-auth
unix_listener /var/spool/postfix/private/auth {
  mode = 0660
      user = postfix
      group = postfix
}
```

Generating a Self-Signed SSL Certificate

To generate a self-signed SSL certificate, use the following command

openssl req -new -x509 -days 365 -nodes -out /etc/pki/tls/certs/mailserver.crt -keyout /etc/pki/tls/private/mailserver.key

openssl req -new -x509 : Creates a new **X.509 certificate**.

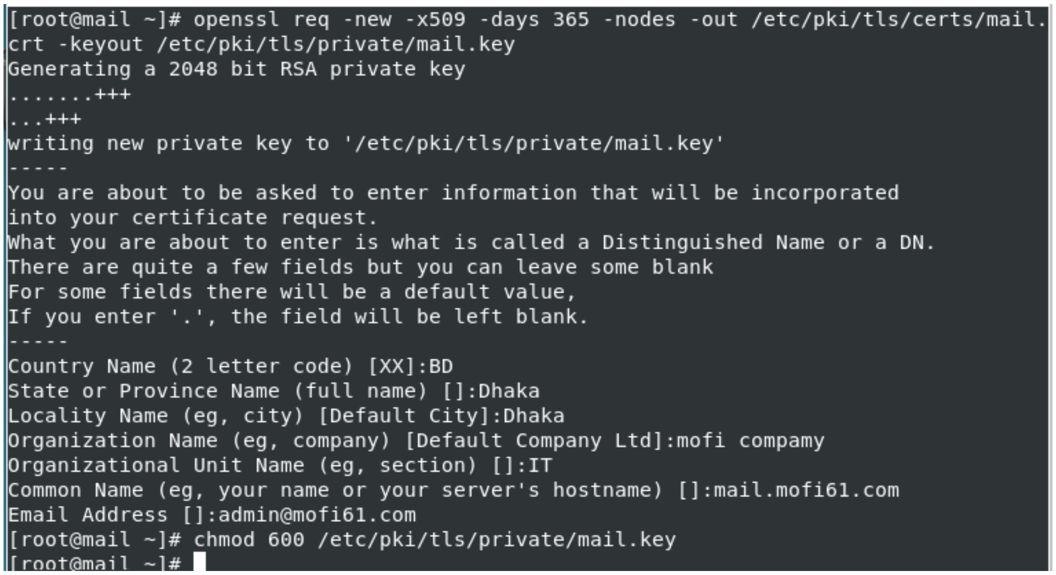
-days 365 : Sets the certificate validity to **365 days**.

-nodes : Skips the passphrase prompt (**useful for automation**).

-out /etc/pki/tls/certs/mailserver.crt : Path to **save the certificate**.

-keyout /etc/pki/tls/private/mailserver.key : Path to **save the private key**

This certificate will be used by Postfix and Dovecot for TLS/SSL encryption.



```
[root@mail ~]# openssl req -new -x509 -days 365 -nodes -out /etc/pki/tls/certs/mail.
crt -keyout /etc/pki/tls/private/mail.key
Generating a 2048 bit RSA private key
.......+++
...+++
writing new private key to '/etc/pki/tls/private/mail.key'
-----
You are about to be asked to enter information that will be incorporated
into your certificate request.
What you are about to enter is what is called a Distinguished Name or a DN.
There are quite a few fields but you can leave some blank
For some fields there will be a default value,
If you enter '.', the field will be left blank.
-----
Country Name (2 letter code) [XX]:BD
State or Province Name (full name) []:Dhaka
Locality Name (eg, city) [Default City]:Dhaka
Organization Name (eg, company) [Default Company Ltd]:mofi compamy
Organizational Unit Name (eg, section) []:IT
Common Name (eg, your name or your server's hostname) []:mail.mofi61.com
Email Address []:admin@mofi61.com
[root@mail ~]# chmod 600 /etc/pki/tls/private/mail.key
[root@mail ~]# 
```

Step 6: A local system user was created for mail access.

useradd akash

passwd akash

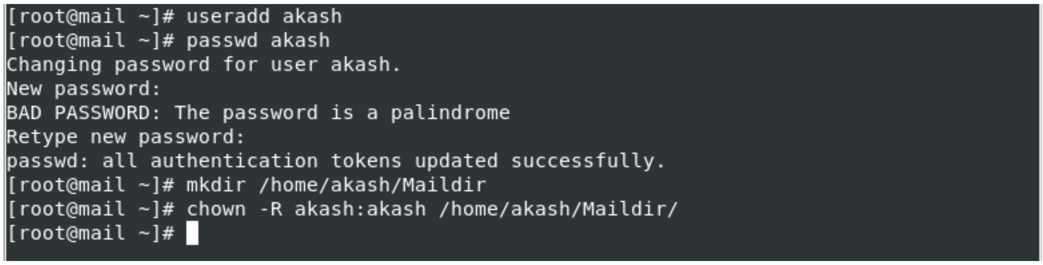
A personal **Maildir** directory was created under the user's home

mkdir -p /home/akash/Maildir

chown -R akash:akash /home/akash/Maildir

- **Proper ownership and permissions were set to ensure reliable mail delivery.** Postfix is configured to **authenticate users** using **Dovecot's SASL service**.

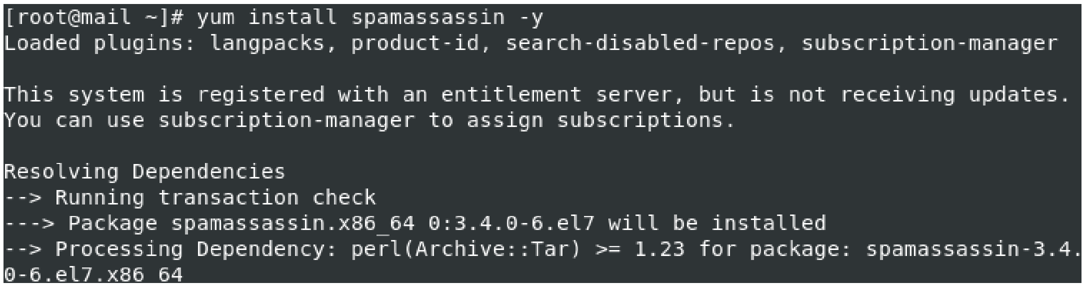
This integration allows users to securely **login** and **send emails** after authentication



```
[root@mail ~]# useradd akash
[root@mail ~]# passwd akash
Changing password for user akash.
New password:
BAD PASSWORD: The password is a palindrome
Retype new password:
passwd: all authentication tokens updated successfully.
[root@mail ~]# mkdir /home/akash/Maildir
[root@mail ~]# chown -R akash:akash /home/akash/Maildir/
[root@mail ~]# 
```

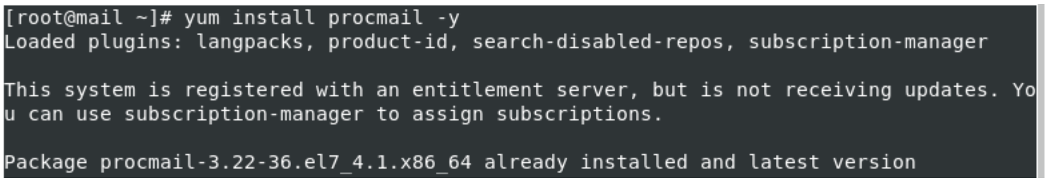
Step 7: Protecting the Mail Server from Spam and Unauthorized Access

To secure the mail server from spam and unauthorized users, implement the following steps



```
[root@mail ~]# yum install spamassassin -y
Loaded plugins: langpacks, product-id, search-disabled-repos, subscription-manager

This system is registered with an entitlement server, but is not receiving updates.
You can use subscription-manager to assign subscriptions.

Resolving Dependencies
--> Running transaction check
---> Package spamassassin.x86_64 0:3.4.0-6.el7 will be installed
--> Processing Dependency: perl(Archive::Tar) >= 1.23 for package: spamassassin-3.4.
0-6.el7.x86_64
```

install procmail **yum install procmail –y**



```
[root@mail ~]# yum install procmail -y
Loaded plugins: langpacks, product-id, search-disabled-repos, subscription-manager

This system is registered with an entitlement server, but is not receiving updates. Yo
u can use subscription-manager to assign subscriptions.

Package procmail-3.22-36.el7_4.1.x86_64 already installed and latest version
```

Use the following commands to open required ports permanently:

firewall-cmd --add-port=465/tcp --permanent   # SMTP over SSL/TLS (secure email sending)

firewall-cmd --add-port=587/tcp --permanent   # SMTP with STARTTLS (email submission)

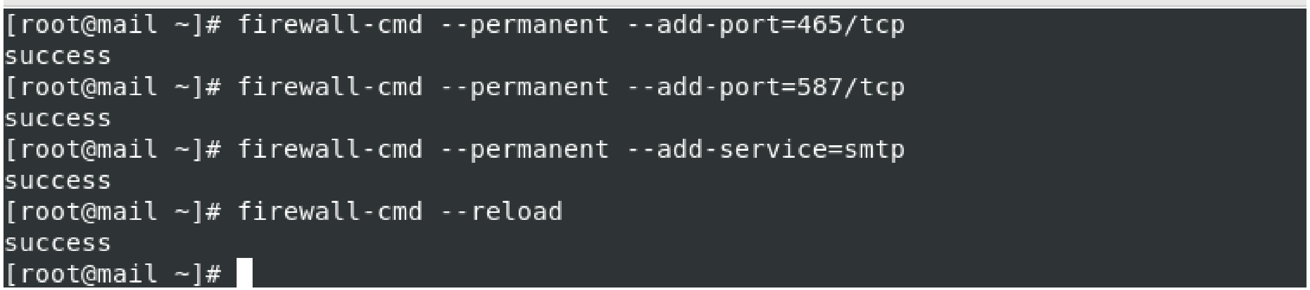
firewall-cmd --add-port=993/tcp --permanent   # IMAP over SSL/TLS (secure email receiving)

Alternatively, you can allow services by name:

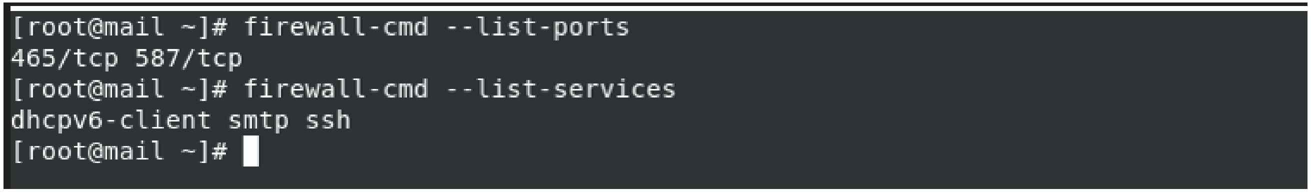
firewall-cmd --add-service=smtp --permanent

firewall-cmd --add-service=imap –permanent

firewall-cmd --add-service=pop3 –permanent



```
[root@mail ~]# firewall-cmd --permanent --add-port=465/tcp
success
[root@mail ~]# firewall-cmd --permanent --add-port=587/tcp
success
[root@mail ~]# firewall-cmd --permanent --add-service=smtp
success
[root@mail ~]# firewall-cmd --reload
success
[root@mail ~]#
```



```
[root@mail ~]# firewall-cmd --list-ports
465/tcp 587/tcp
[root@mail ~]# firewall-cmd --list-services
dhcpv6-client smtp ssh
[root@mail ~]#
```

step 8:

Edit the Forward Zone File

Edit your **forward zone file** (**/var/named/mamun.forward**) to add an **MX record** and **A record** for the mail server:vim /var/named/mofi61.forward

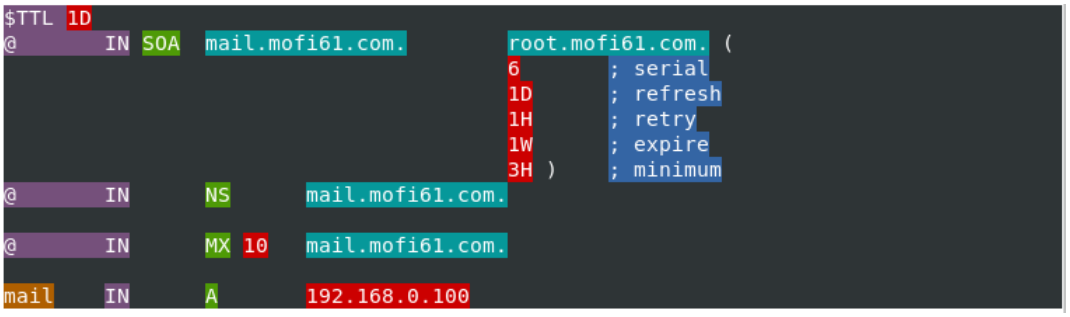
Add or edit the following lines:

```
@       IN  A       192.168.0.100
@       IN  MX 10   mail.mofi61.com.
mail    IN  A       192.168.0.100
```

@ IN A – Defines the main domain's IP address.

@ IN MX – Points to the mail server responsible for handling email (with priority 10).

mail IN A – Associates the hostname mail.mofi61.com with its IP address.



```
$TTL 1D
@       IN SOA  mail.mofi61.com.        root.mofi61.com. (
                                        6       ; serial
                                        1D      ; refresh
                                        1H      ; retry
                                        1W      ; expire
                                        3H )    ; minimum
@       IN      NS      mail.mofi61.com.

@       IN      MX 10   mail.mofi61.com.

mail    IN      A       192.168.0.100
```

Edit the Reverse Zone File

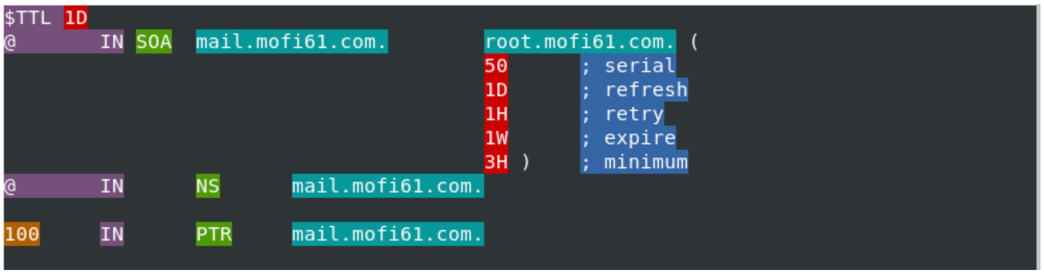
Edit your **reverse zone file** (e.g., /var/named/mofi61.reverse) to add a **PTR record** for reverse DNS lookup:

vim /var/named/mofi61.reverse

Add the following:

100 IN PTR mail.mofi61.com.

100 is the last octet of the IP 192.168.0.100.
This maps the IP address back to the hostname mail.mofi61.com.



```
$TTL 1D
@       IN SOA  mail.mofi61.com.        root.mofi61.com. (
                                        50      ; serial
                                        1D      ; refresh
                                        1H      ; retry
                                        1W      ; expire
                                        3H )    ; minimum
@       IN      NS      mail.mofi61.com.

100     IN      PTR     mail.mofi61.com.
```

Step 9:

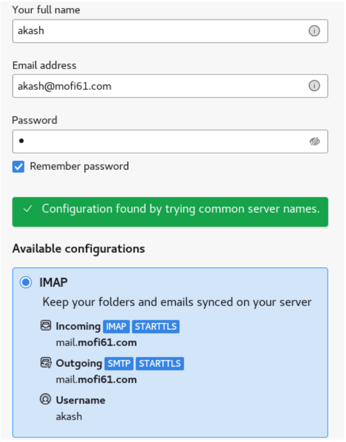
Testing the Mail Server using Thunderbird Mail Client

To verify that the mail server is working correctly, you can test it by installing and configuring a mail client such as **Mozilla Thunderbird**.

using: tar -xvJf thunderbird-137.0.1.tar.xz

Run Thunderbird Mail Client: cd thunderbird ./thunderbird Use the following command to download Thunderbird from the official Mozilla source: wget "https://download.mozilla.org/?product=thunderbird-137.0.1-SSL&os=linux64&lang=en-US" -O thunderbird-137.0.1.tar.xz

After downloading, extract the **.tar.xz** file



Your full name: akash

Email address: akash@mofi61.com

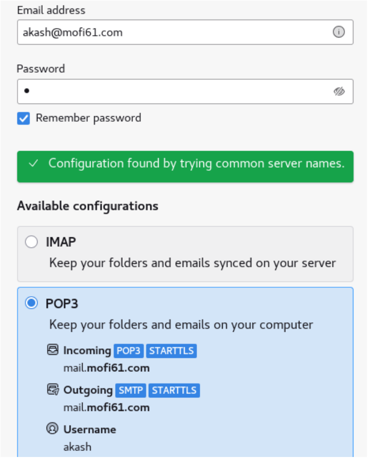
Password: •

☑ Remember password

✓ Configuration found by trying common server names.

Available configurations

● IMAP
Keep your folders and emails synced on your server
Incoming IMAP STARTTLS mail.mofi61.com
Outgoing SMTP STARTTLS mail.mofi61.com
Username akash



Email address: akash@mofi61.com

Password: •

☑ Remember password

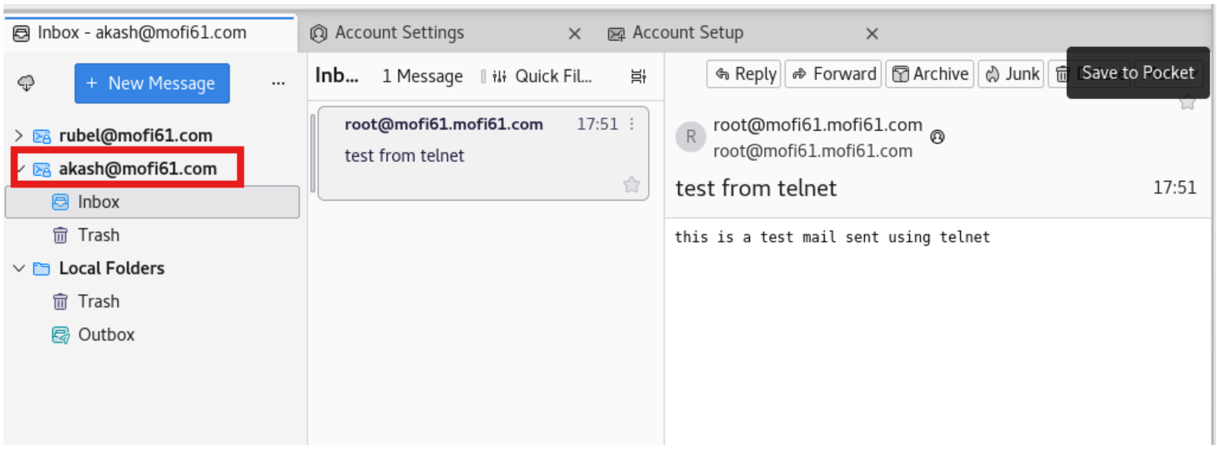
✓ Configuration found by trying common server names.

Available configurations

○ IMAP
Keep your folders and emails synced on your server

● POP3
Keep your folders and emails on your computer
Incoming POP3 STARTTLS mail.mofi61.com
Outgoing SMTP STARTTLS mail.mofi61.com
Username akash

After successfully verifying the mail server settings and completing the account setup in **Thunderbird,** you will see an interface similar to the one below: You can add another mail client and see both the client in same interface and send mail and receive both clients



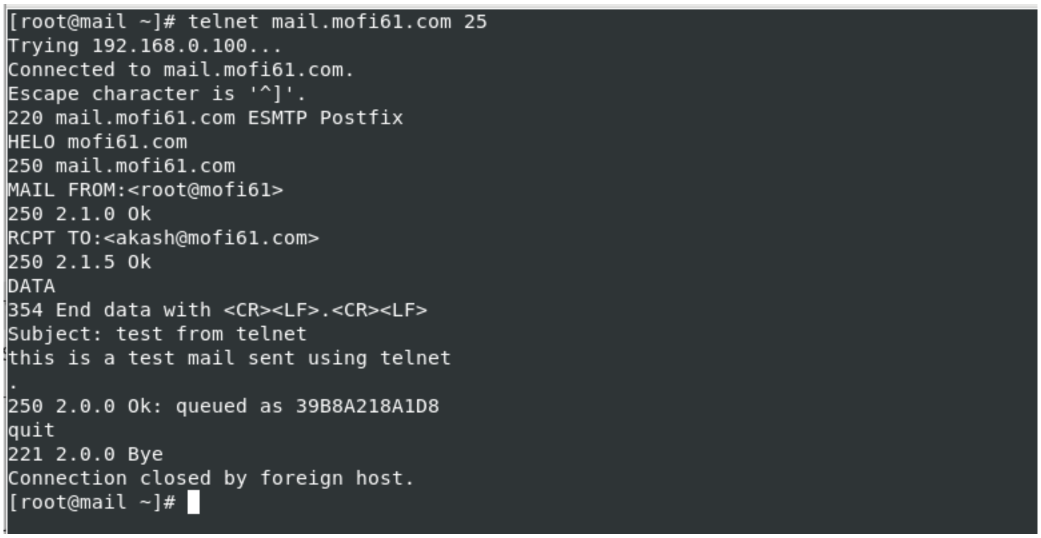
root@mofi61.mofi61.com 17:51
test from telnet

root@mofi61.mofi61.com
root@mofi61.mofi61.com

test from telnet 17:51

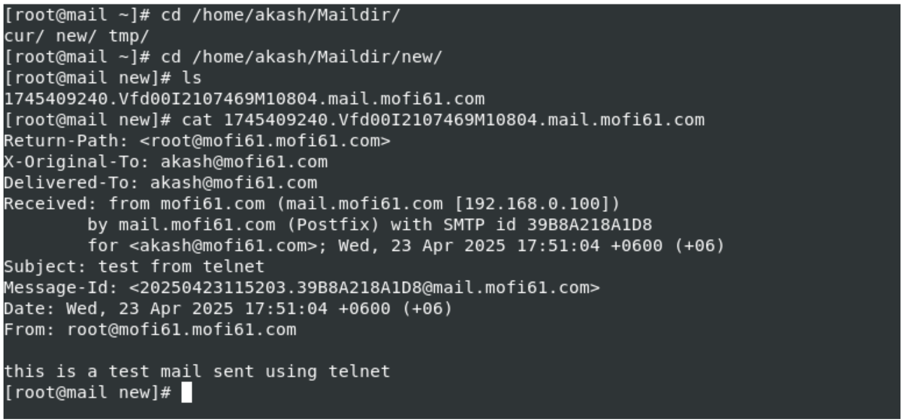
this is a test mail sent using telnet

- **Internal Email Test Using Telnet** Start a Telnet Session telnet <FQDN> <port/service>
- **Internal Email Test Using Telnet** Start a Telnet Session telnet <FQDN> <port/service>
- **HELO** <domain.com>
- **MAIL FROM**:user@domain.com
- **RCPT TO**:user@domain.com
- **DATA**
- **Subject**: Test Email from Telnet



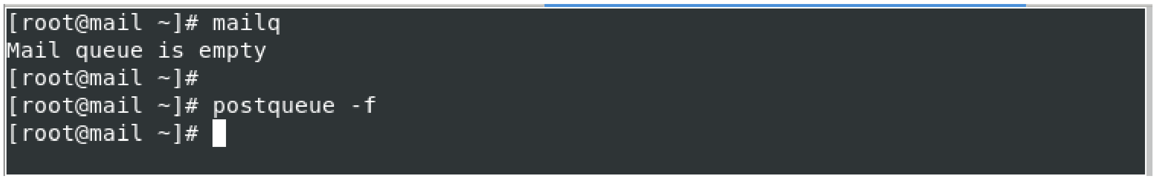
```
[root@mail ~]# telnet mail.mofi61.com 25
Trying 192.168.0.100...
Connected to mail.mofi61.com.
Escape character is '^]'.
220 mail.mofi61.com ESMTP Postfix
HELO mofi61.com
250 mail.mofi61.com
MAIL FROM:<root@mofi61>
250 2.1.0 Ok
RCPT TO:<akash@mofi61.com>
250 2.1.5 Ok
DATA
354 End data with <CR><LF>.<CR><LF>
Subject: test from telnet
this is a test mail sent using telnet
.
250 2.0.0 Ok: queued as 39B8A218A1D8
quit
221 2.0.0 Bye
Connection closed by foreign host.
[root@mail ~]# 
```

- This is a test email body sent via Telnet.quit
- Verify the mail received from user maildir directory **CD /home/user/Maildir/new/**



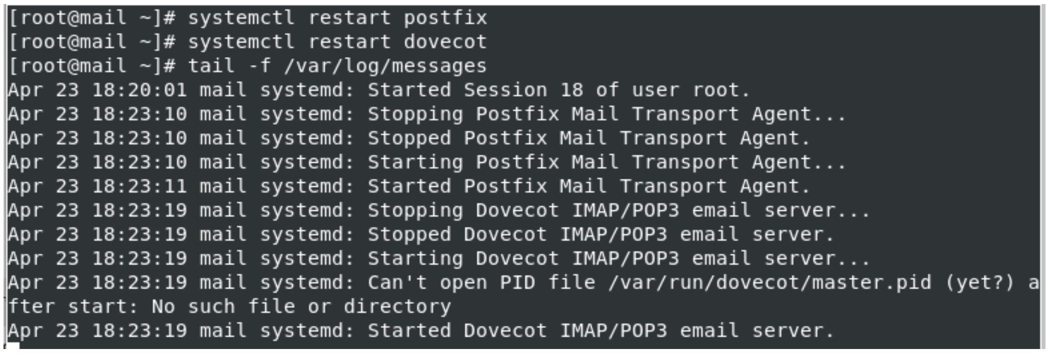
```
[root@mail ~]# cd /home/akash/Maildir/
cur/ new/ tmp/
[root@mail ~]# cd /home/akash/Maildir/new/
[root@mail new]# ls
1745409240.Vfd00I2107469M10804.mail.mofi61.com
[root@mail new]# cat 1745409240.Vfd00I2107469M10804.mail.mofi61.com
Return-Path: <root@mofi61.mofi61.com>
X-Original-To: akash@mofi61.com
Delivered-To: akash@mofi61.com
Received: from mofi61.com (mail.mofi61.com [192.168.0.100])
        by mail.mofi61.com (Postfix) with SMTP id 39B8A218A1D8
        for <akash@mofi61.com>; Wed, 23 Apr 2025 17:51:04 +0600 (+06)
Subject: test from telnet
Message-Id: <20250423115203.39B8A218A1D8@mail.mofi61.com>
Date: Wed, 23 Apr 2025 17:51:04 +0600 (+06)
From: root@mofi61.mofi61.com

this is a test mail sent using telnet
[root@mail new]# 
```

Mail Queue **mailq** Force Mail Queue Delivery **postqueue –f**



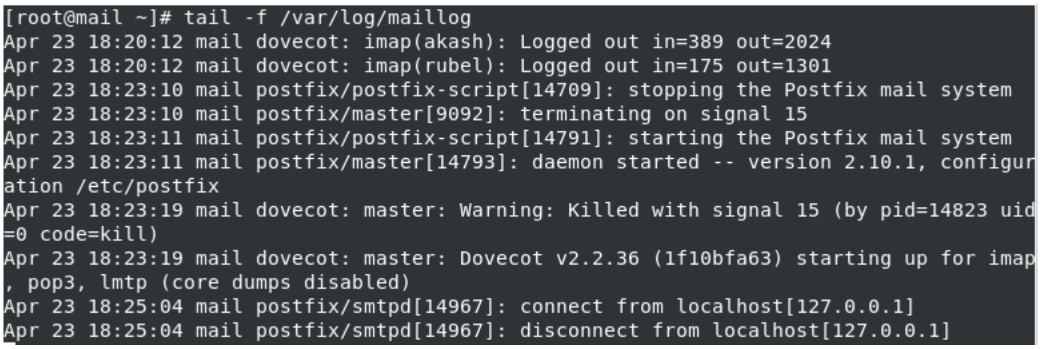
```
[root@mail ~]# mailq
Mail queue is empty
[root@mail ~]#
[root@mail ~]# postqueue -f
[root@mail ~]# 
```

Step 10: To ensure that the mail was sent securely and processed correctly by the mail server, you can monitor the system log file in real-time**. tail -f /var/log/messages /maillog**



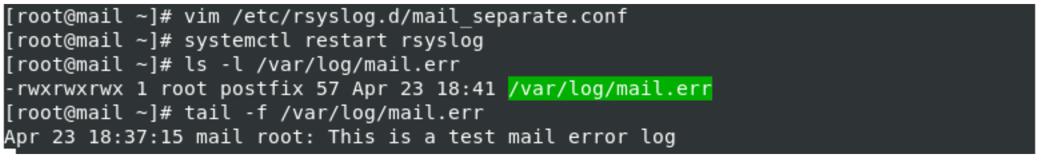
```
[root@mail ~]# systemctl restart postfix
[root@mail ~]# systemctl restart dovecot
[root@mail ~]# tail -f /var/log/messages
Apr 23 18:20:01 mail systemd: Started Session 18 of user root.
Apr 23 18:23:10 mail systemd: Stopping Postfix Mail Transport Agent...
Apr 23 18:23:10 mail systemd: Stopped Postfix Mail Transport Agent.
Apr 23 18:23:10 mail systemd: Starting Postfix Mail Transport Agent...
Apr 23 18:23:11 mail systemd: Started Postfix Mail Transport Agent.
Apr 23 18:23:19 mail systemd: Stopping Dovecot IMAP/POP3 email server...
Apr 23 18:23:19 mail systemd: Stopped Dovecot IMAP/POP3 email server.
Apr 23 18:23:19 mail systemd: Starting Dovecot IMAP/POP3 email server...
Apr 23 18:23:19 mail systemd: Can't open PID file /var/run/dovecot/master.pid (yet?) a
fter start: No such file or directory
Apr 23 18:23:19 mail systemd: Started Dovecot IMAP/POP3 email server.
```

Verify the **tail -f /var/log/maillog**

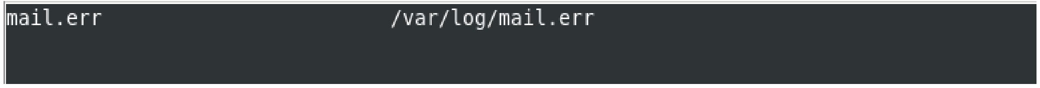


```
[root@mail ~]# tail -f /var/log/maillog
Apr 23 18:20:12 mail dovecot: imap(akash): Logged out in=389 out=2024
Apr 23 18:20:12 mail dovecot: imap(rubel): Logged out in=175 out=1301
Apr 23 18:23:10 mail postfix/postfix-script[14709]: stopping the Postfix mail system
Apr 23 18:23:10 mail postfix/master[9092]: terminating on signal 15
Apr 23 18:23:11 mail postfix/postfix-script[14791]: starting the Postfix mail system
Apr 23 18:23:11 mail postfix/master[14793]: daemon started -- version 2.10.1, configur
ation /etc/postfix
Apr 23 18:23:19 mail dovecot: master: Warning: Killed with signal 15 (by pid=14823 uid
=0 code=kill)
Apr 23 18:23:19 mail dovecot: master: Dovecot v2.2.36 (1f10bfa63) starting up for imap
, pop3, lmtp (core dumps disabled)
Apr 23 18:25:04 mail postfix/smtpd[14967]: connect from localhost[127.0.0.1]
Apr 23 18:25:04 mail postfix/smtpd[14967]: disconnect from localhost[127.0.0.1]
```

Now go **to /etc/rsyslog.d/mail_separate.conf** and add mail.err for dropping the error message in **/var/log/mail.err**



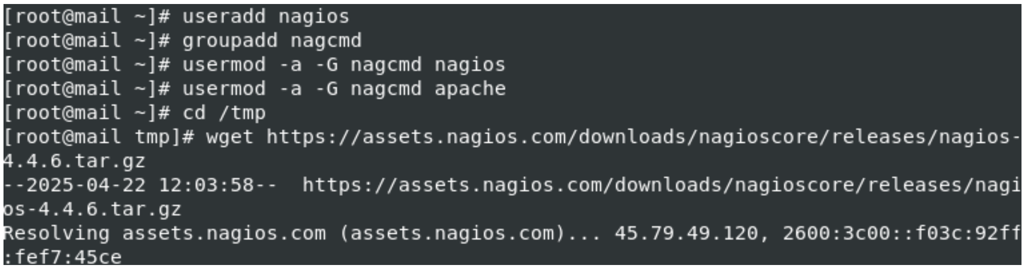
```
[root@mail ~]# vim /etc/rsyslog.d/mail_separate.conf
[root@mail ~]# systemctl restart rsyslog
[root@mail ~]# ls -l /var/log/mail.err
-rwxrwxrwx 1 root postfix 57 Apr 23 18:41 /var/log/mail.err
[root@mail ~]# tail -f /var/log/mail.err
Apr 23 18:37:15 mail root: This is a test mail error log
```



```
mail.err                        /var/log/mail.err
```

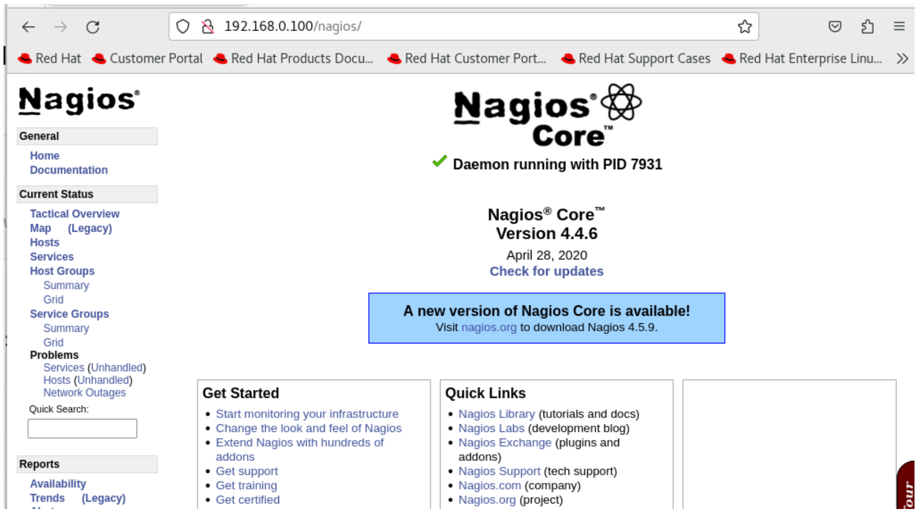
Nagios Core Monitoring Setup on Install Required Dependencies
yum install -y gcc glibc glibc-common wget unzip httpd php gd gd-devel perl postfix

Create Nagios User and Group



```
[root@mail ~]# useradd nagios
[root@mail ~]# groupadd nagcmd
[root@mail ~]# usermod -a -G nagcmd nagios
[root@mail ~]# usermod -a -G nagcmd apache
[root@mail ~]# cd /tmp
[root@mail tmp]# wget https://assets.nagios.com/downloads/nagioscore/releases/nagios-
4.4.6.tar.gz
--2025-04-22 12:03:58--  https://assets.nagios.com/downloads/nagioscore/releases/nagi
os-4.4.6.tar.gz
Resolving assets.nagios.com (assets.nagios.com)... 45.79.49.120, 2600:3c00::f03c:92ff
:fef7:45ce
```

Nagios Web Interface



✓ Daemon running with PID 7931

Nagios® Core™
Version 4.4.6
April 28, 2020
Check for updates

A new version of Nagios Core is available!
Visit nagios.org to download Nagios 4.5.9.

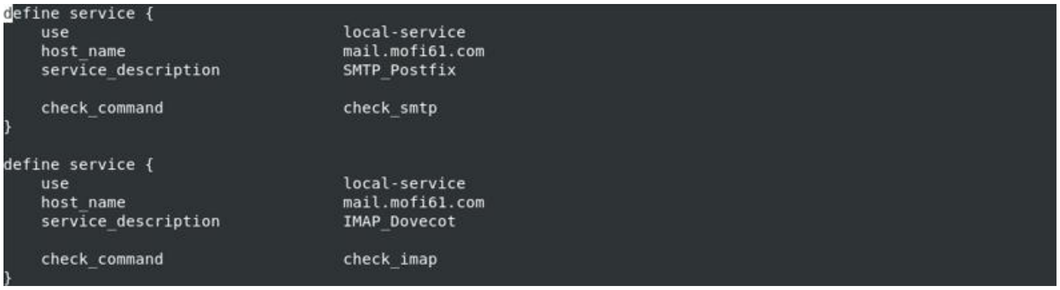
Get Started
- Start monitoring your infrastructure
- Change the look and feel of Nagios
- Extend Nagios with hundreds of addons
- Get support
- Get training
- Get certified

Quick Links
- Nagios Library (tutorials and docs)
- Nagios Labs (development blog)
- Nagios Exchange (plugins and addons)
- Nagios Support (tech support)
- Nagios.com (company)
- Nagios.org (project)

Configure Mail Server Monitoring

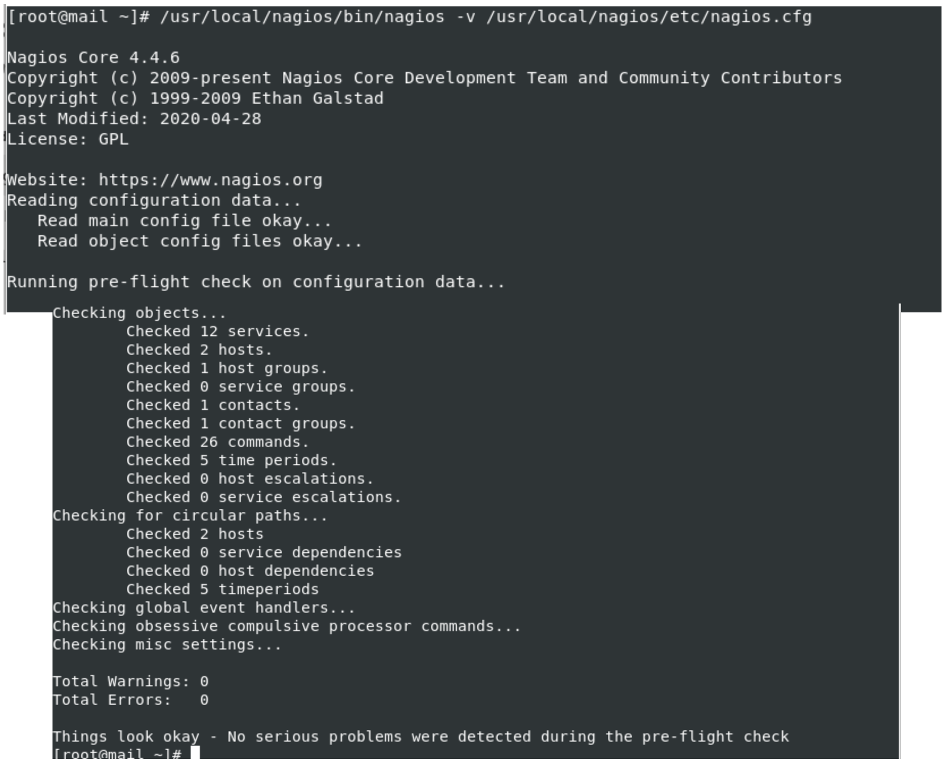
Edit default configuration:**vim /usr/local/nagios/etc/objects/localhost.cfg**

Add checks for mail services:



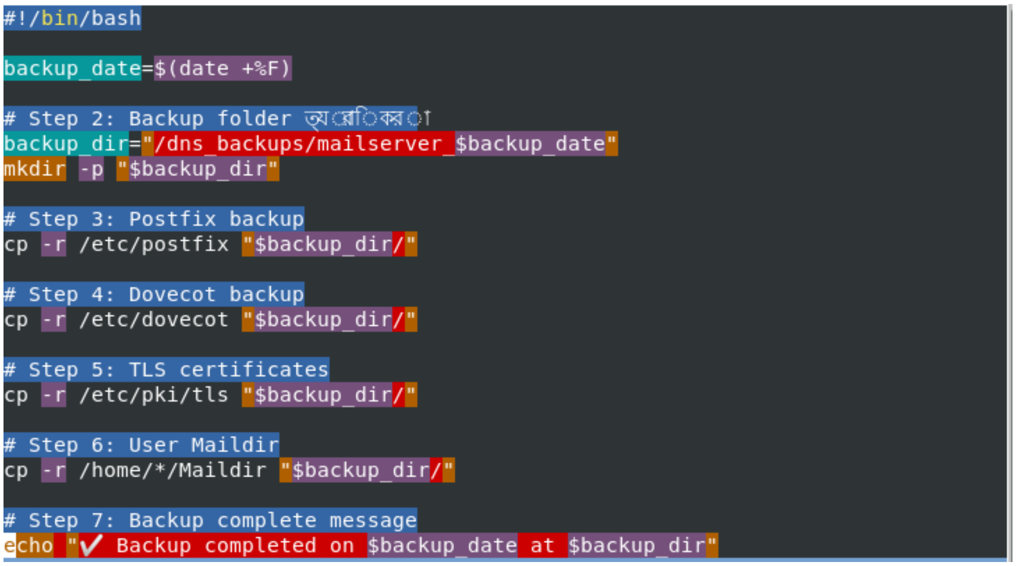
```
define service {
    use                             local-service
    host_name                       mail.mofi61.com
    service_description             SMTP_Postfix

    check_command                   check_smtp
}

define service {
    use                             local-service
    host_name                       mail.mofi61.com
    service_description             IMAP_Dovecot

    check_command                   check_imap
}
```

Verify and Restart Nagios **Check configuration** /usr/local/nagios/bin/nagios -v /usr/local/nagios/etc/nagios.cfg



```
[root@mail ~]# /usr/local/nagios/bin/nagios -v /usr/local/nagios/etc/nagios.cfg

Nagios Core 4.4.6
Copyright (c) 2009-present Nagios Core Development Team and Community Contributors
Copyright (c) 1999-2009 Ethan Galstad
Last Modified: 2020-04-28
License: GPL

Website: https://www.nagios.org
Reading configuration data...
   Read main config file okay...
   Read object config files okay...

Running pre-flight check on configuration data...
Checking objects...
        Checked 12 services.
        Checked 2 hosts.
        Checked 1 host groups.
        Checked 0 service groups.
        Checked 1 contacts.
        Checked 1 contact groups.
        Checked 26 commands.
        Checked 5 time periods.
        Checked 0 host escalations.
        Checked 0 service escalations.
Checking for circular paths...
        Checked 2 hosts
        Checked 0 service dependencies
        Checked 0 host dependencies
        Checked 5 timeperiods
Checking global event handlers...
Checking obsessive compulsive processor commands...
Checking misc settings...

Total Warnings: 0
Total Errors:   0

Things look okay - No serious problems were detected during the pre-flight check
[root@mail ~]#
```

Step 11: Backup and Disaster Recovery Backup Script: **`/usr/local/bin/mailserver_backup.sh`**

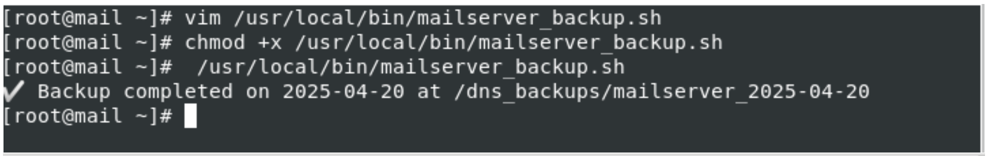


```
#!/bin/bash

backup_date=$(date +%F)

# Step 2: Backup folder তৈরি করা
backup_dir="/dns_backups/mailserver_$backup_date"
mkdir -p "$backup_dir"

# Step 3: Postfix backup
cp -r /etc/postfix "$backup_dir/"

# Step 4: Dovecot backup
cp -r /etc/dovecot "$backup_dir/"

# Step 5: TLS certificates
cp -r /etc/pki/tls "$backup_dir/"

# Step 6: User Maildir
cp -r /home/*/Maildir "$backup_dir/"

# Step 7: Backup complete message
echo "✓ Backup completed on $backup_date at $backup_dir"
```

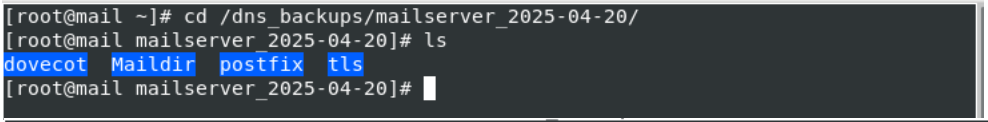
- Make the script executable: chmod +x /usr/local/bin/mailserver_backup.sh

- Schedule Daily Backup at 2:00 AM with Cron: crontab –e Add command : 0 2 * * * /usr/local/bin/mailserver_backup.sh

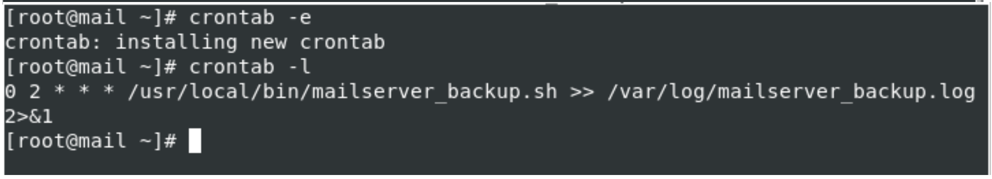
Run the backup /usr/local/bin/backup_mail_server.sh   Verify the backup in mail server



```
[root@mail ~]# vim /usr/local/bin/mailserver_backup.sh
[root@mail ~]# chmod +x /usr/local/bin/mailserver_backup.sh
[root@mail ~]#  /usr/local/bin/mailserver_backup.sh
✓ Backup completed on 2025-04-20 at /dns_backups/mailserver_2025-04-20
[root@mail ~]# 
```



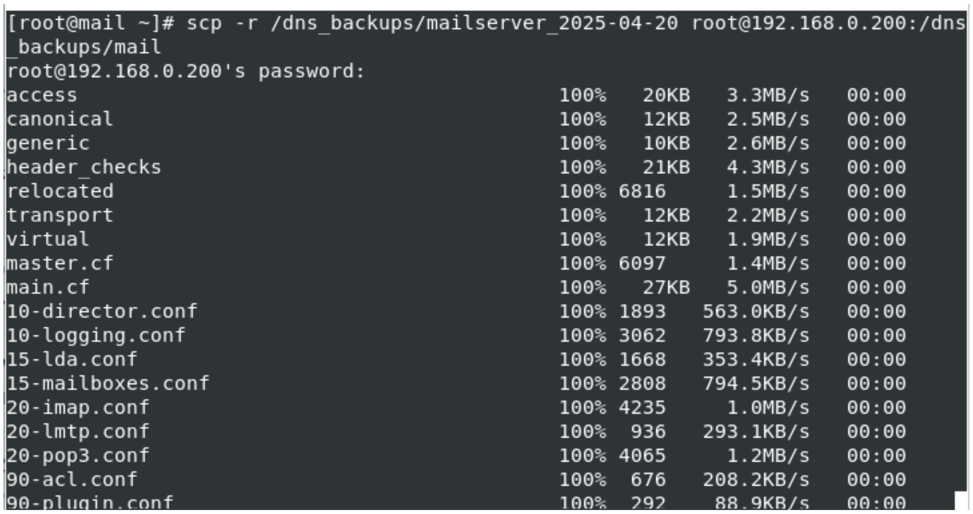
```
[root@mail ~]# cd /dns_backups/mailserver_2025-04-20/
[root@mail mailserver_2025-04-20]# ls
dovecot  Maildir  postfix  tls
[root@mail mailserver_2025-04-20]# 
```



```
[root@mail ~]# crontab -e
crontab: installing new crontab
[root@mail ~]# crontab -l
0 2 * * * /usr/local/bin/mailserver_backup.sh >> /var/log/mailserver_backup.log
2>&1
[root@mail ~]# 
```

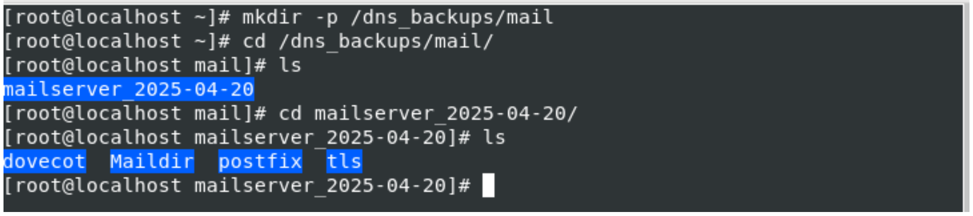
Use Case: Transfer Mail Server Backup to Remote Server

- Local (current) server has backup at: **`/dns_backups/mailserver_2025-04-20`**
- Remote server IP: **`192.168.0.200`**
- Remote user: `root`
- Destination path on remote: **`/home/dns_backups/mail`**
- **Copy from Local to Remote : scp -r /dns_backups/mailserver_2025-04-21 root@192.168.0.200:/home/dns_backups/mail**



```
[root@mail ~]# scp -r /dns_backups/mailserver_2025-04-20 root@192.168.0.200:/dns
_backups/mail
root@192.168.0.200's password:
access                                        100%   20KB   3.3MB/s   00:00
canonical                                     100%   12KB   2.5MB/s   00:00
generic                                       100%   10KB   2.6MB/s   00:00
header_checks                                 100%   21KB   4.3MB/s   00:00
relocated                                     100% 6816     1.5MB/s   00:00
transport                                     100%   12KB   2.2MB/s   00:00
virtual                                       100%   12KB   1.9MB/s   00:00
master.cf                                     100% 6097     1.4MB/s   00:00
main.cf                                       100%   27KB   5.0MB/s   00:00
10-director.conf                              100% 1893   563.0KB/s   00:00
10-logging.conf                               100% 3062   793.8KB/s   00:00
15-lda.conf                                   100% 1668   353.4KB/s   00:00
15-mailboxes.conf                             100% 2808   794.5KB/s   00:00
20-imap.conf                                  100% 4235     1.0MB/s   00:00
20-lmtp.conf                                  100%  936   293.1KB/s   00:00
20-pop3.conf                                  100% 4065     1.2MB/s   00:00
90-acl.conf                                   100%  676   208.2KB/s   00:00
90-plugin.conf                                100%  292    88.9KB/s   00:00
```

Remote server folder name **/dns_backups/mail**



```
[root@localhost ~]# mkdir -p /dns_backups/mail
[root@localhost ~]# cd /dns_backups/mail/
[root@localhost mail]# ls
mailserver_2025-04-20
[root@localhost mail]# cd mailserver_2025-04-20/
[root@localhost mailserver_2025-04-20]# ls
dovecot  Maildir  postfix  tls
[root@localhost mailserver_2025-04-20]# 
```

Step: 12. Documentation and Maintenance Mail Server Setup Documentation

Server Hostname: mail.mofi61.com
IP Address: 192.168.0.100
OS Version: RHEL 7.9
Mail Server: Postfix (SMTP), Dovecot (IMAP/POP3)

Custom Configurations:
- Postfix main.cf and master.cf modified
- Dovecot conf.d/10-mail.conf and 10-auth.conf adjusted for Maildir format
- TLS enabled using self-signed certificate stored at /etc/pki/tls/

Backup:
- Backup script: /usr/local/bin/mailserver_backup.sh
- Daily cron at 2:00 AM
- Backup destination: /dns_backups/

Disaster Recovery:
- Restore configuration files from /dns_backups/
- Restart mail services using systemctl

Maintenance Tips:
- Check log files: /var/log/maillog
- Verify mail queue: `postqueue -p`
- Monitor disk usage: `df -h`