



Prolećni semestar, 2016/17

PREDMET: IT335 Administracija računarskih sistema i mreža
Projektni zadatak

Mail server

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Uvod

U projektnom zadatku biće demonstrirano podizanje mail servera i njegovo korišćenje unutar mreže. Podizanje i konfiguracija Postfix-a, Dovecot-a, kao i RainLoop-a. Biće prikazano kroz screenshot-ove (slike ekrana) kako je sve uradjeno, greške koje su pravljene i konfiguracije koje su podešene. I na samom kraju biće prikazano testiranje pomoću Rainloop Webmail klijenta kako bi se slali mailovi (poruke) kroz mrežu.

Dобра и лоша strana mail servera

Dobra strana je što možemo za korisnika ili kompaniju da napravimo lični mail server i u zavisnosti od klijentskih želja i potreba da kontrolišemo ceo server i da ga konfigurišemo za potrebe istog. Koristimo konfiguraciju koja je potrebna za klijenta, i ne opterećujemo server i mrežu bespotrebnim konfiguracijama, i podešavanjima. Možemo, dakle, fino podešavati server u zavisnosti od potreba samih klijenata, za razliku od recimo gmail-a koji je pravljen za široku upotrebu sa određenom konfiguracijom i podešavanjima, koji možda našem klijentu ne bi odgovarali. Pored toga možemo sami preko baze podataka manipulisati korisničkim nalozima kao i prosleđenom poštom, što sve ukupno čini niz dobrih strana podizanja mail servera. S druge strane, loše strane su da bi loša konfiguracija samog mail servera mogla dovesti do ozbiljnih propusta u bezbednosti što bi moglo klijenta koštati velikih gubitaka, i dok mi podižemo i konfigurišemo mail server po sopstvenim nahođenjima, neke velike kompanije nude već gotova rešenja u vidu mail servera koja su dosta bezbednija i dosta duže se radi na ravjanju istog rešenja.

Arhaizam

Domen - **Internet domen** je tekstualna oznaka koja identificuje skup uređaja ili [internet](#) servisa, povezujući ih u jedinstvenu administrativno-tehničku celinu

Cilj projektnog zadatka:

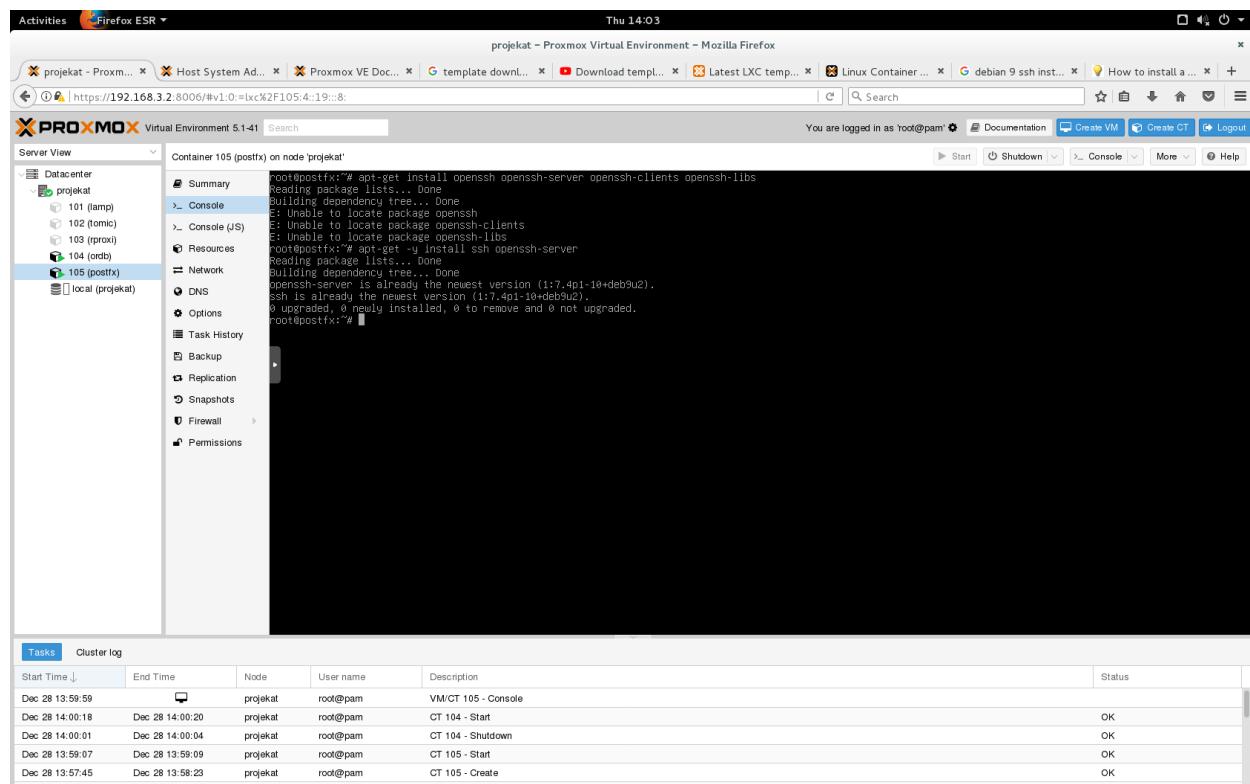
Cilj projektnog zadatka je bio podizanje mail servera. Ovo je postignuto konfiguracijom Postfix-a, Dovecot-a kao i RainLoop Webmail-a u Debianu 9. Na ovaj način je dođen jasniji uvid o tome kako izgleda podići i konfigurisati jedan mail server. Detaljnije će biti opisano u nastavku dokumenta.

Mail server:

Mail server je računarski sistem koji šalje i prima email poruke. Kako bi jedan računarski sistem mogao da funkcioniše, mora da koristi neki mail server softver (program) koji bi omogućio administratoru sistema da kreira i konfiguriše email naloge za domene koji su hostovani na server. Kao u našem projektnom, mi smo napravili da nam se email nalog zavrsava sa @nemanjasara . Mail server koristi standardne email protokole SMTP protokole koji šalje poruke i rukuje odlaznim mail request-ovima (zahtevima). IMAP i POP3 protokoli primaju poruke i rukovode dolaznim mailovima. Kada se ulogujem na mail server koristeći Rainloop kao webmail interfejs ili email klijenta, ovi protokoli samostalno se podešavaju tako da nikog od nas (korisnika) ne opterećuju. Mail server je veoma fleksibilan i može se koristiti na različitim platformama.

Podizanje Mail Servera:

Prvenstveno, podignut je proxmox od strane kolega, koji su omogućili kontejner sa Debian distribucijom Linux-a. Dodeljivanje resursa se vršilo od strane kolega koji su podigli proxmox, gde su jedne od bitnijih konfiguracija bile, podešavanje statičke IP adrese kontejneru, i dodata imena (nameserver). Prvenstveno je dodeljeno ime postfix, koje se kasnije promenilo u nemanjasara, kako bi konfigurisali lakse krajnji domen – nemanjasara.



Slika 1 – openssh instalacija.

Iz razloga što terminal kod proxmox-a radi kroz web interfejs, te je sporiji nego običan terminal, i dodaje određene karaktere pri bržem kucanju, odlučeno je da se putem openssh sa druge mašine povežemo na naš server, pa kroz terminal linux-a dalje podizemo i konfigurišemo željeni softver.

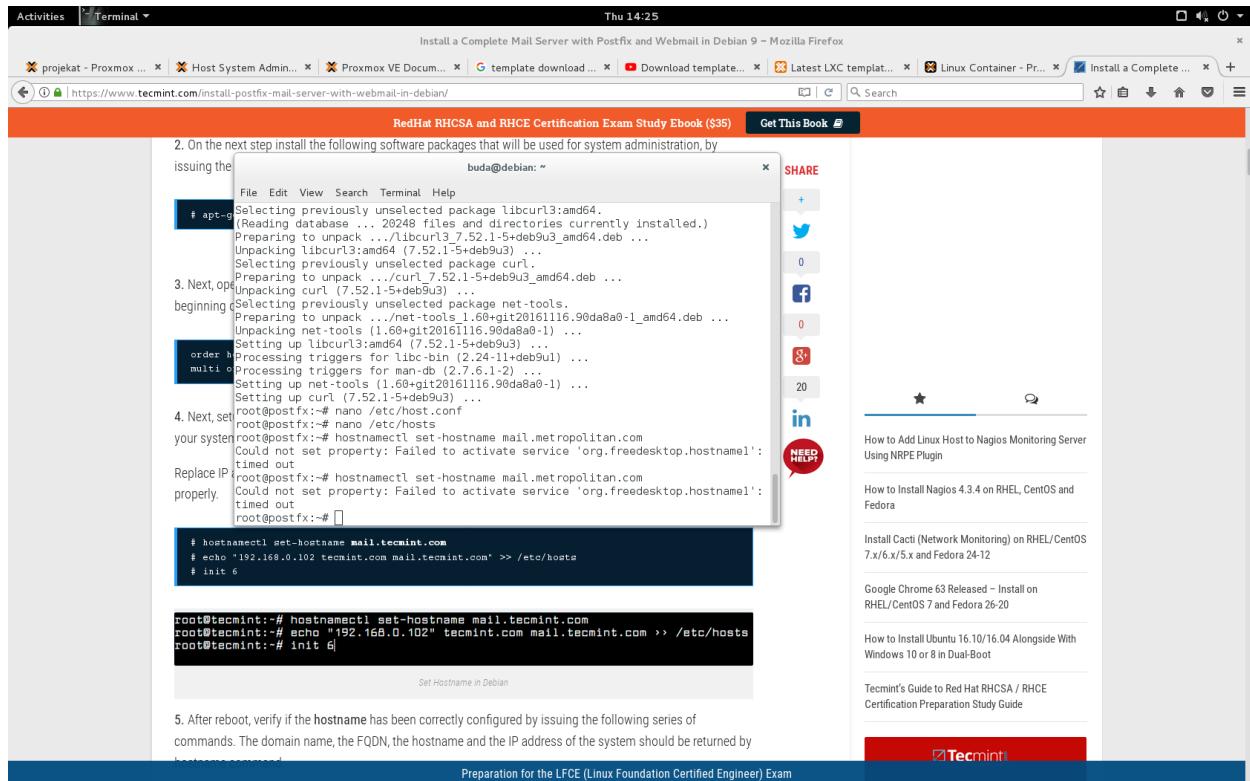
Kao što se može videti na slici jedan, instaliramo potrebne pakete kao i softver da bi omogućili openssh tj. daljinsko povezivanje na naš server.

U samoj konfiguraciji openssh-a promenjena je samo jedna linija koda kako bi omogućili to daljinsko povezivanje.

Otvaramo konfiguracioni fajl: nano /etc/ssh/sshd_config

A nakon toga menjamo sledeću liniju koda u YES.

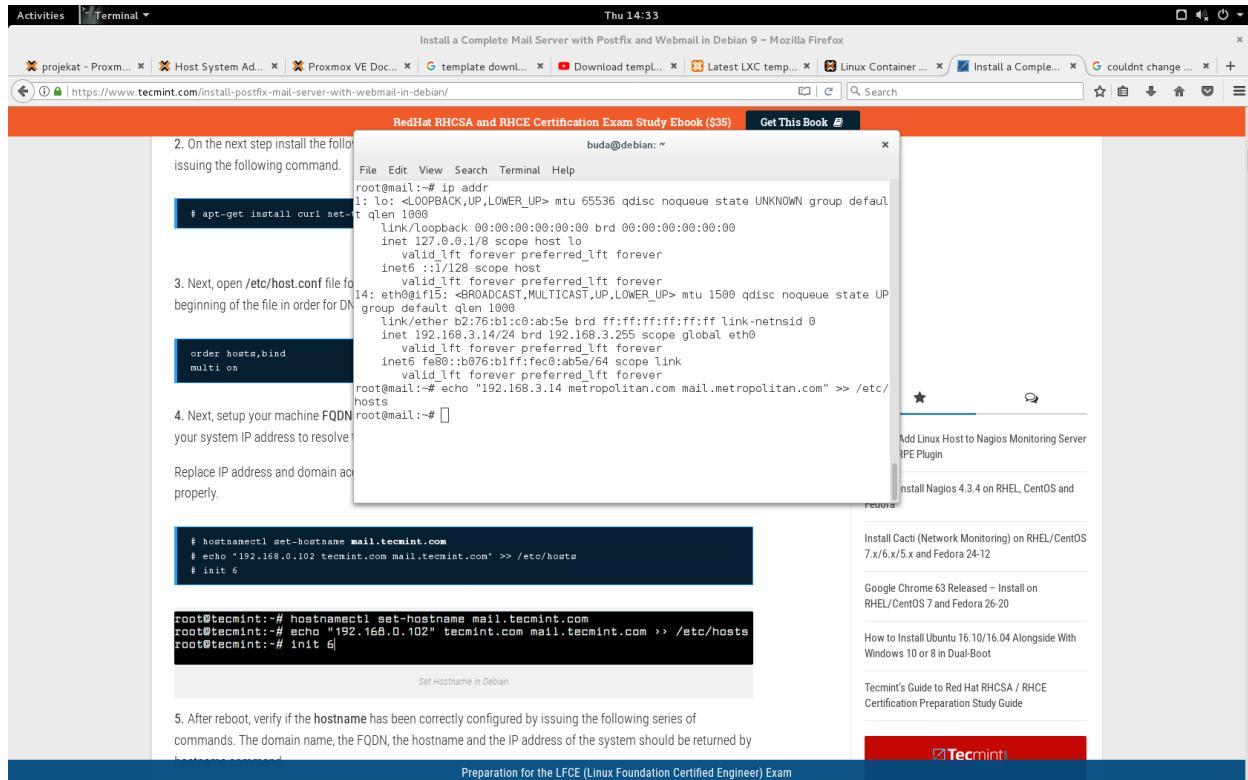
`PermitRootLogin yes`



```
# PermitRootLogin no
PermitRootLogin yes
```

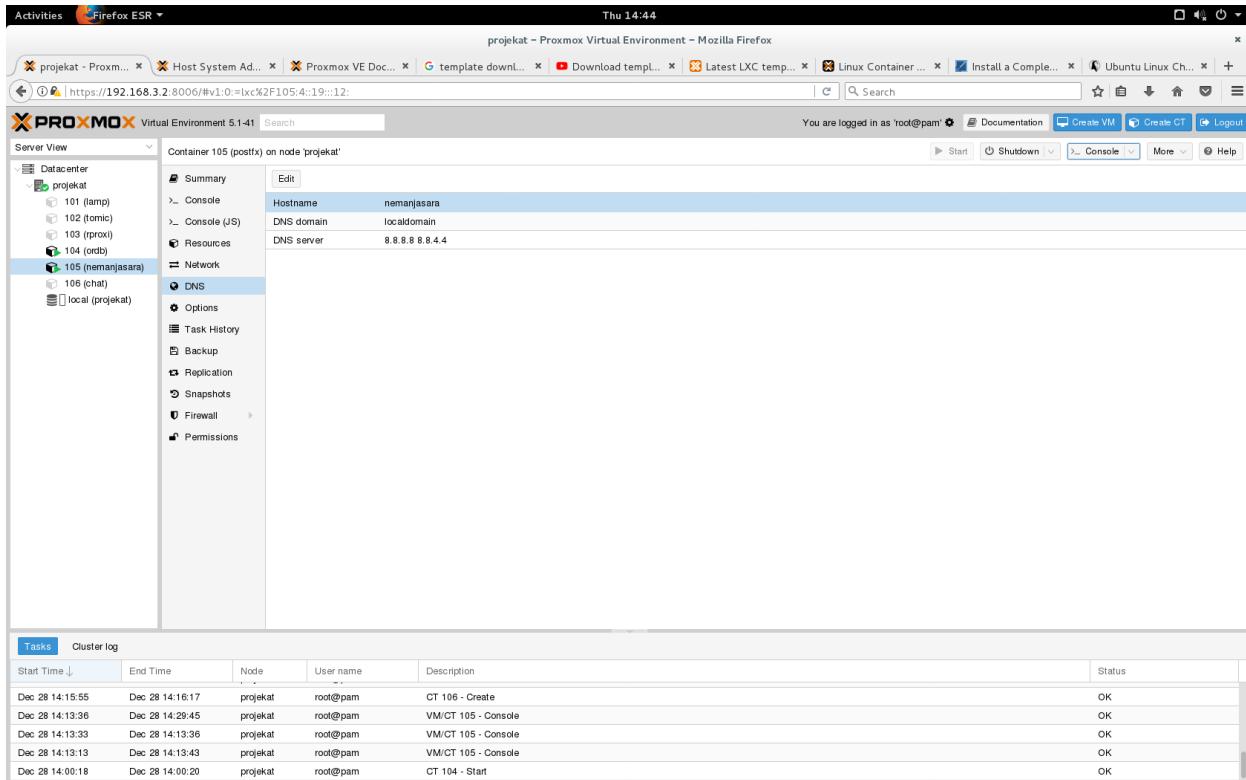
The screenshot shows a terminal window titled "Terminal" with the command `sudo nano /etc/ssh/sshd_config` running. The line `PermitRootLogin yes` is highlighted in yellow. The terminal also displays other configuration options like `Port 22`, `Protocol 2`, and `ListenAddress 0.0.0.0`. The background shows a web browser with a guide on how to install a mail server on Debian 9 using Postfix and Webmail.

Slika 2 – Neuspešno menjanje imena servera (nameserver)



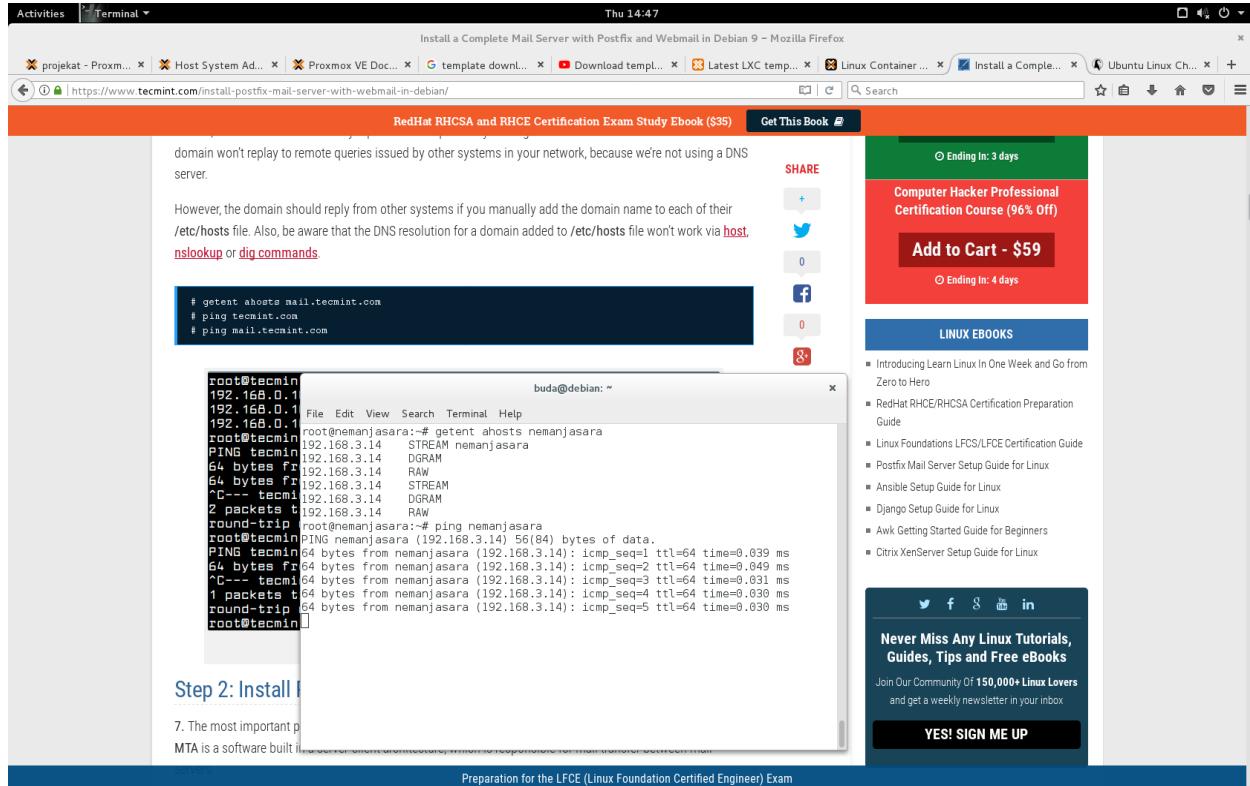
Slika 3 – Neuspšeno menjanje imena servera (nameserver)

Pokušaj upisa u hosts fajl na putanji /etc/hosts ip adresu kao i željenog budućeg domена. Obizom da on već postoji registrovan odlučeno je da se odustane od ovog pristupa te se uzeo drugi domen koji sigurno nije registrovan, i promenjeno je ime servera (nameserver) ručno, direktno kroz proxmox.



Slika 4 – Izmena

Kao što je napomenuto, manuelno je promenjen hostname, preko web interfejsa proxmox-a.



Slika 3-pingovanje domena

Na Slici 5 možemo videti da smo prilikom pingovanja (otkucane ping komande) dobili vreme odziva što nam govori da naš domen funkcioniše i da nam odgovara na lokalne upite. Ukoliko ne koristimo DNS domen neće odgovoriti na ove upite u našoj mreži. Domen će nam odgovoriti sa drugih sistema ukoliko mi ručno unesemo ime domena za svaki od fajlova /etc/hosts.

getent ahosts nemanjasara

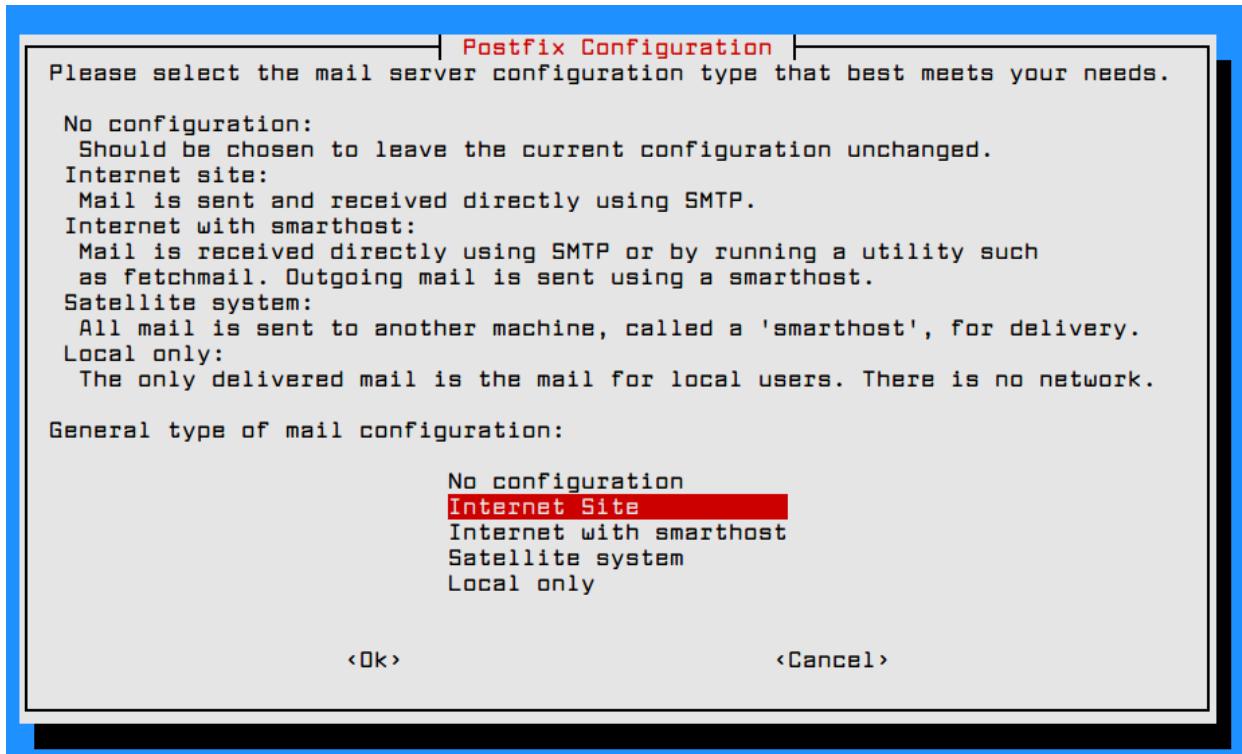
ping nemanjasara

Konfiguracija Postfix-a Mail Servera na Debianu:

Instaliranje postfix mail server na Debianu

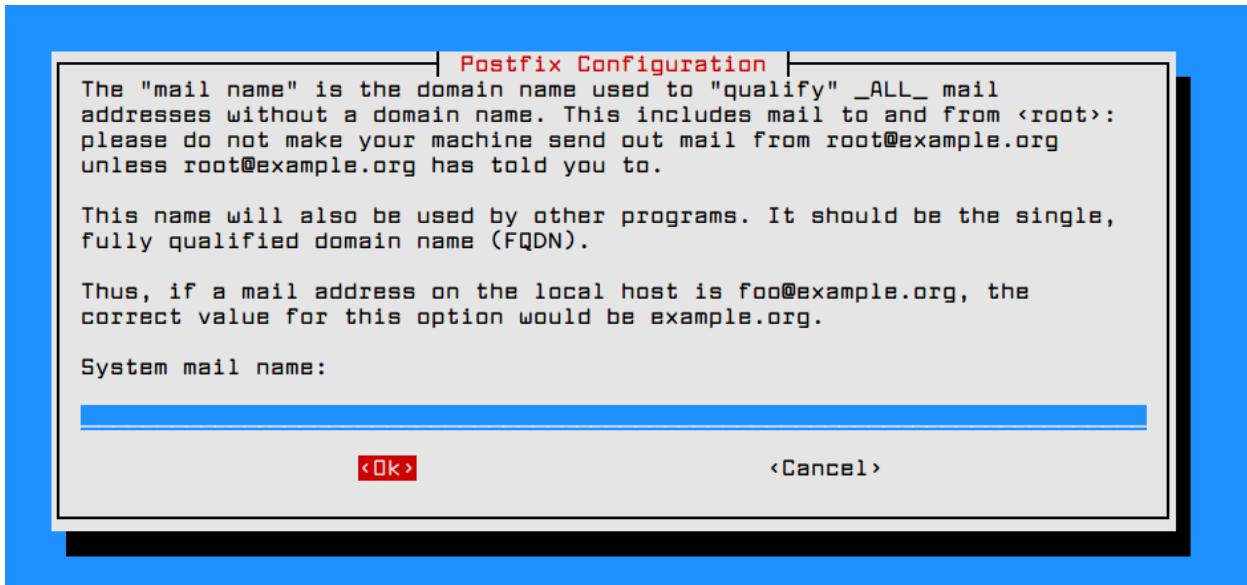
Najvažniji deoprojektnog zadatka jeste ovaj softver zvani Postfix. On je taj koji je zadužen za server-klijent transferovanje poruka. Da bi smo ga instalirali, potrebno je uneti komandu:

apt-get install postfix



Slika 6 – Instalacija i konfiguracija postfix-a

Iz menija bira se Internet Site, kao što se iznad može videti, to se radi iz razloga što nam baš ova opcija doprinosi da se mail pošalje i primi direktno putem SMTP protokola.



Slika 7 – Instalacija I konfiguracija postfix-a

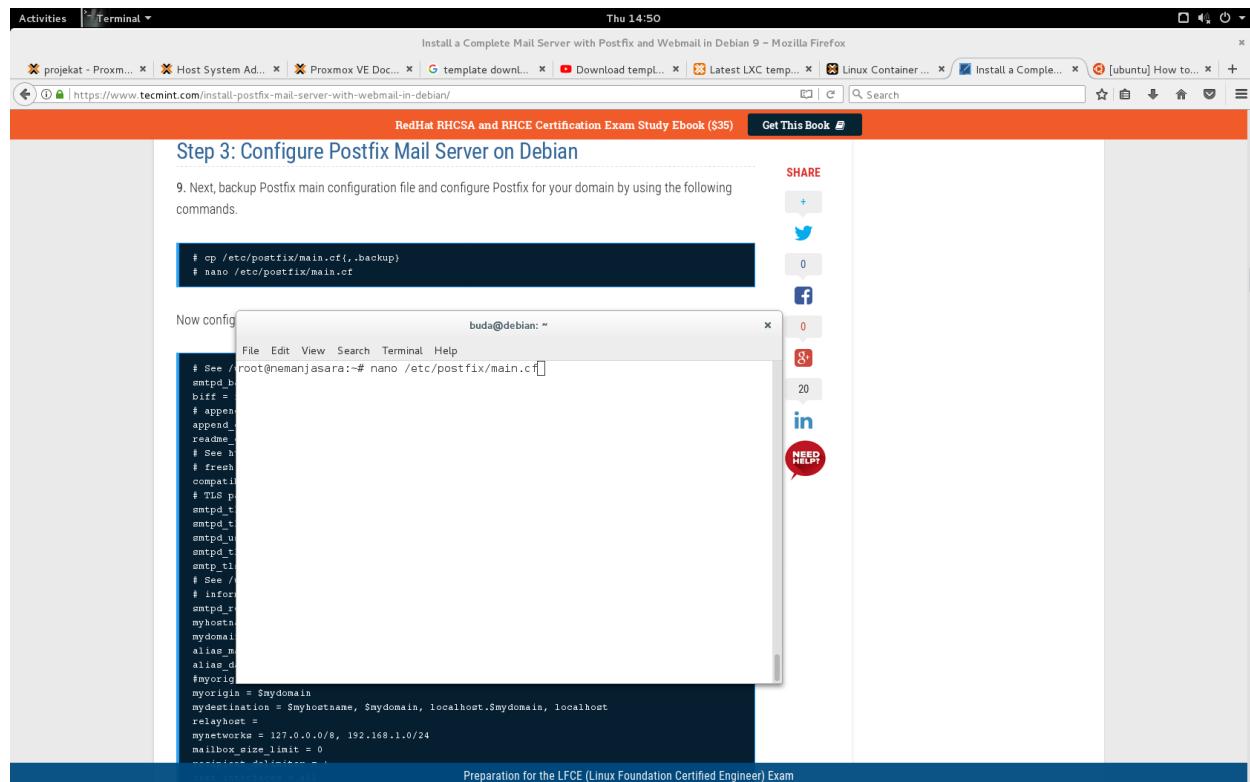
Nakon odabira Internet Site i pritiska na OK, dobijamo sledeći prozor konfiguracije u kome treba uneti naziv domena, kucamo nemanjasara i idemo na OK.

Konfiguriranje postfix mail server na Debianu

Dalje konfigurišemo postfix tako što kucamo određene komande koje nam otvaraju konfiguracione fajlove. Prvi koji smo želeli da otvorimo jeste konfiguracioni fajl pod imenom main.cf (Slika 8).

Komanda koju smo koristili je:

nano /etc/postfix/main.cf



Slika 8 – Konfiguracija Postfix-a, main.cf

U ovom fajlu smo izmenili neke delove. Kako ne bismo morali za svaku promenjenu komandu da radimo screenshot, ovde ćemo napisati korake koje smo sproveli:

myhostname = nemanjasara.localdomain

mydomain = nemanjasara.lan,

mynetworks = 127.0.0.0/8 , 192.168.3.0/24

myorigin = \$mydomain

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

inet_protocols = ipv4

home_mailbox = Maildir/

#SMTP

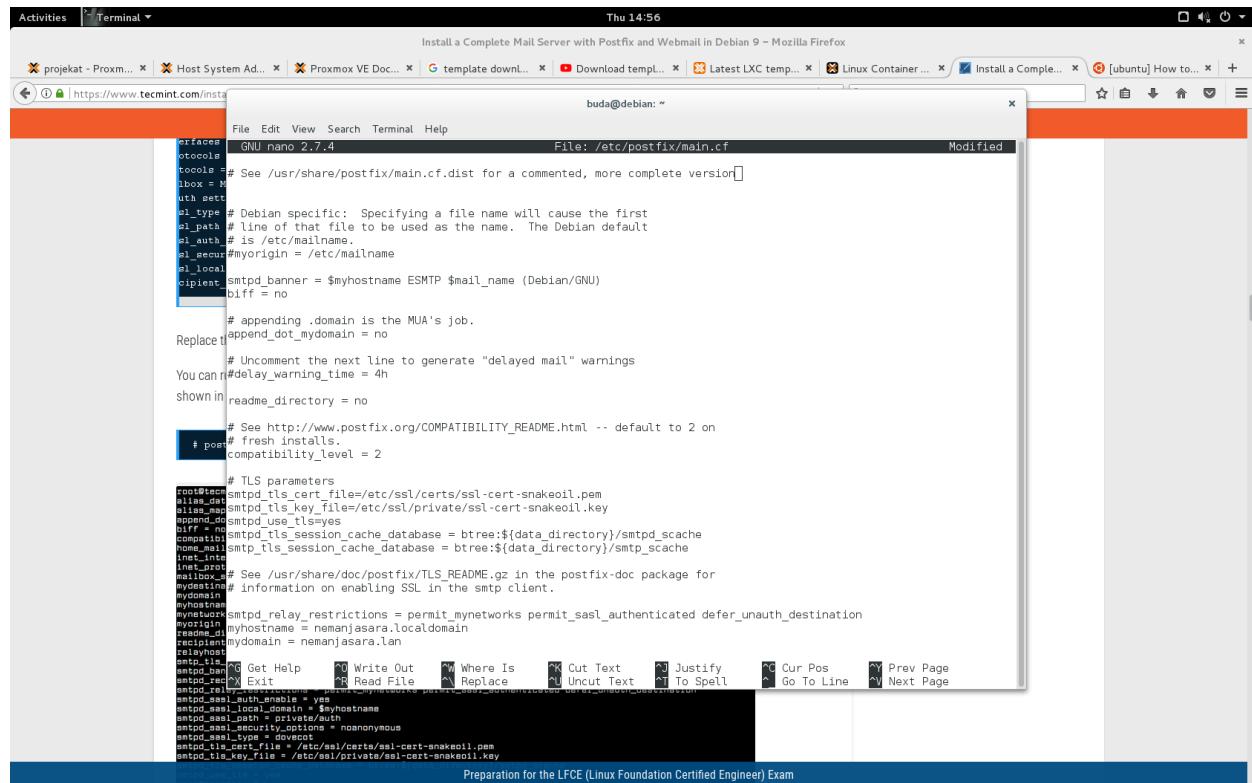
smtpd_sasl_type = dovecot

```
smtpd_sasl_path = private/auth
smtpd_sasl_auth_enable = yes
smtpd_sasl_security_options = noanonymous
smtpd_sasl_local_domain = $myhostname
```

Prvi deo je standardna konfiguracija postfix-a koja se odnosi na ime našeg domena kao i slične parameter vezane za lokalni domen. Omogućavanje ipv4 protokola, kao i dodeljivanje mailbox-a u direktorijum na lokaciji Maildir/ u okviru lokalnog korisnika (/username/Maildir/new ...).

Drugi deo konfiguracije odnosi se na podešavanje postfix-a da radi sa Dovecot-om.

Kompletne slike konfiguracije nalaze se u nastavku.



```
File Edit View Search Terminal Help
File: /etc/postfix/main.cf
Modified

# See /usr/share/postfix/main.cf.dist for a commented, more complete version

# Debian specific: Specifying a file name will cause the first
# line of that file to be used as the name. The Debian default
# is /etc/mailname.
# myorigin = /etc/mailname

# appending .domain is the MUA's job.
#append_dot_mydomain = no

# Uncomment the next line to generate "delayed mail" warnings
#delay_warning_time = 4h

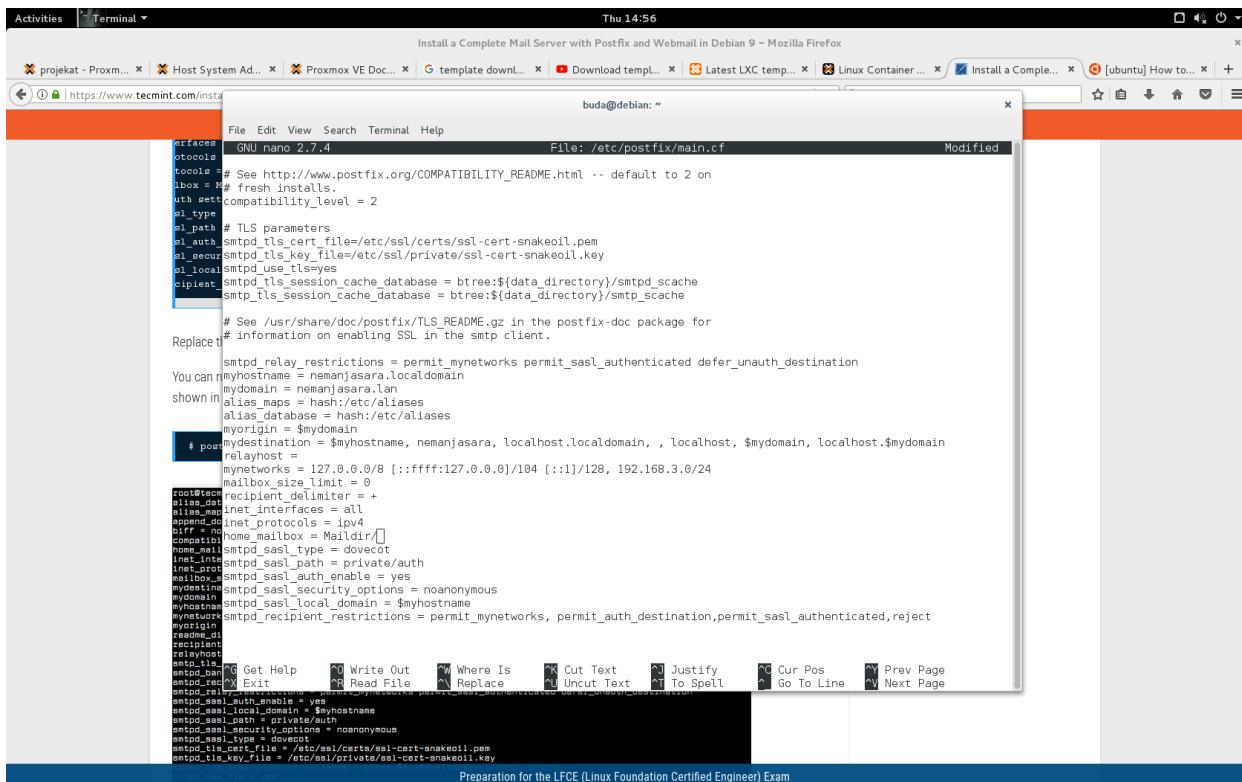
# See http://www.postfix.org/COMPATIBILITY_README.html -- default to 2 on
# fresh installs.
compatibility_level = 2

# TLS parameters
smtpd_tls_cert_file=/etc/ssl/certs/ssl-cert-snakeoil.pem
smtpd_tls_key_file=/etc/ssl/private/ssl-cert-snakeoil.key
smtpd_use_tls=yes
smtpd_tls_session_cache_database = btree:${data_directory}/smtpd_scache
home_mailbox smtpd_tls_session_cache_database = btree:${data_directory}/smtp_scache
inet_interfaces = all
inet_protocols = all
mailboxes # See /usr/share/doc/postfix/TLS_README.gz in the postfix-doc package for
mydestination # information on enabling SSL in the smtp client.

myhostname = nemanjasara.localdomain
mynetworks = 127.0.0.0/8
myorigin = nemanjasara.lan
recipient_delimiter = +
inet_protocols = all
smtpd_tls_CA_file = /etc/ssl/certs/ca-certificates.crt
smtpd_tls_CA_file = /etc/ssl/certs/ca-certificates.crt
smtpd_tls_cert_file = /etc/ssl/certs/ssl-cert-snakeoil.pem
smtpd_tls_key_file = /etc/ssl/private/ssl-cert-snakeoil.key

# Dovecot
smtpd_sasl_auth_enable = yes
smtpd_sasl_password_file = /etc/postfix/sasl_passwd
smtpd_sasl_path = private/auth
smtpd_sasl_security_options = noanonymous
smtpd_sasl_type = dovecot
smtpd_sasl_authenticated_header = yes
smtpd_sasl_tls_CA_file = /etc/ssl/certs/ca-certificates.crt
smtpd_sasl_tls_key_file = /etc/ssl/private/ssl-cert-snakeoil.key
```

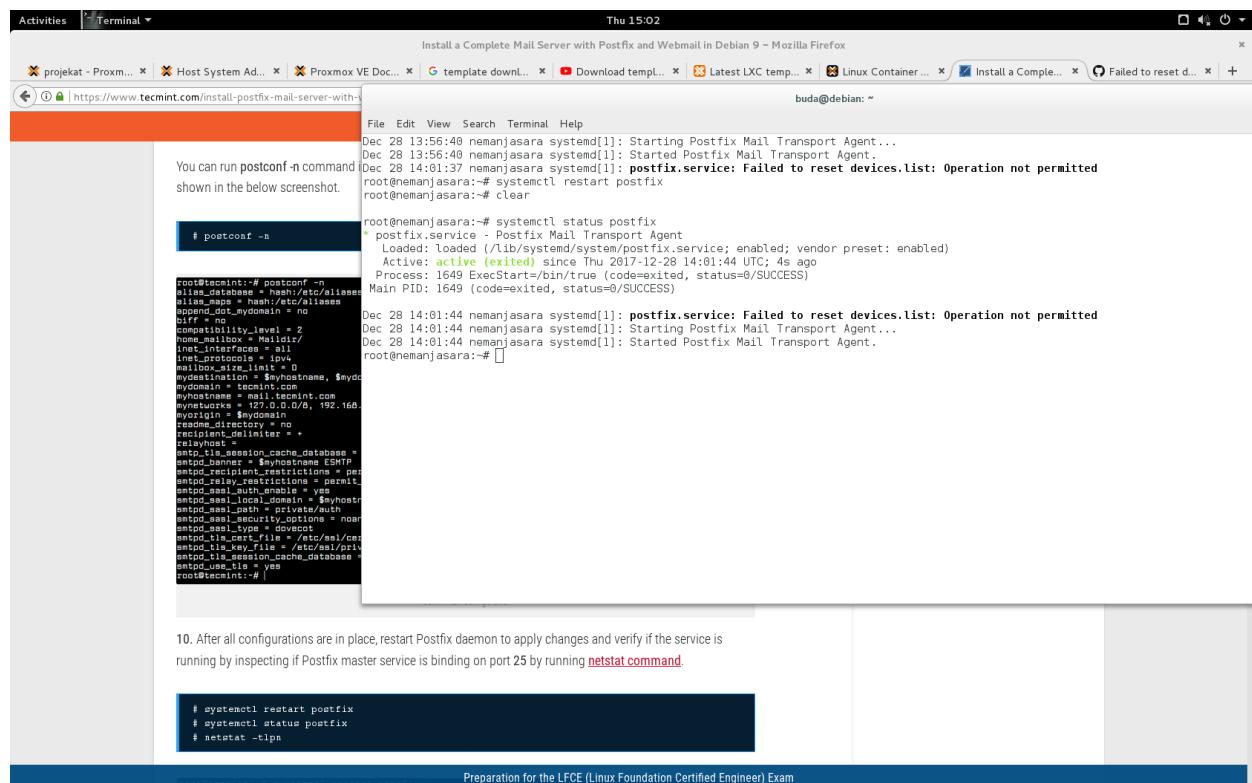
Slika 9 – Konfiguracija fajla main.cf



Slika 9 – Konfiguracija fajla main.cf - nastavak

Pošto smo završili main.cf, želeli smo da se uverimo da je sve konfigurisano kako treba i da nema grešaka, pokrenuli smo komandu **systemctl restart postfix**, a odmah zatim i komandu **systemctl status postfix** (Slika 10). Kod restarta, nije bilo nikakvih problema, što znači da je postfix dobro konfigurisan, međutim prilikom provere statusa dobili smo upozorenje da nam neke operacije nisu dozvoljene a koje su vezane za servise.

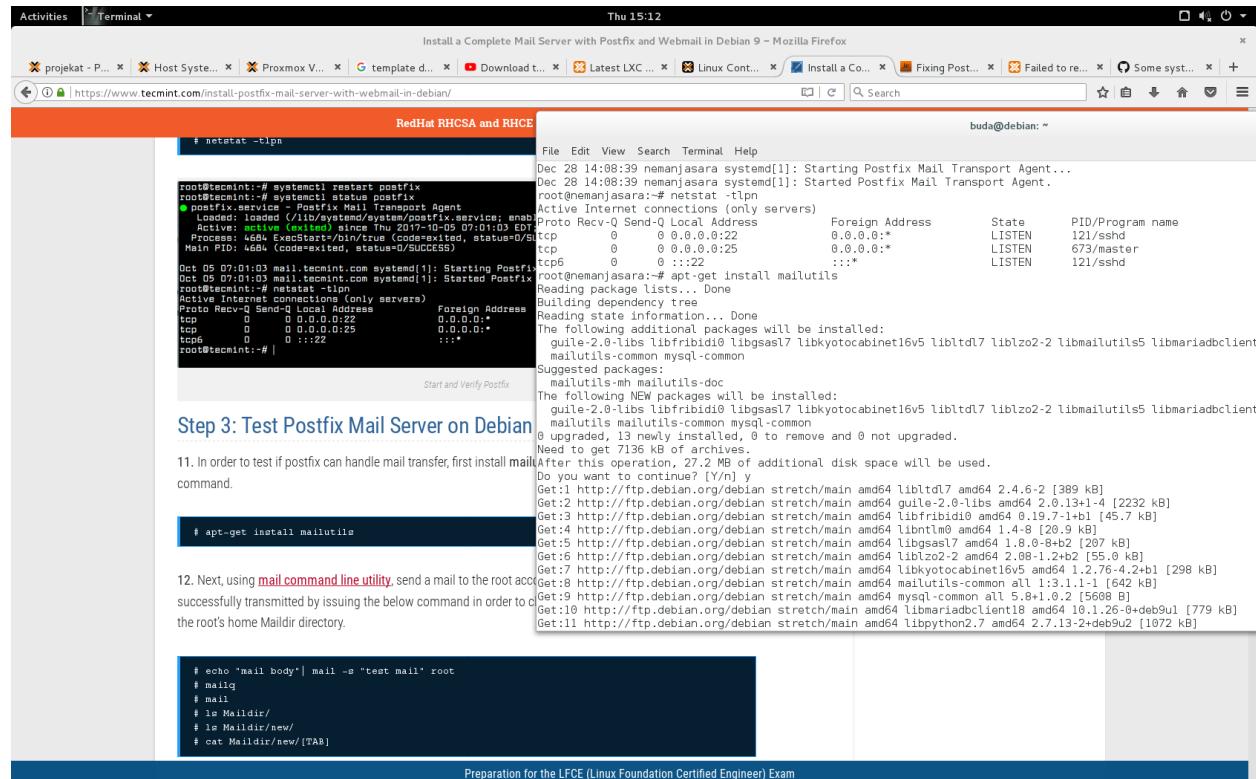
Posle određenog vremena traženja rešenja, došli smo do zaključka, zajedno sa asistentom, da se ne radi o grešci nego u upozorenju koje se javlja jer koristimo proxmox, koji na određeni način rukuje sa samim servisima, suprotno od onoga što smo na lokalnim mašinama pre izrade samog projekta pokušali gde je sve prošlo bez ikakvih problema. Dakle, ustanovljeno je da nije reč o grešci nego samo o upozorenju.



Slika 10 – Prikaz greške koja je nastala prilikom prikaza postfix statusa

Jedino što nam ostaje je da se proveri port, da li je otvoren i da li osluškuje. Posto postfix radi na portu 25, tražimo da vidimo baš taj da li je otvoren. Komandom: **netstat -tlpn**

I kao što se može i videti na sledećoj slici, port 25 je otvoren i u statusu je osluškivanja (STATE: LISTEN)



```
# netstat -tlpn
root@nemanjasara:~# systemctl restart postfix
root@nemanjasara:~# systemctl status postfix
● postfix.service - Postfix Mail Transport Agent
   Loaded: loaded (/lib/systemd/system/postfix.service; enabled; vendor preset: active)
   Active: active (exited) since Thu 2017-10-05 07:01:03 EDT
     Process: 4684 ExecStart=/bin/true (code=exited, status=0/SUCCESS)
Main PID: 4684 (code=exited, status=0/SUCCESS)
Oct 05 07:01:03 mail.tecmint.com systemd[1]: Starting Postfix...
Oct 05 07:01:03 mail.tecmint.com systemd[1]: Started Postfix Mail Transport Agent.
root@nemanjasara:~# netstat -tlpn
Active Internet connections (only servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State      PID/Program name
tcp        0      0 0.0.0.0:22              0.0.0.0:*          LISTEN     121/sshd
tcp        0      0 0.0.0.0:25              0.0.0.0:*          LISTEN     673/master
tcp        0      0 ::1:22                  :::*                 LISTEN     121/sshd
root@nemanjasara:~# apt-get install mailutils
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  guile-2.0-libs libfribidi0 libgsasl7 libkyotocabinet16v5 libltdl7 liblzo2-2 libmailutils5 libmariadbclient
  mailutils-mailutils-common mysql-common
Suggested packages:
  mailutils-nh mailutils-doc
The following NEW packages will be installed:
  guile-2.0-libs libfribidi0 libgsasl7 libkyotocabinet16v5 libltdl7 liblzo2-2 libmailutils5 libmariadbclient
  mailutils-mailutils-common mysql-common
0 upgraded, 13 newly installed, 0 to remove and 0 not upgraded.
Need to get 7136 kB of archives.
After this operation, 27.2 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://ftp.debian.org/debian stretch/main amd64 libltdl7 amd64 2.4.6-2 [389 kB]
Get:2 http://ftp.debian.org/debian stretch/main amd64 guile-2.0-libs amd64 2.0.13+1-1 [2232 kB]
Get:3 http://ftp.debian.org/debian stretch/main amd64 libfribidi0 amd64 0.19.7-1+b1 [45.7 kB]
Get:4 http://ftp.debian.org/debian stretch/main amd64 libnl3 amd64 1.4.8 [28.9 kB]
Get:5 http://ftp.debian.org/debian stretch/main amd64 liblzo2-2 amd64 1.8.0-8+deb9u2 [207 kB]
Get:6 http://ftp.debian.org/debian stretch/main amd64 libmailutils5 amd64 1.4.76-4.2+b1 [298 kB]
Get:7 http://ftp.debian.org/debian stretch/main amd64 libkyotocabinet16v5 amd64 1.4.76-4.2+b1 [55.0 kB]
Get:8 http://ftp.debian.org/debian stretch/main amd64 mailutils-common all 1:3.1.1-1 [642 kB]
Get:9 http://ftp.debian.org/debian stretch/main amd64 mysql-common all 5.8.1-0.2 [5609 kB]
Get:10 http://ftp.debian.org/debian stretch/main amd64 libmariadbclient16v5 amd64 10.1.26-8+deb9u1 [779 kB]
Get:11 http://ftp.debian.org/debian stretch/main amd64 libpython2.7 amd64 2.7.13-2+deb9u2 [1072 kB]

# echo 'mail body' | mail -s "test mail" root
# mailq
# mail
# ls Maildir/
# ls Maildir/new/
# cat Maildir/new/[TAB]
```

Slika 11 – Instalacija mailutils i provera portova

Da bi smo proverili odnosno testirali da li postfix može da izdrži svoju ulogu, prvo instaliramo mailutils pakete tako što zadajemo komandu:

`apt-get install mailutils`

Nakon što smo to pokrenuli, potvrđujemo nastavak.

Zatim smo poslali mail ka root account-u i proverili da li je mail uspešno stigao u Maildir/.

Komande su:

```
echo "DESI SARO CARE" | mail -s "test mail" root
```

```
mailq
```

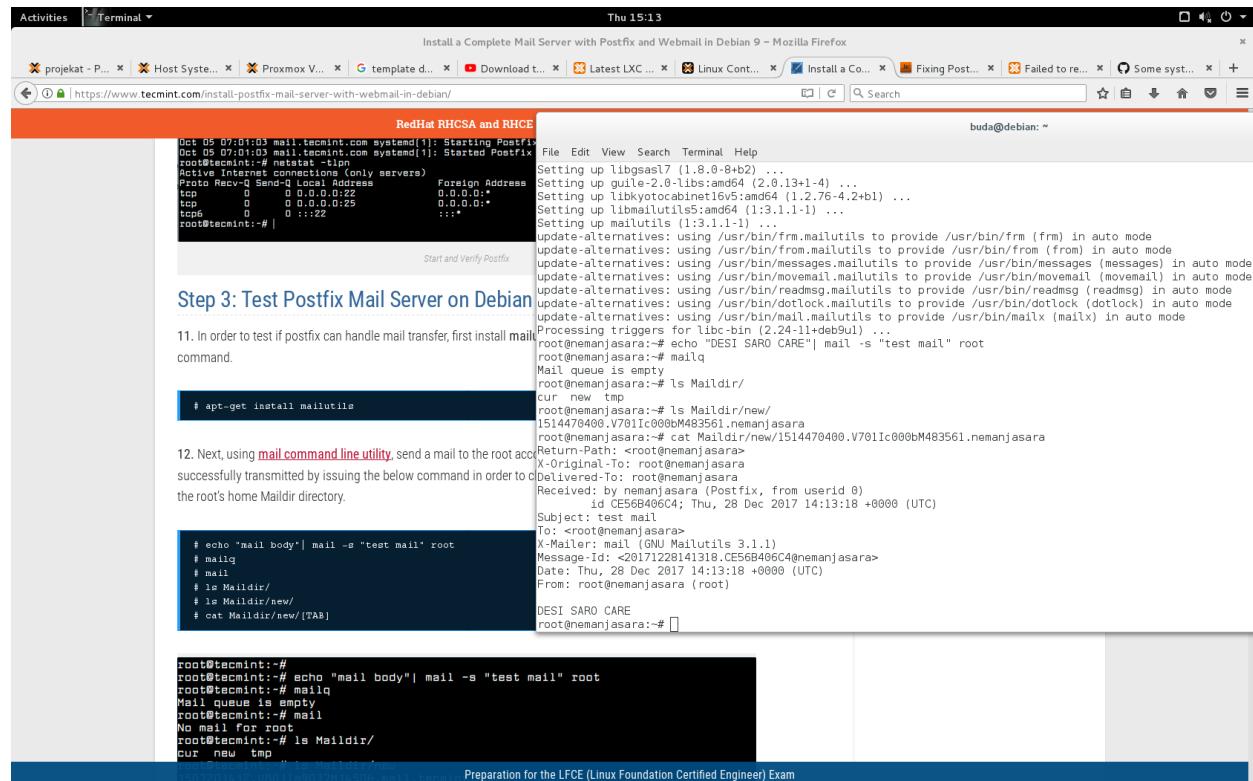
```
mail
```

```
ls Maildir/
```

```
ls Maildir/new/
```

```
cat Maildir/new/[TAB]
```

Dobili smo vidno šta smo napisali i to se sve nalazi u donjem delu Slike 12.



The terminal output shows the following steps:

```

Oct 08 07:51:03 mail.tecmint.com systemd[1]: Starting Postfix
Oct 08 07:51:03 mail.tecmint.com systemd[1]: Started Postfix
root@tecmint:~# netstat -an
Active Internet connections (only servers)
Proto Recv-Q Local Address           Foreign Address         State
tcp        0      0.0.0.0:22            0.0.0.0:0              LISTEN
tcp        0      0.0.0.0:22            0.0.0.0:0              LISTEN
tcp6       0      :::22                :::*                  LISTEN
root@tecmint:~# 

Start and Verify Postfix
File Edit View Search Terminal Help
Setting up libgsasl7 (1.8.0-8+b2) ...
Setting up guile-2.0-libs:amd64 (2.0.13+1-4) ...
Setting up libkyoto-binnet16v5:amd64 (1.2.76-4.2+b1) ...
Setting up libmailutils5:amd64 (1.13.1.1-1) ...
Setting up mailx (1.1-1) ...
update-alternatives: using /usr/bin/frm-mailutils to provide /usr/bin/frm (frm) in auto mode
update-alternatives: using /usr/bin/frm-mailutils to provide /usr/bin/frm (frm) in auto mode
update-alternatives: using /usr/bin/messages-mailutils to provide /usr/bin/messages (messages) in auto mode
update-alternatives: using /usr/bin/movemail-mailutils to provide /usr/bin/movemail (movemail) in auto mode
update-alternatives: using /usr/bin/readmsg-mailutils to provide /usr/bin/readmsg (readmsg) in auto mode
update-alternatives: using /usr/bin/dotlock-mailutils to provide /usr/bin/dotlock (dotlock) in auto mode
update-alternatives: using /usr/bin/mail-mailutils to provide /usr/bin/mailx (mailx) in auto mode
Processing triggers for libc-bin (2.24-11+deb9u1) ...
root@nemanjasara:~# echo "DESI SARO CARE" | mail -s "test mail" root
root@nemanjasara:~# mailq
Mail queue is empty
root@nemanjasara:~# ls Maildir/
cur new tmp
root@nemanjasara:~# ls Maildir/new/
1514470400.V701c000bM483561.nemanjasara
root@nemanjasara:~# cat Maildir/new/1514470400.V701c000bM483561.nemanjasara
Return-Path: <root@nemanjasara>
X-Original-To: root@nemanjasara
Delivered-To: root@nemanjasara
Received: by nemanjasara (Postfix, from userid 0)
          CE56BA06C4; Thu, 28 Dec 2017 14:13:18 +0000 (UTC)
Subject: DESI SARO CARE
To: <root@nemanjasara>
X-Mailer: mail (GNU Mailutils 3.1.1)
Message-ID: <20171228141318.CE56BA06C4@nemanjasara>
Date: Thu, 28 Dec 2017 14:13:18 +0000 (UTC)
From: root@nemanjasara (root)

DESI SARO CARE
root@nemanjasara:~# 

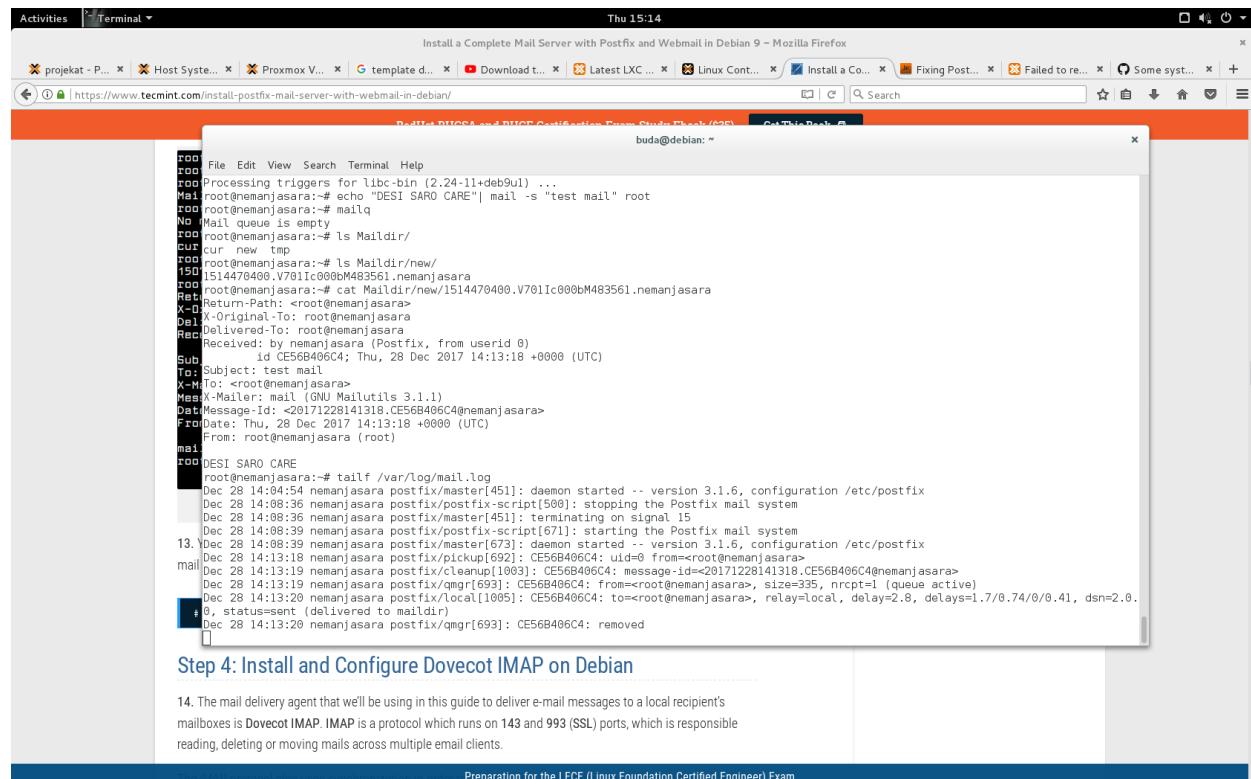
root@tecmint:~#
root@tecmint:~# echo "mail body" | mail -s "test mail" root
root@tecmint:~# mailq
Mail queue is empty
root@tecmint:~# mail
No mail for you
root@tecmint:~# ls Maildir/
cur new tmp

```

Slika 12 – Uspešno poslat prvi mail

Takođe smo proverili postfix log da se uverimo da je sve u redu:

tailf /var/log/mail.log



```

Thu 15:14
Install a Complete Mail Server with Postfix and Webmail in Debian 9 - Mozilla Firefox
https://www.tecmint.com/install-postfix-mail-server-with-webmail-in-debian/
Pre-Run DEBCA and DUCP Certification Exam Study Guide (2018) Get This Book
buda@debian: ~

root@mail:~# echo "DESI SARO CARE" | mail -s "test mail" root
root@mail:~# ls Maildir
No Mail queue is empty.
root@mail:~# ls Maildir/
cur new tmp
root@mail:~# ls Maildir/new/
1514470400.V7011c000bM483561.nemanjasara
root@mail:~# cat Maildir/new/1514470400.V7011c000bM483561.nemanjasara
Return-Path: <root@nemanjasara>
X-Original-To: root@nemanjasara
Delivered-To: root@nemanjasara
Received: by nemanjasara (Postfix, from user id 0)
Subj: id CE56B406C4; Thu, 28 Dec 2017 14:13:18 +0000 (UTC)
To: Subject: test mail
X-M>To: <root@nemanjasara>
Message-Mailer: mail (GNU Mailutils 3.1.1)
Date: Message-ID: <20171228141318.CE56B406C4@nemanjasara>
From: Date: Thu, 28 Dec 2017 14:13:18 +0000 (UTC)
From: From: root@nemanjasara (root)

mail
DESI SARO CARE
root@mail:~# tailf /var/log/mail.log
Dec 28 14:08:54 nemanjasara postfix/master[451]: daemon started -- version 3.1.6, configuration /etc/postfix
Dec 28 14:08:36 nemanjasara postfix/postfix-script[500]: stopping the Postfix mail system
Dec 28 14:08:36 nemanjasara postfix/master[451]: terminating on signal 15
Dec 28 14:08:39 nemanjasara postfix/postfix-script[671]: starting the Postfix mail system
Dec 28 14:08:39 nemanjasara postfix/master[673]: daemon started -- version 3.1.6, configuration /etc/postfix
Dec 28 14:13:18 nemanjasara postfix/pickup[692]: CE56B406C4: uid=0 from=<root@nemanjasara>
Dec 28 14:13:19 nemanjasara postfix/cleanup[1003]: CE56B406C4: message-id=<20171228141318.CE56B406C4@nemanjasara>
Dec 28 14:13:19 nemanjasara postfix/qmgr[693]: CE56B406C4: from=<root@nemanjasara>, size=35, nrcpt=1 (queue active)
Dec 28 14:13:20 nemanjasara postfix/local[1005]: CE56B406C4: to=<root@nemanjasara>, relay=local, delay=2.8, delays=1.7/0.74/0/0.41, dsn=2.0,
# 0, status=sent (delivered to maildir)
Dec 28 14:13:20 nemanjasara postfix/qmgr[693]: CE56B406C4: removed

```

Step 4: Install and Configure Dovecot IMAP on Debian

14. The mail delivery agent that we'll be using in this guide to deliver e-mail messages to a local recipient's mailboxes is Dovecot IMAP. IMAP is a protocol which runs on 143 and 993 (SSL) ports, which is responsible reading, deleting or moving mails across multiple email clients.

Preparation for the LFCE (Linux Foundation Certified Engineer) Exam

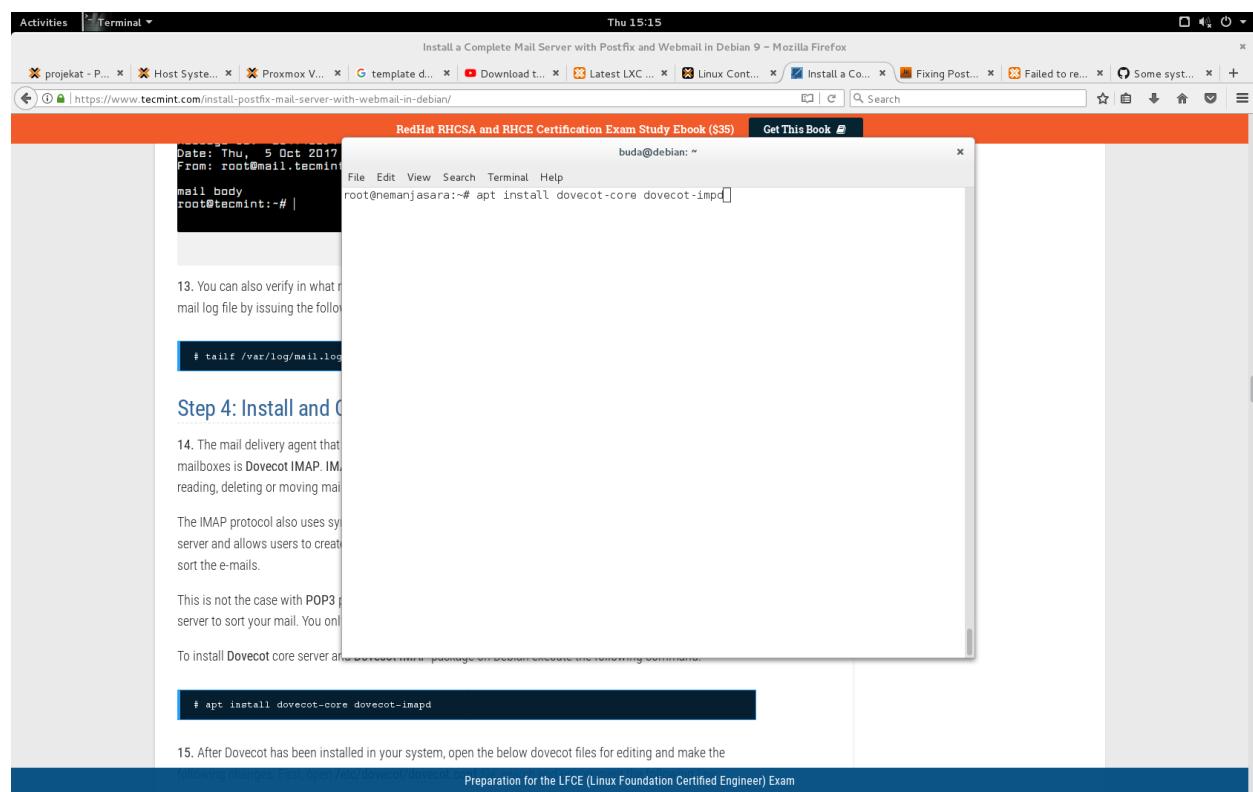
Slika 13 – Provera log-a postfix-a

Instalacija i konfiguriranje Dovecot IMAP-a na Debian-u

Agent isporuke pošte koji ćemo koristiti u ovom projektu za isporuku e-mail poruka, lokalnim poštanskim sandučićima, lokalnog primaoca je Dovecot(IMAP). IMAP je protocol koji je na 143 portu i 993(SSL) portu, koji je odgovoran za čitanje, brisanje i pomeranje poruka između nekoliko email klijenata. IMAP takođe koristi sinhronizaciju kako bi osigurao da kopije svačije poruke budu sačuvane na serveru i da dozvoli klijentu da kreira nekoliko direktorijuma na sereveru, kao i da pomera mailove ka ovom direktorijumu kako bi sortirali mailove. POP3 protokol ne dozvoljava korisnicima da kreiraju direktorijume na serveru i da sortiraju poštu. Postoji samo inbox folder, i svako skida poštu na svoj računar nakon čega se ona birše sa servera.

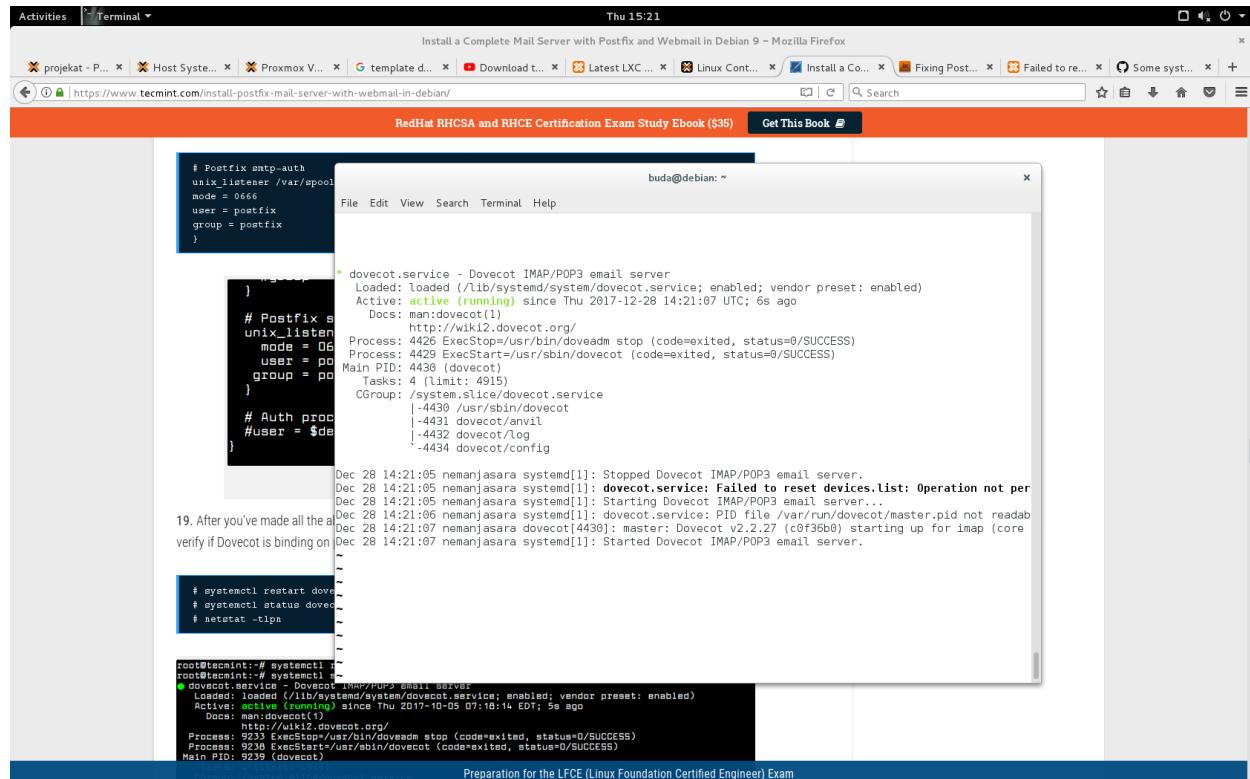
Kako bi smo instalirali Dovecot i Dovecot IMAP pakete na Debian-u otkucaćemo sledeću komandu:

```
apt install dovecot-core dovecot-imapd
```



Slika 14 – Instalacija Dovecote-a i Dovecot IMAP-a

Proveravamo status doveote-a kako bismo utvrdili da je sve proteklo bez greške. I dalje stoji upozorenje koje zanemarujemo.



The screenshot shows a terminal window with several command-line outputs:

```

# Postfix smtp-auth
unix_listener /var/spool
mode = 0666
user = postfix
group = postfix
}

} "}

# Postfix smtpd
unix_listener
mode = 06
user = po
group = po
}
# Auth proc
#user = $de
}

dovecot.service - Dovecot IMAP/POP3 email server
Loaded: loaded (/lib/systemd/system/dovecot.service; enabled; vendor preset: enabled)
Active: active (running) since Thu 2017-12-28 14:21:07 UTC; 6s ago
Docs: man:dovecot(1)
      http://wiki2.dovecot.org/
Process: 4426 ExecStop=/usr/bin/dovecadm stop (code=exited, status=0/SUCCESS)
Process: 4429 ExecStart=/usr/sbin/dovecot (code=exited, status=0/SUCCESS)
Main PID: 4430 (dovecot)
      Tasks: 4 (limit: 4915)
      CGroup: /system.slice/dovecot.service
              |-4430 /usr/sbin/dovecot
              | 4431 dovecot/anvil
              | 4432 dovecot/log
              | 4434 dovecot/config
Dec 28 14:21:05 nemanjasara systemd[1]: Stopped Dovecot IMAP/POP3 email server.
Dec 28 14:21:05 nemanjasara systemd[1]: dovecot.service: Failed to reset devices.list: Operation not per
Dec 28 14:21:05 nemanjasara systemd[1]: Starting Dovecot IMAP/POP3 email server...
Dec 28 14:21:06 nemanjasara systemd[1]: dovecot.service: PID file /var/run/dovecot/master.pid not readable
Dec 28 14:21:07 nemanjasara dovecot[4430]: master: Dovecot v2.2.27 (c0f36b0) starting up for imap (core
Dec 28 14:21:07 nemanjasara systemd[1]: Started Dovecot IMAP/POP3 email server.

19. After you've made all the above changes, restart Dovecot and verify if Dovecot is binding on port 143 and 993.

# systemctl restart dovecot
# systemctl status dovecot
# netstat -tlpn
root@tecmail:~# systemctl
root@tecmail:~# systemctl
● dovecot.service - Dovecot IMAP/POP3 mail server
   Loaded: loaded (/lib/systemd/system/dovecot.service; enabled; vendor preset: enabled)
   Active: active (running) since Thu 2017-10-05 07:18:14 EDT; 5s ago
     Docs: man:dovecot(1)
           http://wiki2.dovecot.org/
   Process: 4426 ExecStop=/usr/bin/dovecadm stop (code=exited, status=0/SUCCESS)
   Process: 9238 ExecStart=/usr/sbin/dovecot (code=exited, status=0/SUCCESS)
 Main PID: 9239 (dovecot)

```

Slika 15 – Prikaz statusa doveote-a

Nakon što smo sve pokrenuli i utvrdili da funkcioniše, otvaramo fajlove u kojima moramo da uradimo neke promene tj. da konfigurišemo fajlove.

Prvi fajl koji otvaramo je **/etc/dovecot/dovecot.conf** u kojem tražimo liniju koja glasi

#listen = , ::

i ovu liniju odkomentarišemo kako bi mogla da funkcioniše.

listen = , ::

Dalje otvaramo fajl:

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

Unutra menjamo 2 linije tako da izgledaju ovako:

```
disable_plaintext_auth = no
auth_mechanisms = plain login
```

Otvaramo fajl

/etc/dovecot/conf.d/10-mail.conf

A u njemu odkomentarišemo linije tako da izgledaju kao ove ispod:

```
mail_location = maildir:~/Maildir
```

Otvaramo fajl

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

I u njemu menjamo linije kako bi izgledale kao ove ispod:

Postfix smtp-auth

```
unix_listener /var/spool/postfix/private/auth {
    mode = 0666
    user = postfix
    group = postfix }
```

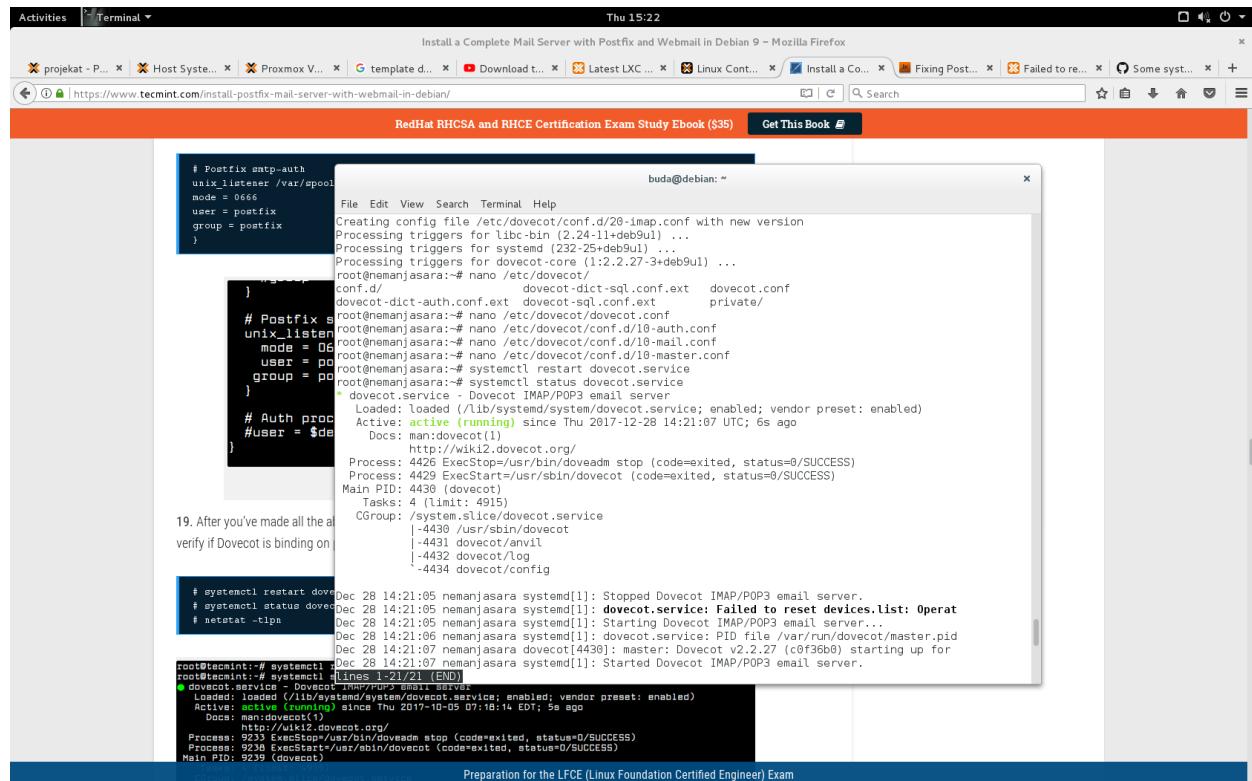
Iz razloga što se po jedna ili dve linije menjaju, I u svoj panici I žurbi oko podešavanja, koje oduzima dosta vremena, pogotovo kada se javi neka greška (a bilo ih je), nismo slikali svaki konfiguracioni fajl I liniju koju smo promenili, em ima po nekoliko slika za svaki fajl, em smo jako malo menjali, tako da smo samo uvrstili ovde šta konkretno I gde je promenjeno.

Nakon ove promene restartovani smo Dovecot deamon (Slika 16), bez greške, i proverili status Dovecot-a koji je radio bez problema. Potom smo proverili da li je otvoren port 143 na kome Dovecot radi.

Sledeće komande su korišćene:

```
systemctl restart dovecot.service
systemctl status dovecot.service
```

```
netstat -tlpn
```



The screenshot shows a terminal window titled "Terminal" with the command "netstat -tlpn" running. The output shows a listening socket for port 143, which is associated with the Dovecot IMAP service. The terminal also displays the configuration of the Dovecot service, including the creation of a new configuration file and the restarting of the service.

```
# Postfix smtp-auth
unix_listener /var/spool
mode = 0666
user = postfix
group = postfix
}

# Postfix s
unix_listener
mode = 06
user = po
group = po
}

# Auth proc
#user = $e
}

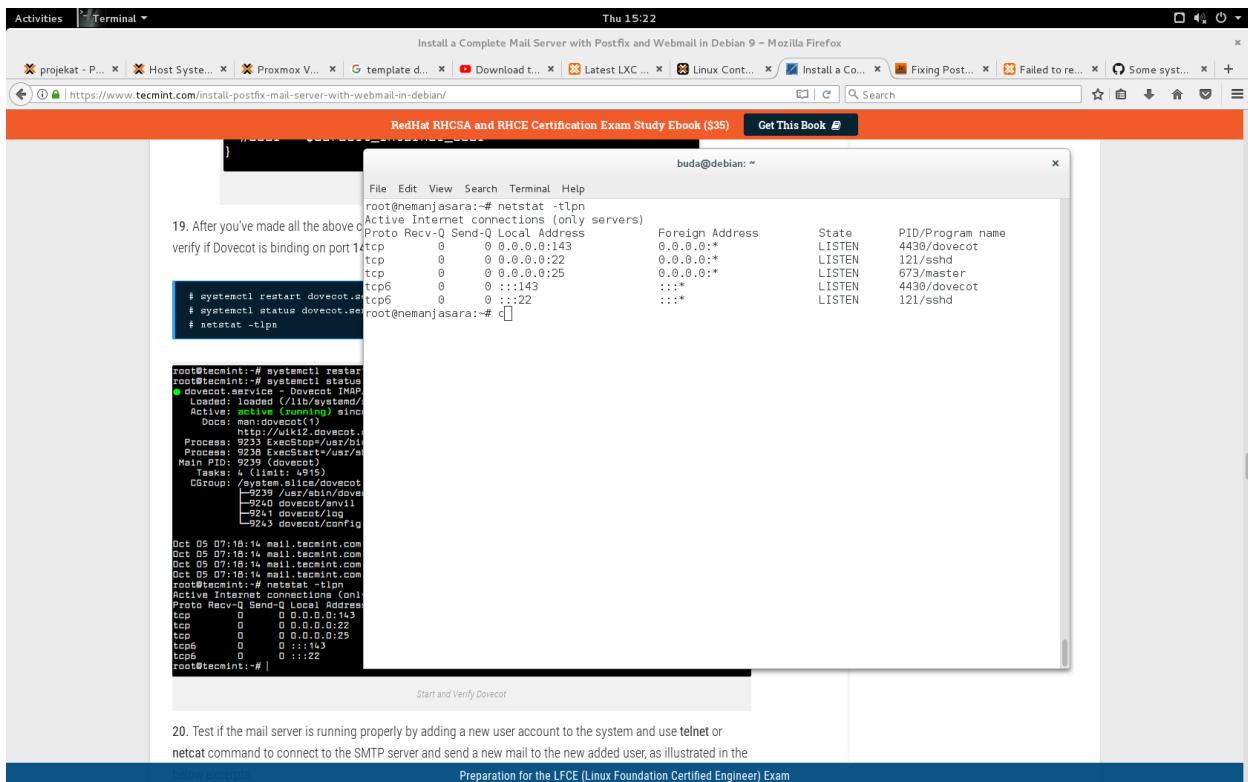
19. After you've made all the al
verify if Dovecot is binding on
# netstat -tlpn

# systemctl restart dove
# systemctl status dove
# netstat -tlpn

# systemctl restart dove
Dec 28 14:21:05 nemanjasara systemd[1]: Stopped Dovecot IMAP/POP3 email server.
Dec 28 14:21:05 nemanjasara systemd[1]: dovecot.service: Failed to reset devices.list: Operat
Dec 28 14:21:05 nemanjasara systemd[1]: Starting Dovecot IMAP/POP3 email server...
Dec 28 14:21:06 nemanjasara systemd[1]: dovecot.service: PID file /var/run/dovecot/master.pid
Dec 28 14:21:07 nemanjasara dovecot[4430]: master: Dovecot v2.2.27 (c0f36b0) starting up for
Dec 28 14:21:07 nemanjasara systemd[1]: Started Dovecot IMAP/POP3 email server.

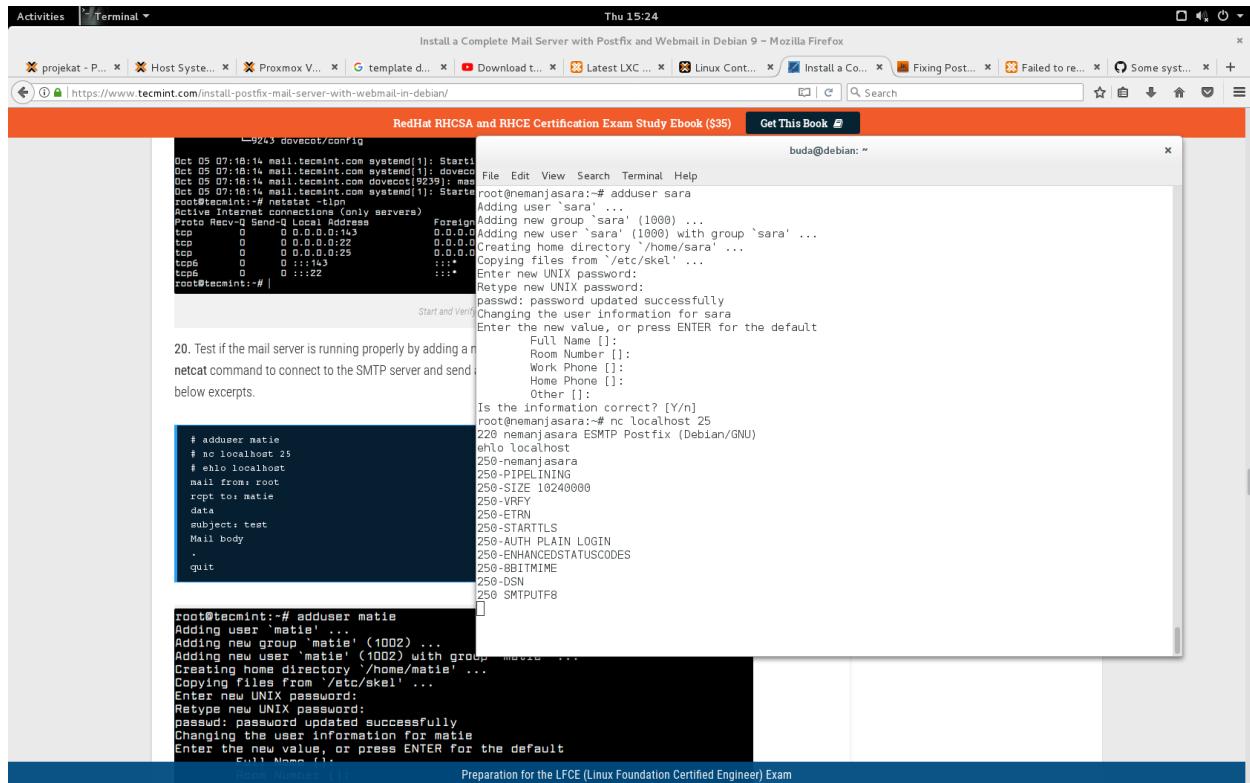
root@tecmin:~# systemctl
root@tecmin:~# systemctl [Lines 1-21/21 (END)]
● dovecot.service - Dovecot IMAP/POP3 Email Server
  Loaded: loaded (/lib/systemd/system/dovecot.service; enabled; vendor preset: enabled)
  Active: active (running) since Thu 2017-10-05 07:18:56 EDT; 5s ago
    Docs: man:dovecot(1)
          http://wiki2.dovecot.org/
Process: 4426 ExecStop=/usr/bin/doveadm stop (code=exited, status=0/SUCCESS)
Process: 4429 ExecStart=/usr/sbin/dovecot (code=exited, status=0/SUCCESS)
Main PID: 4430 (dovecot)
  Tasks: 1 (limit: 4915)
CGroup: /system.slice/dovecot.service
        └─4430 /usr/sbin/dovecot
            ├─4431 dovecot/anvil
            ├─4432 dovecot/log
            └─4434 dovecot/config
```

Slika 4 – Restartovanje i status Dovecote-a



Slika 5 – Provera porta Dovecota(0.0.0.143)

Kako bi smo testirali da li nam mail server radi kako treba dodajemo nov account sistemu i koristimo telnet ili netcat komandu da bi se konektovali na SMTP server i poslali novi mail ka novom korisniku. U našem slučaju je to korisnik sara i njemu smo dodelili samo određene podatke, jer nas konkretno drugi podaci nisu interesovali prilikom testiranja (Slika 18).



The screenshot shows a terminal window titled 'Terminal' with the command 'root@tecmint: ~' at the prompt. The terminal displays the following steps:

- Creating a new user 'sara':

```
# adduser sara
Adding user 'sara' ...
Adding new group 'sara' (1000) ...
Adding new user 'sara' (1000) with group 'sara' ...
Creating home directory '/home/sara' ...
Copying files from '/etc/skel' ...
Enter new UNIX password:
Retype new UNIX password:
passwd: password updated successfully
Changing the user information for sara
Enter the new value, or press ENTER for the default
    Full Name []:
    Room Number []:
    Work Phone []:
    Home Phone []:
    Other []:
```
- Testing the mail server with netcat:

```
Is the information correct? [Y/n]
root@nemanjasara:~# nc localhost 25
220 nemanjasara ESMTP Postfix (Debian/GNU)
ehlo localhost
250-nemanjasara
250-PIPELINING
250-SIZE 10240000
250-VRFY
250-ETRN
250-STARTTLS
250-AUTH PLAIN LOGIN
250-ENHANCEDSTATUSCODES
250-8BITMIME
250-DSN
250-SMTPUTF8
```
- Creating another user 'matie':

```
root@tecmint:~# adduser matie
Adding user 'matie' ...
Adding new group 'matie' (1002) ...
Adding new user 'matie' (1002) with group 'matie' ...
Creating home directory '/home/matie' ...
Copying files from '/etc/skel' ...
Enter new UNIX password:
Retype new UNIX password:
passwd: password updated successfully
Changing the user information for matie
Enter the new value, or press ENTER for the default
    Full Name []:
    Room Number []:
    Work Phone []:
    Home Phone []:
    Other []:
```

Slika 6 – Dodavanje korisnika sara.

Kod koji smo koristili je:

```
adduser sara
```

```
nc localhost 25
```

```
ehlo localhost
```

```
mail from: root
```

```
rcpt to: sara
```

```
data
```

```
subject: Ovo je test
```

```
Mail body
```

```
.
```

```
quit
```

Kod koji smo koristili je, možemo videti u Slici 19 bez poslednje otkucane komande quit:

```
adduser sara
```

```
nc localhost 25
```

```
ehlo localhost
```

```
mail from: root
```

```
rcpt to: sara
```

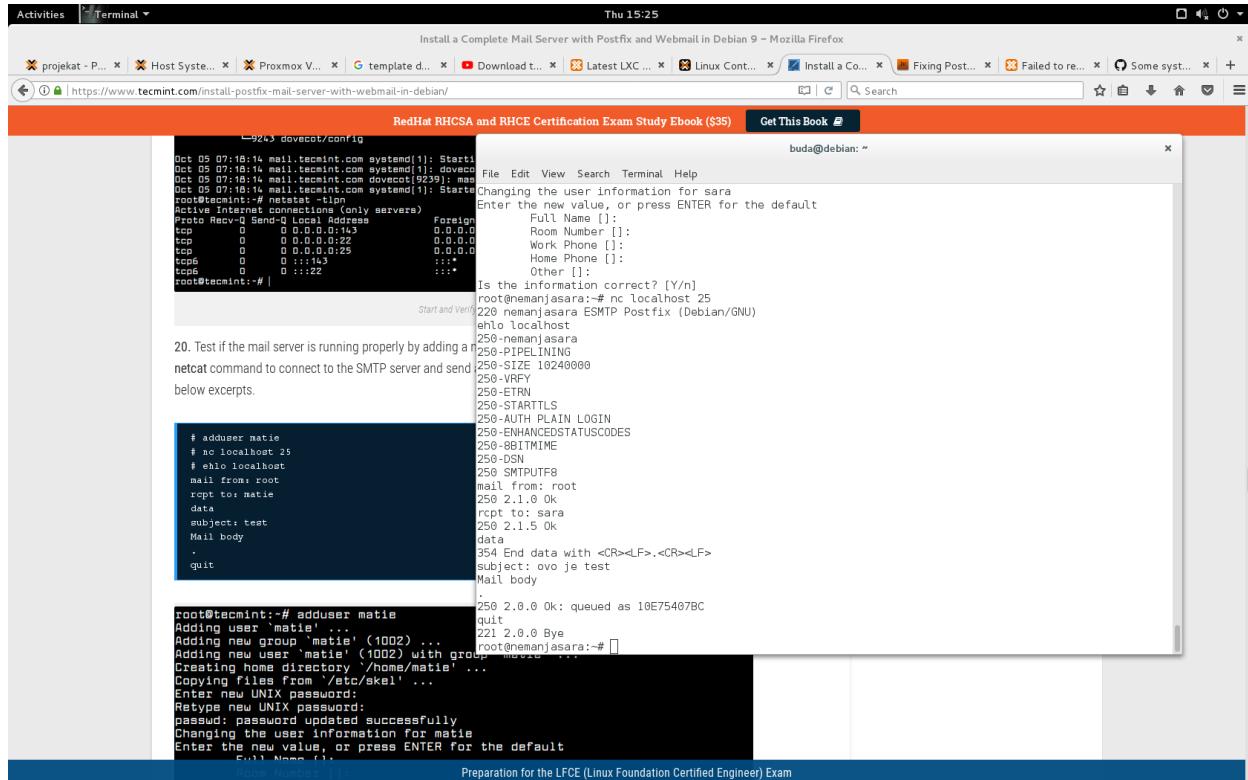
```
data
```

```
subject: ovo je test
```

```
Mail body
```

```
.
```

```
quit
```



Slika 19 – Nakon komande quit

Takođe možemo da se konektujemo na korisnički mailbox sa komandne linije koristeći IMAP protocol tako što otkucamo sledeće linije koda (Slika 20).

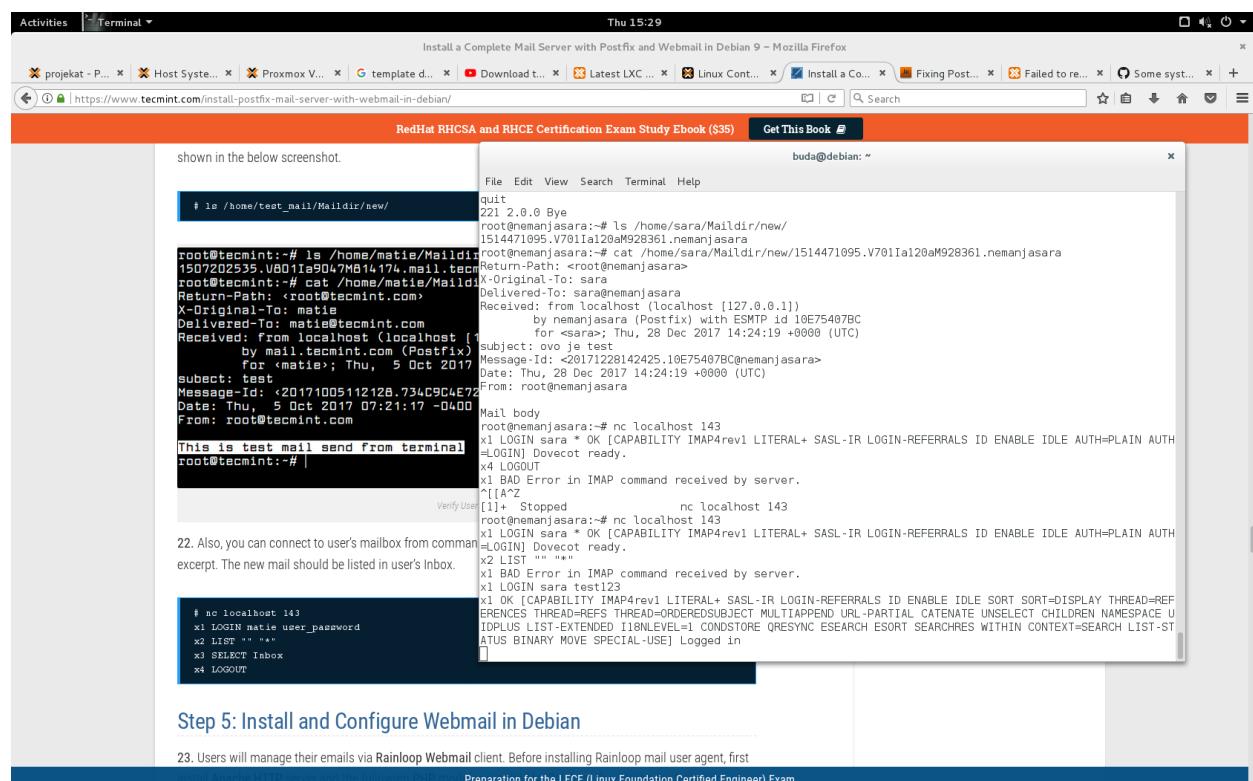
nc localhost 143

x1 LOGIN sara test123

x2 LIST "" "*"

x3 SELECT Inbox

x4 LOGOUT



```

Activities Terminal Thu 15:29
Install a Complete Mail Server with Postfix and Webmail in Debian 9 - Mozilla Firefox
projekt - P... Host System... Proxmox V... template d... Download t... Latest LXC... Linux Cont... Install a Co... Fixing Post... Failed to re... Some syst...
https://www.tecmint.com/install-postfix-mail-server-with-webmail-in-debian/
RedHat RHCSA and RHCE Certification Exam Study Ebook ($35) Get This Book

shown in the below screenshot.

# ls /home/test_mail/Maildir/sew/
quit
221 2.0.0 Bye
root@nemanjasara:~# ls /home/sara/Maildir/new/
1514471095.V701Ia120aM928361.nemanjasara
Return-Path: <root@tecmint.com>
X-Original-To: matie
Delivered-To: matie@tecmint.com
Received: from localhost (localhost [127.0.0.1])
        by mail.tecmint.com (Postfix) with ESMTP id 10E75407BC
        for <sara@>; Thu, 28 Dec 2017 14:24:19 +0000 (UTC)
subject: ovo je test
Message-ID: <20171228142425.10E75407BC@nemanjasara>
Date: Thu, 28 Dec 2017 14:24:19 +0000 (UTC)
From: root@nemanjasara
Mail body
root@nemanjasara:~# nc localhost 143
x1 LOGIN sara * OK [CAPABILITY IMAP4rev1 LITERAL+ SASL-IR LOGIN-REFERRALS ID ENABLE IDLE AUTH=PLAIN AUTH=LOGIN] Dovecot ready.
x4 LOGOUT
x1 BAD Error in IMAP command received by server.
^[[A^Z
[1]+ Stopped nc localhost 143
root@nemanjasara:~# nc localhost 143
x1 LOGIN sara * OK [CAPABILITY IMAP4rev1 LITERAL+ SASL-IR LOGIN-REFERRALS ID ENABLE IDLE AUTH=PLAIN AUTH=LOGIN] Dovecot ready.
x2 LIST "" "*"
x3 SELECT Inbox
x4 LOGOUT
x1 BAD Error in IMAP command received by server.
x1 LOGIN sara test123
x1 OK [CAPABILITY IMAP4rev1 LITERAL+ SASL-IR LOGIN-REFERRALS ID ENABLE IDLE SORT SORT=DISPLAY THREAD=REFERENCES THREAD=REFS THREAD=ORDEREDSUBJECT MULTIAPPEND URL-PARTIAL CATENATE UNSELECT CHILDREN NAMESPACE URLPLUS LIST-EXTENDED I18NLEVEL=1 CONDSTORE QRESYNC ESEARCH ESEARCHES WITHIN CONTEXT=SEARCH LIST-STATUS BINARY MOVE SPECIAL-USE] Logged in

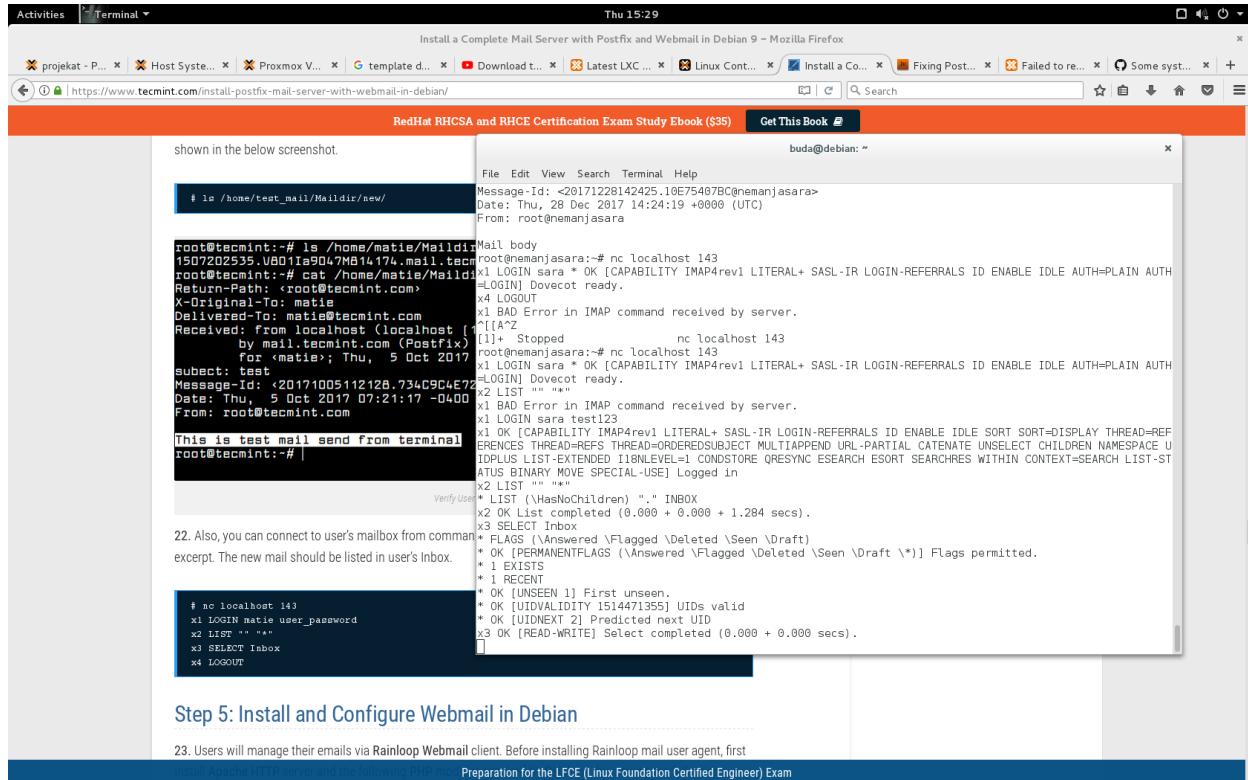
```

Step 5: Install and Configure Webmail in Debian

23. Users will manage their emails via Rainloop Webmail client. Before installing Rainloop mail user agent, first

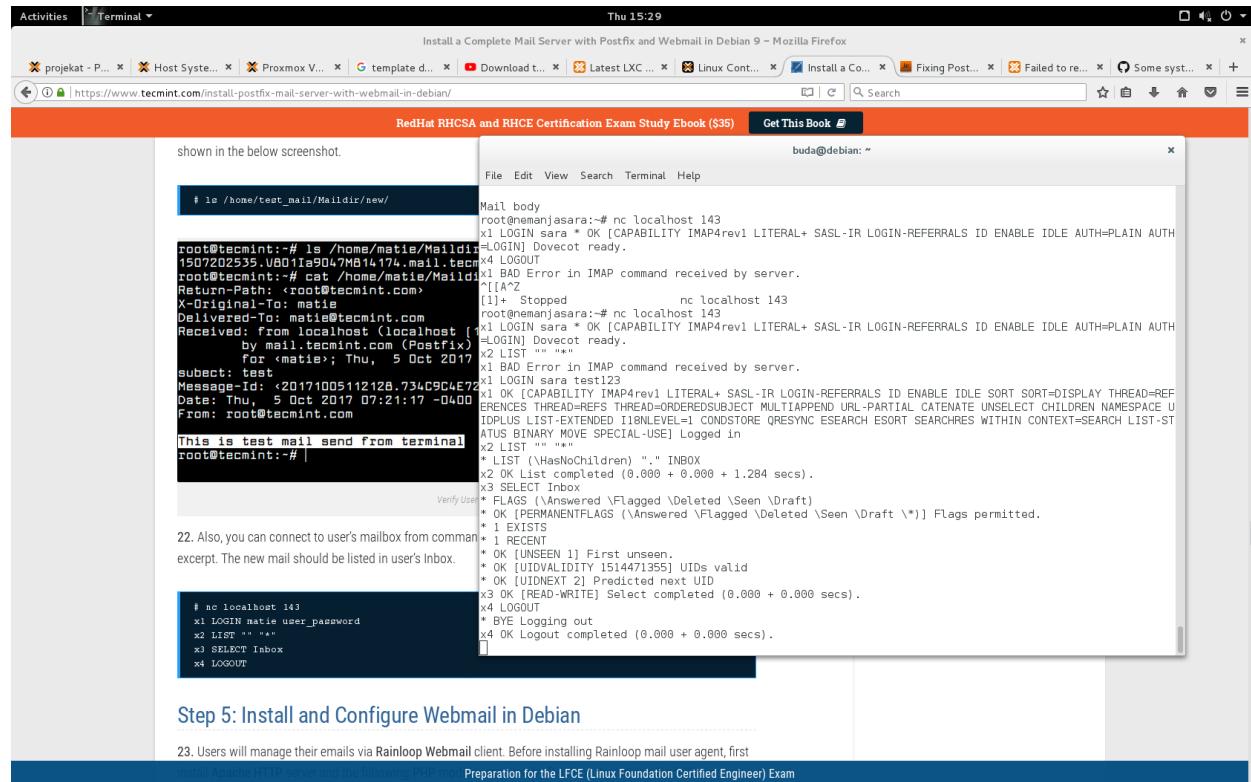
Slika 70-povezivanje na korisnički nalog preko IMAP-a.

U našem konkretnom primeru imali smo grešku što nam je sistem prijavio. Pa smo morali još jednom istu komandu da izvršimo. (Slika 21).



Slika 21-ponovljena komanda IMAP

Na Slici 22 možemo sa sigurnošću da kažemo da je naša komanda uspešno izvršena i da je system odgovorio sa Bye, jer smo tražili da Izlogujemo.



The screenshot shows a terminal window titled "Terminal" running on a Debian 9 system. The terminal displays the following command and its output:

```
# ls /home/matic/Maildir/new/
Mail body
root@nemanjasara:~# nc localhost 143
x1 LOGIN sara * OK [CAPABILITY IMAP4rev1 LITERAL+ SASL-IR LOGIN-REFERRALS ID ENABLE IDLE AUTH=PLAIN AUTH=LOGIN] Dovecot ready.
root@nemanjasara:~# cat /home/matic/Maildir/
x1 BAD Error in IMAP command received by server.
root@nemanjasara:~# <root@nemanjasara.com>
x1 [A-Z]
X-Origin-To: matie
Delivered-To: matie@tecmint.com
Received: from localhost (localhost [127.0.0.1]) by mail.tecmint.com (Postfix)
        for <matie>; Thu, 5 Oct 2017
Return-Path: <root@nemanjasara.com>
X-Original-To: matie
X-Original-Recipient: matie@tecmint.com
X-Original-Message-ID: <20171005112128.734C9C4E@tecmint.com>
X-Original-Subject: test
X-Original-From: root@nemanjasara.com
X-Original-To: matie@tecmint.com
X-Original-Recipient: matie@tecmint.com
X-Original-Message-ID: <20171005112128.734C9C4E@tecmint.com>
X-Original-Subject: test
X-Original-From: root@nemanjasara.com
X-Original-To: matie@tecmint.com
X-Original-Recipient: matie@tecmint.com
X-Original-Message-ID: <20171005112128.734C9C4E@tecmint.com>
X-Original-Subject: test
X-Original-From: root@nemanjasara.com
This is test mail send from terminal
root@nemanjasara:~#
```

Below the terminal window, there is a note: "22. Also, you can connect to user's mailbox from command line. The new mail should be listed in user's Inbox." followed by a code snippet:

```
# nc localhost 143
x1 LOGIN matie user_password
x2 LIST "" ""
x3 SELECT Inbox
x4 LOGOUT
```

Step 5: Install and Configure Webmail in Debian

23. Users will manage their emails via Rainloop Webmail client. Before installing Rainloop mail user agent, first

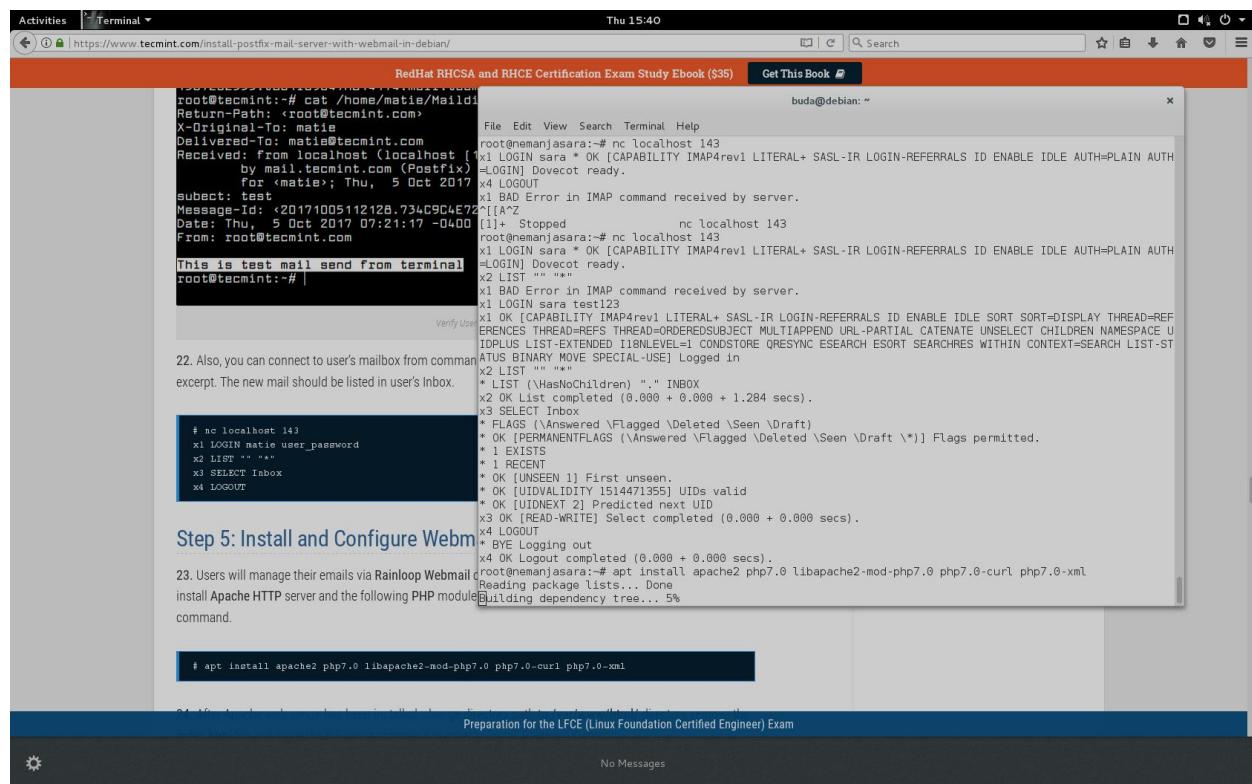
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Slika 23-uspešno izvršena IMAP komanda

Instalacija i konfiguriranje webmaila u Debianu

Korisnik će korišćenjem Rainloop Webmail klijenta moći da rukovodi svojim mailovima, ali pre nego što njega instaliramo moramo da instaliramo Apache HTTP server i prateće PHP module koji su traženi od strane Rainloop-a. To ćemo uraditi tako što ćemo izvršiti komandu(Slika 24):

```
apt install apache2 php7.0 libapache2-mod-php7.0 php7.0-curl php7.0-xml
```



```
root@tecmin:~# cat /home/matic/Maildir
Return-Path: <root@tecmin.com>
X-Original-To: matie
Delivered-To: matie@tecmin.com
Received: from localhost (localhost [127.0.0.1])
by mail.tecmin.com (Postfix) for matie@tecmin.com (Postfix)
for matie@tecmin.com; Thu, 5 Oct 2017 07:21:17 -0400
From: root@tecmin.com

This is test mail send from terminal
root@tecmin:~# |
```

22. Also, you can connect to user's mailbox from command line. The new mail should be listed in user's inbox.

```
# nc localhost 143
x1 LOGIN matie user_password
x2 LIST "" "*"
x3 SELECT Inbox
x4 LOGOUT
```

Step 5: Install and Configure Webmail

23. Users will manage their emails via Rainloop Webmail. We need to install Apache HTTP server and the following PHP module.

```
# apt install apache2 php7.0 libapache2-mod-php7.0 php7.0-curl php7.0-xml
```

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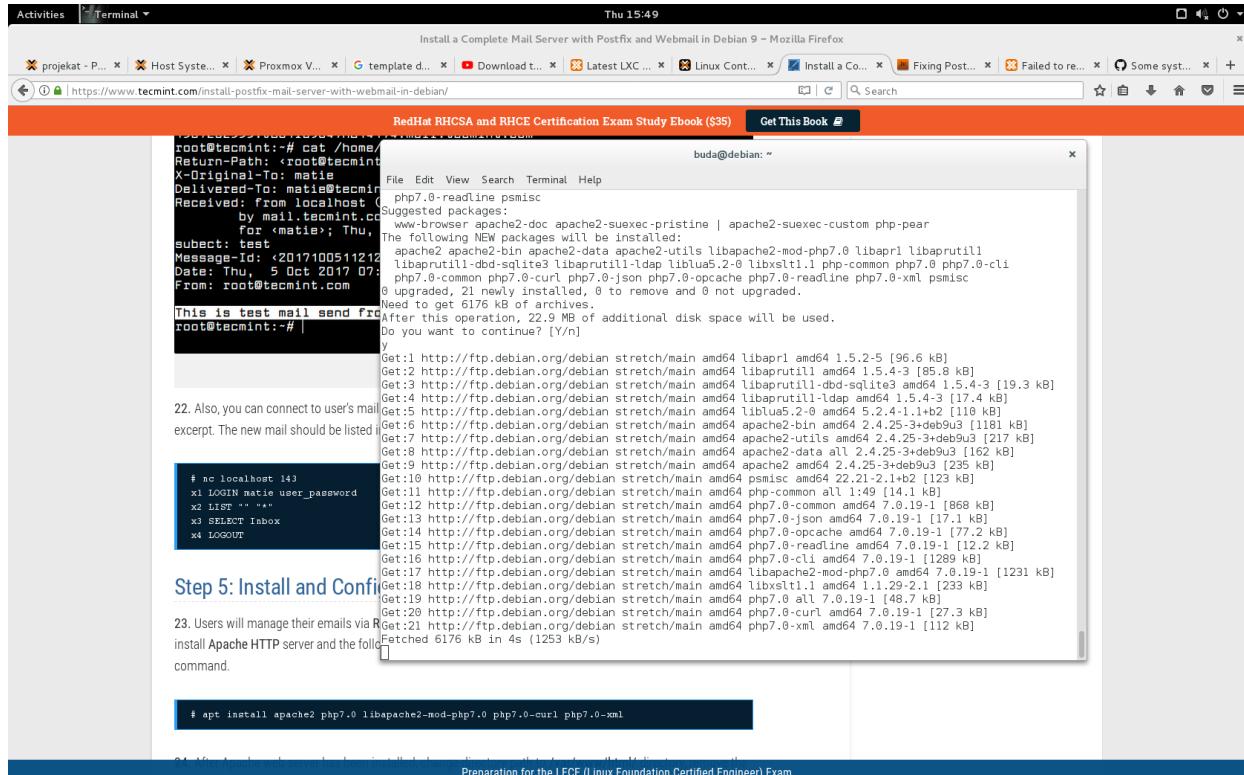
Slika 24-instalacija Apache-a

Nakon apachea web server je instaliram i pravimo izmene na putanju ka /var/www/html/ direktorijumu tako što uklanjamo index.html fajl i problem kod komande kako bi mogli da instaliramo Rainloop Webmail (Slika 28)

```
cd /var/www/html/
```

```
rm index.html
```

```
curl -sL https://repository.rainloop.net/installer.php | php
```



```

root@tecmint:~# cat /home/matic/testmail.txt
Return-Path: <root@tecmint>
X-Original-To: matie@tecmint
Delivered-To: matie@tecmint
Received: from localhost (tecmint [127.0.0.1])
        by mail.tecmint.com (php7.0-readline psmisc)
        for <matie>; Thu, 05 Oct 2017 07:22:45 +0100
Subject: test
Message-ID: <>
Date: Thu, 5 Oct 2017 07:22:45 +0100
From: root@tecmint.com

This is test mail send from tecmint.

root@tecmint:~# nc localhost 143
x1 LOGIN matie user_password
x2 LIST ""
x3 SELECT Inbox
x4 LOGOUT

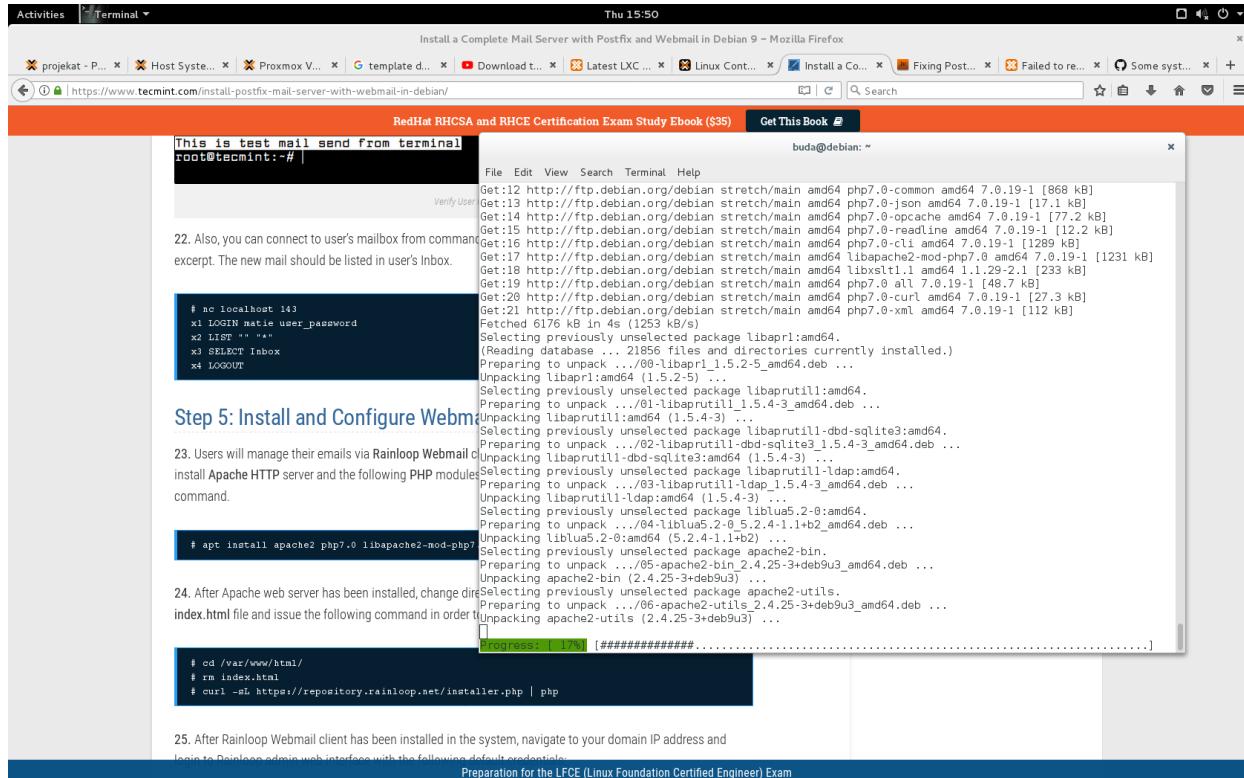
# apt install apache2 php7.0 libapache2-mod-php7.0 php7.0-curl php7.0-xm

```

22. Also, you can connect to user's mail via telnet. The new mail should be listed in the inbox.

23. Users will manage their emails via Roundcube webmail. To do this, you need to install Apache HTTP server and the following command.

Slika 25-instalacija apache



The screenshot shows a Linux desktop environment with a terminal window and a browser window.

Terminal Window:

```
This is test mail send from terminal
root@tecmin:~#
```

Browser Window:

Thu 15:50

Install a Complete Mail Server with Postfix and Webmail in Debian 9 – Mozilla Firefox

https://www.tecmint.com/install-postfix-mail-server-with-webmail-in-debian/

RedHat RHCSA and RHCE Certification Exam Study Ebook (\$35) Get This Book ↗

This is test mail send from terminal

Verify User

22. Also, you can connect to user's mailbox from command excerpt. The new mail should be listed in user's Inbox.

```
# nc localhost 143
x1 LOGIN nataše user_password
x2 LIST "" "*"
x3 SELECT Inbox
x4 LOGOUT
```

23. Users will manage their emails via Rainloop Webmail client. To do this, we need to install Apache HTTP server and the following PHP modules. Run the following command.

```
# apt install apache2 php7.0 libapache2-mod-php7.0
```

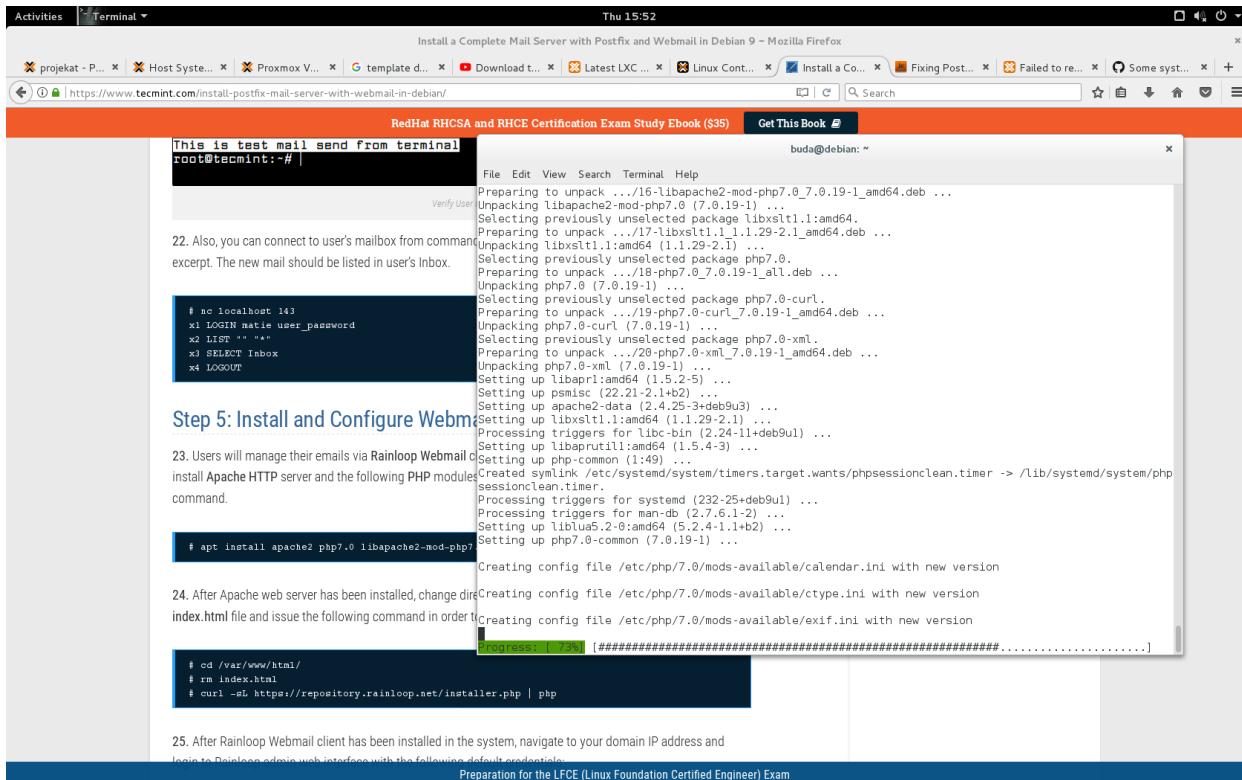
24. After Apache web server has been installed, change directory to /var/www/html and issue the following command in order to download index.html file and issue the following command in order to download Rainloop Webmail client.

```
# cd /var/www/html/
# rm index.html
# curl -sL https://repository.rainloop.net/installer.php | php
```

25. After Rainloop Webmail client has been installed in the system, navigate to your domain IP address and login to Rainloop admin web interface with the following default credentials.

Preparation for the LFCE (Linux Foundation Certified Engineer) Exam

Slika 26-čekanje da se skine



Slika 27-idalje se skidaju podaci

Activities Terminal Thu 15:55

Install a Complete Mail Server with Postfix and Webmail in Debian 9 – Mozilla Firefox

projekat - P... Host Syste... Proxmox V... G template d... Download t... Latest LXC... Linux Cont... Install a Co... Fixing Post... Failed to re... Some syst... +

https://www.tecmint.com/install-postfix-mail-server-with-webmail-in-debian/ Search

RedHat RHCSA and RHCE Certification Exam Study Ebook (\$35) Get This Book

This is test mail send from terminal
root@tecmint:~|

File Edit View Search Terminal Help
Enabling module negotiation.
Enabling module setenvif.
Enabling module filter.
Enabling module deflate.
Enabling module status.
Enabling module reqtimeout.
Enabling conf charset.
Enabling conf localized-error-pages.
Enabling conf security.
Enabling conf serve-cgi-bin.
Enabling site 000-default.
Created symlink /etc/systemd/system/multi-user.target.wants/apache2.service → /lib/systemd/system/apache2.service.
Created symlink /etc/systemd/system/multi-user.target.wants/apache-htcacheclean.service → /lib/systemd/system/apache-htcacheclean.service.

22. Also, you can connect to user's mailbox from command line. The new mail should be listed in user's inbox.

```
# nc localhost 143
x1 LOGIN nemanja user_password
x2 LIST "" "a"
x3 SELECT Inbox
x4 LOGOUT
```

Step 5: Install and Configure Webmail

23. Users will manage their emails via Rainloop Webmail client. First, install Apache HTTP server and the following PHP modules using the following command.

```
# apt install apache2 php7.0 libapache2-mod-php7.0
```

24. After Apache web server has been installed, change directory to /var/www/html and issue the following command in order to download Rainloop Webmail client.

```
# cd /var/www/html/
# rm index.html
# curl -sL https://repository.rainloop.net/installer.php | php
```

25. After Rainloop Webmail client has been installed in the system, navigate to your domain IP address and login to Rainloop admin web interface with the following default credentials:

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Slika 28-izvršavanje komande za uklanjanje index.html

Nakon ovoga vidimo da je došlo do greške (Slika 29). Videli smo da je problem u direktorijumu u kojem smo se nalazili.



Index of /

Name Last modified Size Description

Apache/2.4.25 (Debian) Server at 192.168.3.14 Port 80

Slika 29-pojavljivanje greške

Nakon ovoga smo promenili putanju i uspešno uklonili fajl koji nam nije trebao. Pošto smo instalirali Rainloop webmail klijent, sada kucamo komandu kako bismo ga naveli ka domain IP adresu i ulogovali se kao Rainloop admin web interfejs sa difoltnim postavkama:

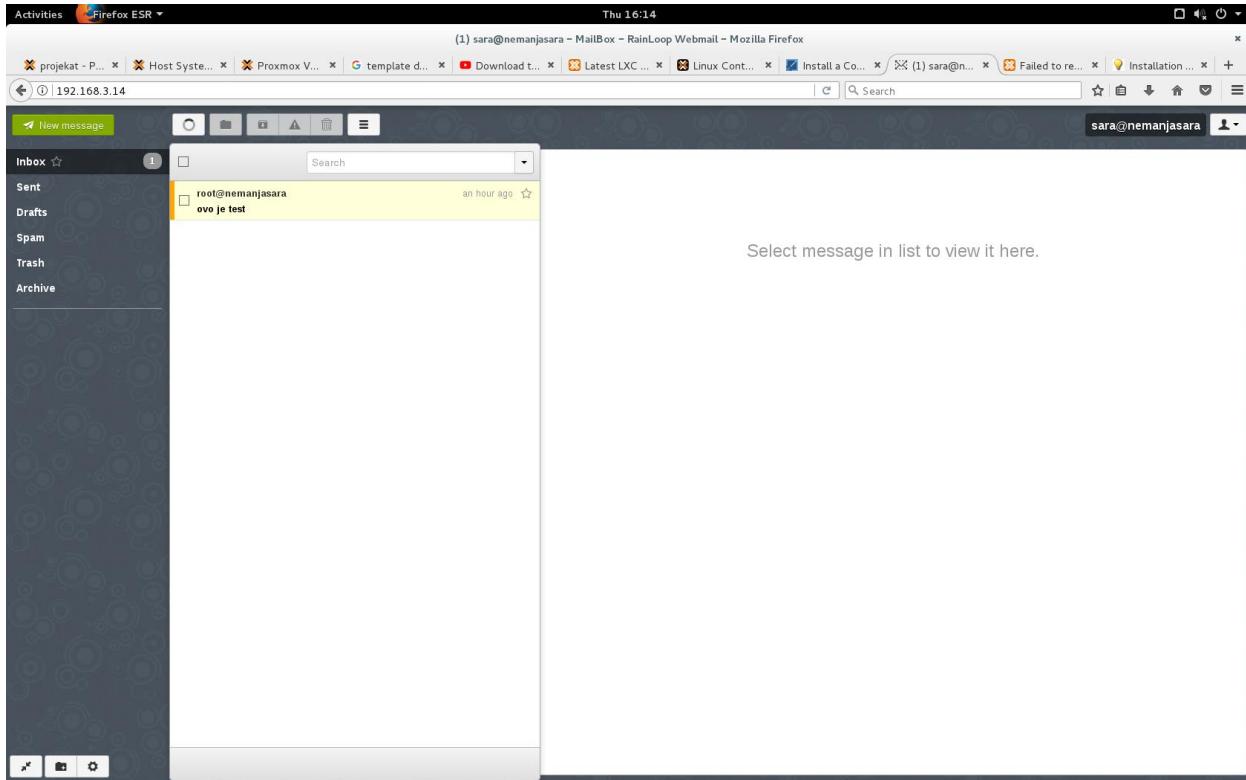
<http://192.168.0.102/?admin>

User: admin

Password: 12345

Na žalost, nismo uspeli da uslikamo unete komande, ali uspeli smo da se ulogujemo na Rainloop Webmail (Slika 30).

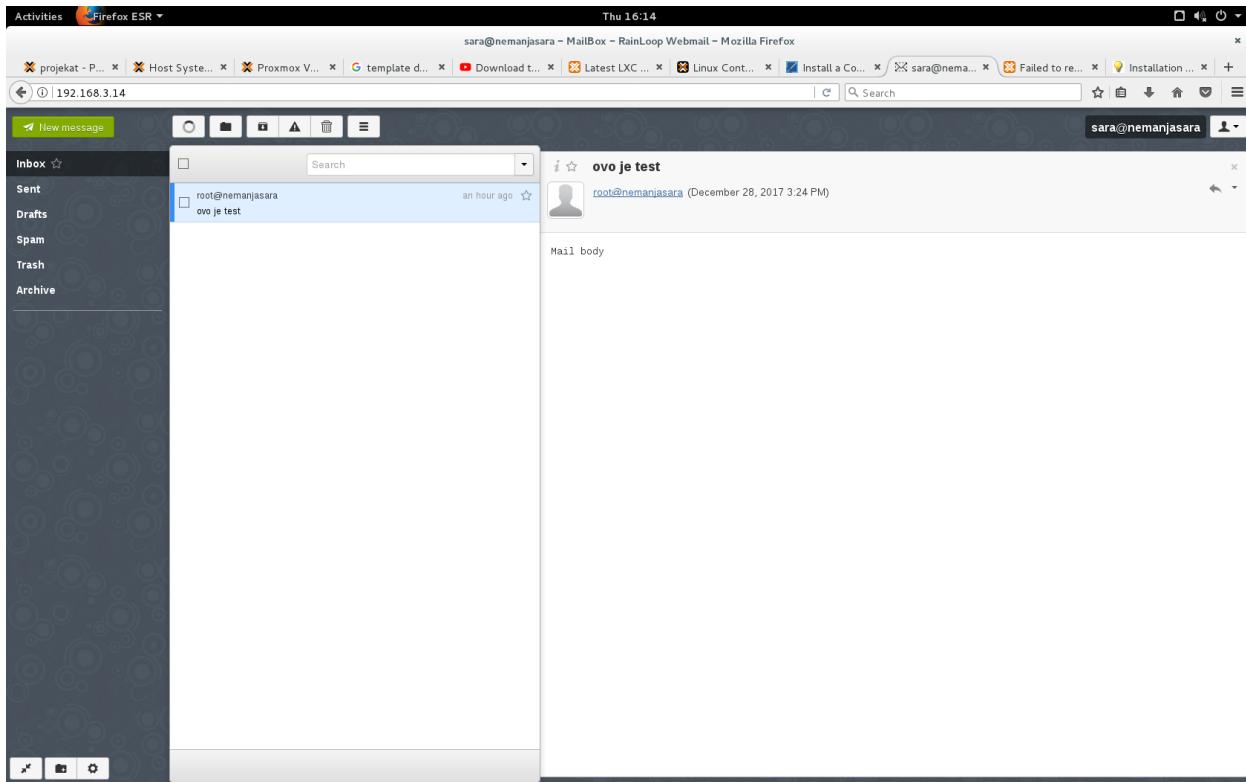
Jedini razlog zbog kog se logujemo kao admin je da podesimo domain u nemanjasara I ništa više.



Slika 30-Rainloop webmail klijent8

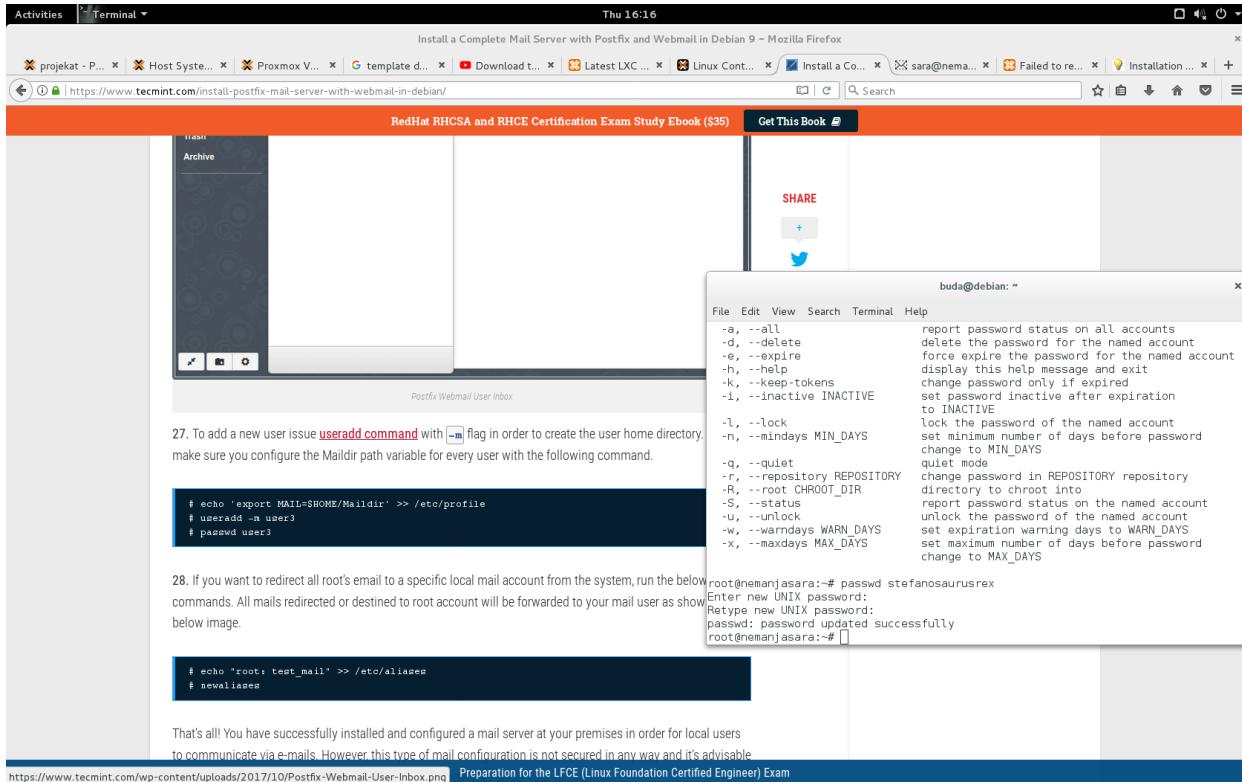
Konačno na adresi 192.168.3.14 dobijamo login formu, kucamo ime korisnika sara kao I šifru test123, I uspevamo da se ulogujemo kao korisnik sara. Možemo sa desne strane videte da smo ulogovani kao sara@nemanjasara.

Pritom, tu je I poruka koju smo prethodno pri testiranju konfiguracije poslali. Što znači da sve radi u savršenom redu.



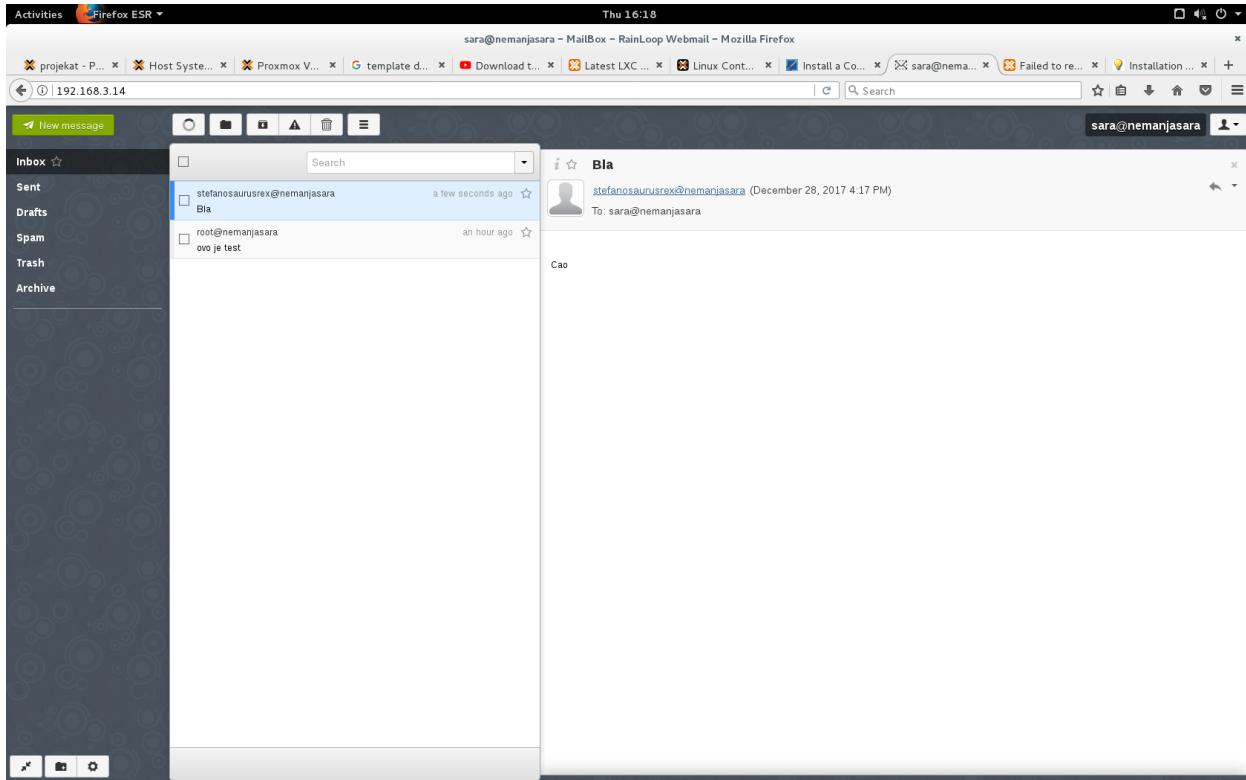
Slika 9-uspeh slanja mailova

Nakon ovoga smo uneli još jednog korisnika Stefanosaurusrex, koji je uneo svoj password. Uspešno je sačuvan (Slika 34).



Slika 10-Unet nov korisnik Stefanosaurusrex

Da bi smo dokazali da je uspešno konfigurisano i da sve radi kako treba, poslali smo poruke jedan drugom koristeći Rainloop. Mailovi su uspešno poslati i uspešno pristigli na zadate adrese. (Slika 35).



Slika 11

Dakle, razmena poruka je uspešna. I na web klijentu imamo poruke koje su razmenjene a takođe I na samom server u okvru korisnikovog /Maildir.

Posle ovoga pristupili smo još nekim testovima poput slanja slike I sličnih attachment-a što je naravno bilo uspešno, ali nismo dokumentivali jer se to od nas nije tražilo. Ono što se tražilo to je da se kreiraju dva korisnika koja će razmeniti poruke, što je I urađeno.

Nedostatci i kako unaprediti:

Naravno, kao i sve i naš projekat ima nekoliko nedostataka, koji se mogu lako otkloniti, navešćemo samo neke od bitnijih. Prvenstveno kako bi dobro bilo da se implementira i neka baza podataka gde bi se svi korisnici čuvali kako bi se lakse manipulisali sa samim nalogima, gde bi preko iste te baze dalje izvlačili određene statističke podatke za klijenta ukoliko postoji potreba za tim. Pored toga potrebno je konfigurisati bezbednosne sertifikate, ali to nije u našoj moći jer su najbezbedniji javni, oni koji se plate. Naravno kao najveća mana, to je domain i DNS, mi smo radili u lokalnoj mreži, a ukoliko bi imali određeni domain i dns, mnogo bi bolje i lakse sve povezali te bi bilo kompletnije.

Dakle, od nas je traženo podizanje mail servera konfiguracija mail servera, i razmena pošte između dva klijenta, bez nekih određenih dodatnih stavki, sve ovo što je navedeno kao mana tj. nedostatak, u dogовору са asistentom je isključeno iz projekta u toku izrade zbog kompleksnosti samog projekta.

Zaključak

Projektni zadatak nas je naveo da se snađemo kako samostalno da uradimo zadatak. Shvatili smo da je projekat bio veoma zanimljiv, jer se od nas očekivalo da naučimo kako da konfigurišemo jedan mail server preko komandne linije. Lako smo shvatili kako i šta treba. Jedini problemi kolji su usledili kod nas je bila kuća greška. Sada nam je jasno da i jedna mala greška, ako se napravi može da nas košta puno sati rada, jer onda moramo iz početka da počnemo sa radom.