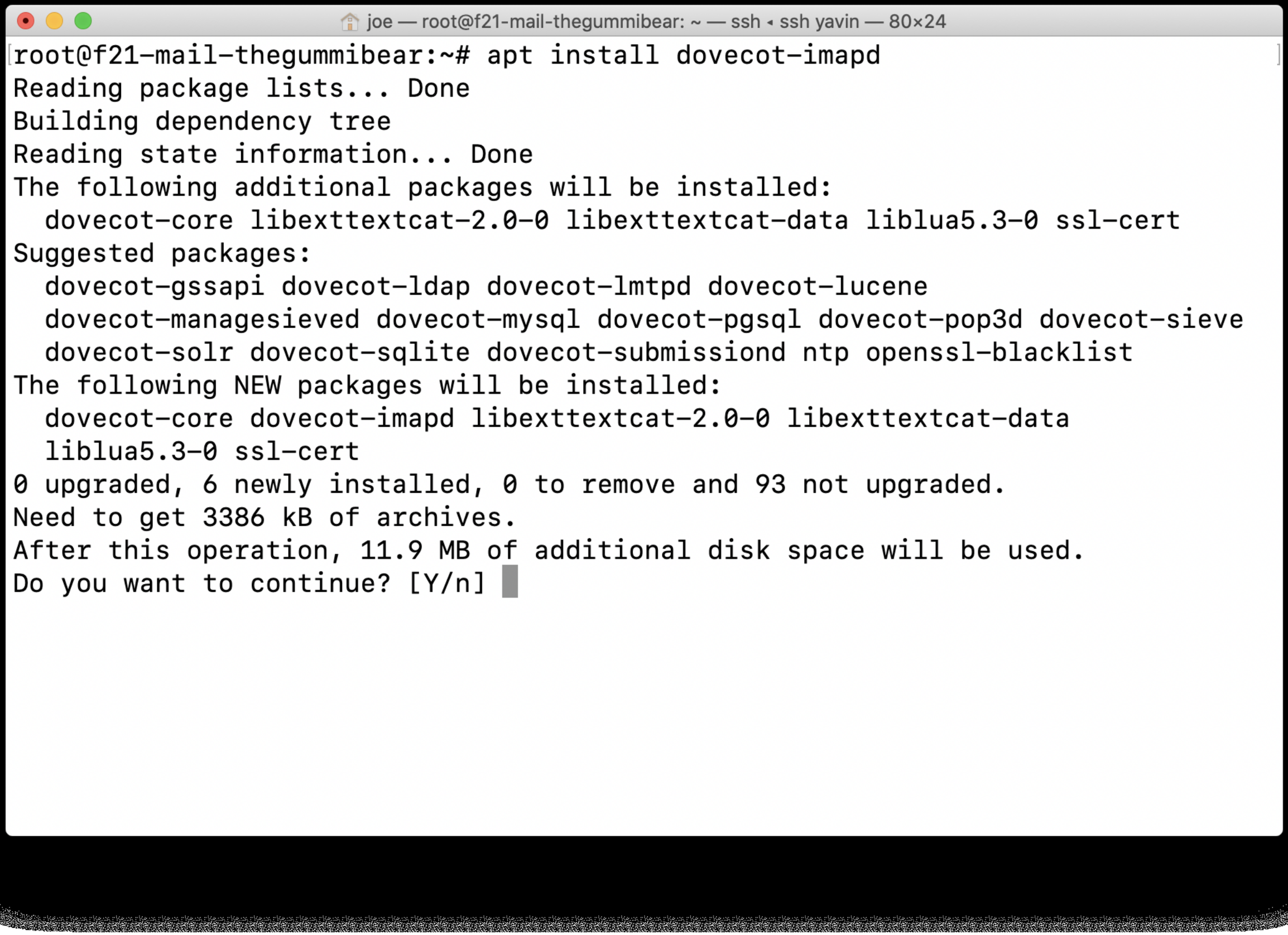
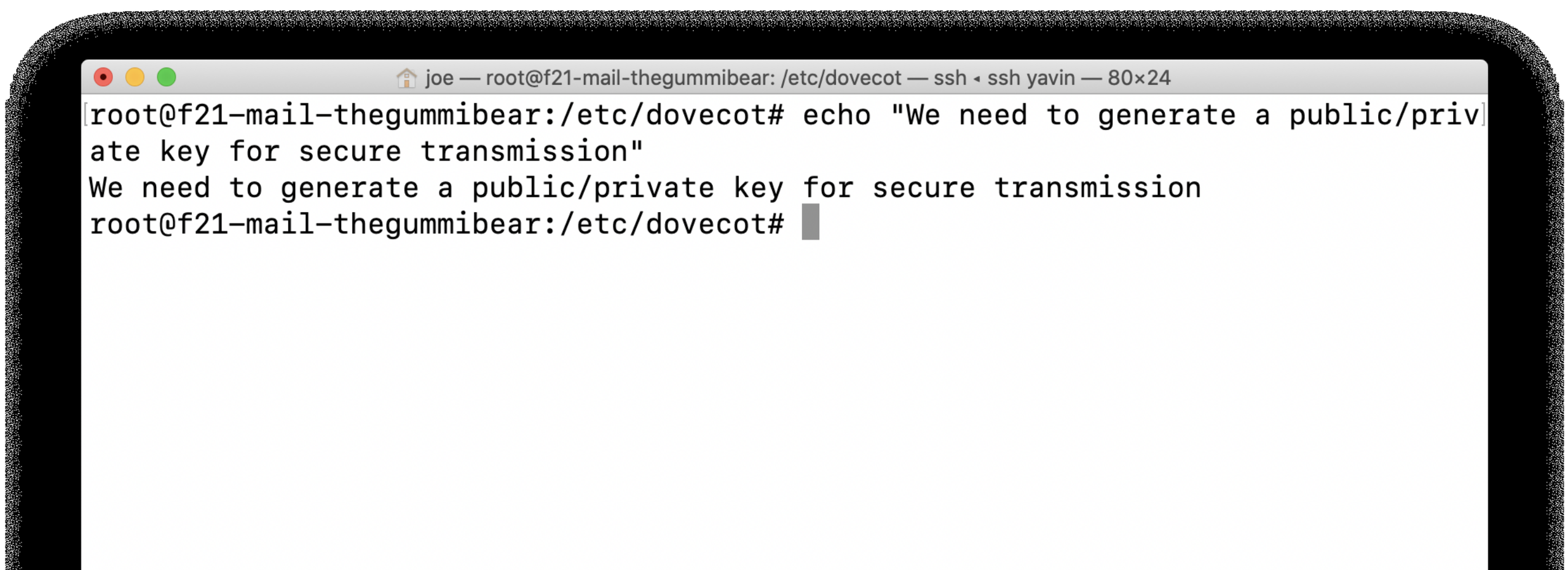
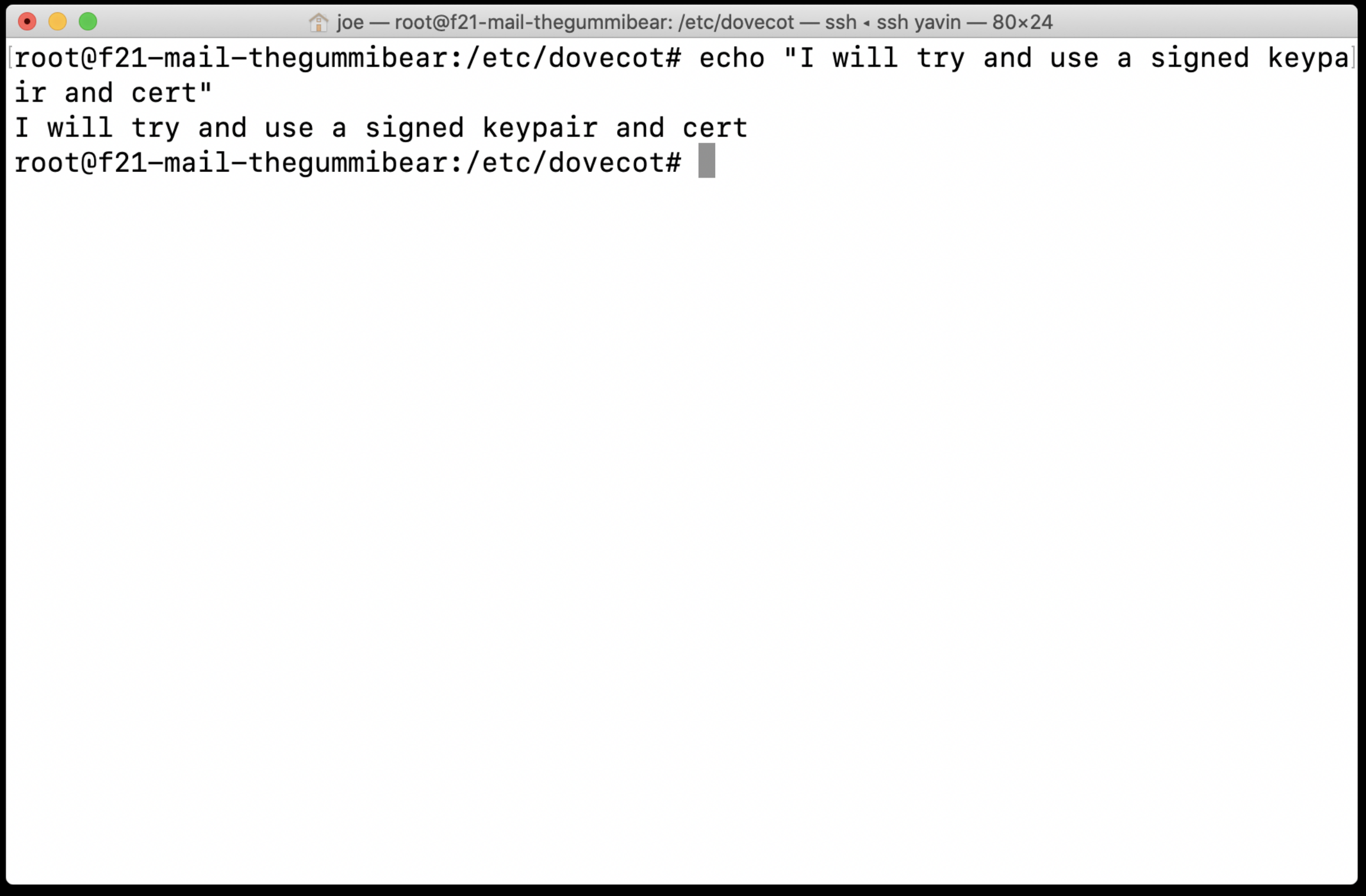

joe — root@f21-mail-thegummibear: ~ — ssh ◂ ssh yavin — 80×24
root@f21-mail-thegummibear:~# apt install dovecot-imapd
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
dovecot-core libexttextcat-2.0-0 libexttextcat-data liblua5.3-0 ssl-cert
Suggested packages:
dovecot-gssapi dovecot-ldap dovecot-lmtpd dovecot-lucene
dovecot-managesieved dovecot-mysql dovecot-pgsql dovecot-pop3d dovecot-sieve
dovecot-solr dovecot-sqlite dovecot-submissiond ntp openssl-blacklist
The following NEW packages will be installed:
dovecot-core dovecot-imapd libexttextcat-2.0-0 libexttextcat-data
liblua5.3-0 ssl-cert
0 upgraded, 6 newly installed, 0 to remove and 93 not upgraded.
Need to get 3386 kB of archives.
After this operation, 11.9 MB of additional disk space will be used.
Do you want to continue? [Y/n]

joe — root@f21-mail-thegummibear: /etc/dovecot — ssh ◂ ssh yavin — 80×24

```
root@f21-mail-thegummibear:/etc/dovecot# ls -l
total 32
drwxr-xr-x 2 root root    4096 Sep 27 11:57 conf.d
-rw-r----- 1 root dovecot 1507 Aug 26  2019 dovecot-dict-auth.conf.ext
-rw-r----- 1 root dovecot  852 Aug 26  2019 dovecot-dict-sql.conf.ext
-rw-r----- 1 root dovecot 5824 Aug 26  2019 dovecot-sql.conf.ext
-rw-r--r-- 1 root root    4401 Jun 16 13:12 dovecot.conf
drwx------ 2 root root    4096 Sep 27 11:57 private
root@f21-mail-thegummibear:/etc/dovecot#
```


joe — root@f21-mail-thegummibear: /etc/dovecot — ssh ◂ ssh yavin — 80×24
root@f21-mail-thegummibear:/etc/dovecot# echo "We need to generate a public/priv
ate key for secure transmission"
We need to generate a public/private key for secure transmission
root@f21-mail-thegummibear:/etc/dovecot#

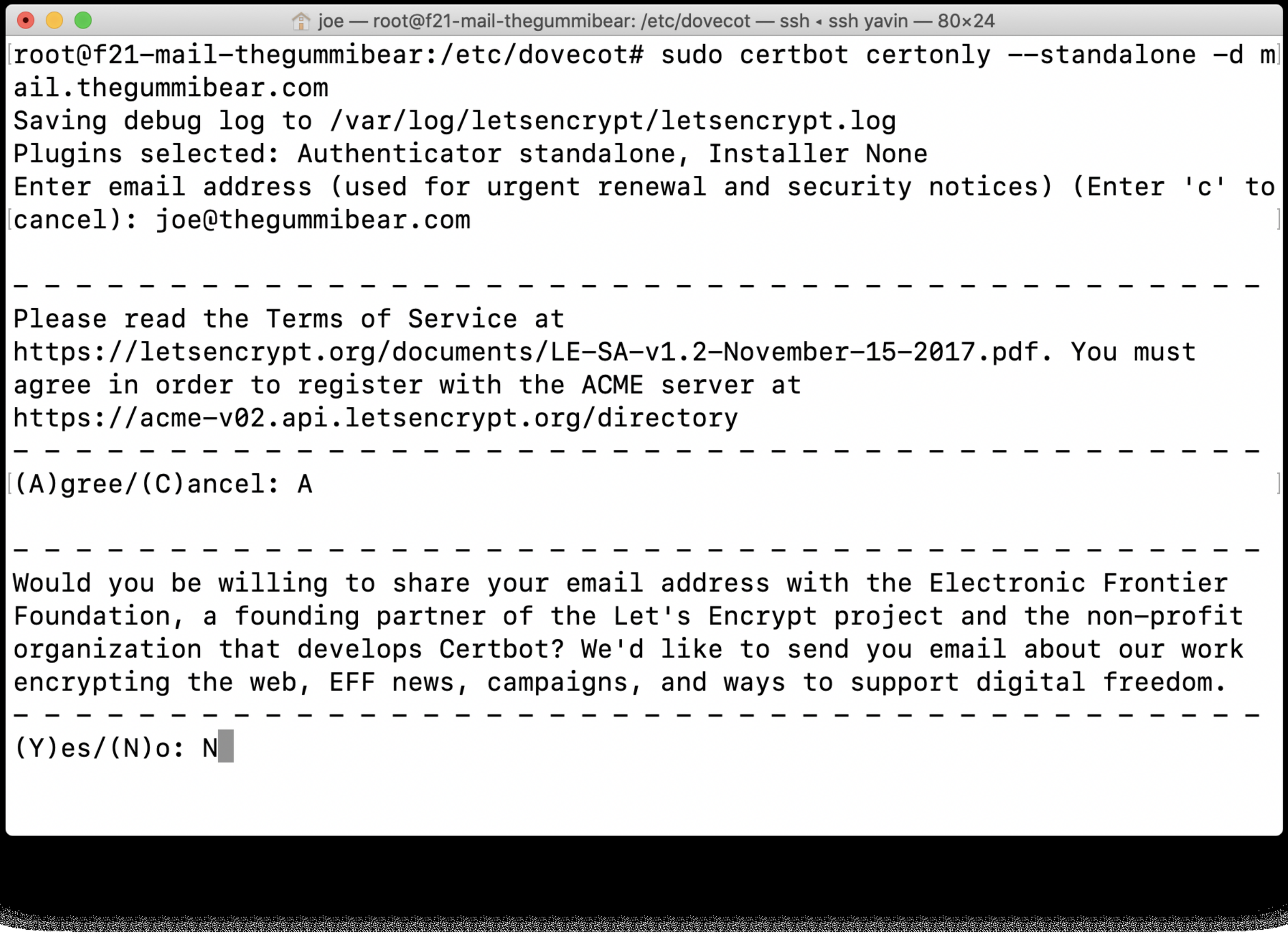

joe — root@f21-mail-thegummibear: /etc/dovecot — ssh ◂ ssh yavin — 80×24
root@f21-mail-thegummibear:/etc/dovecot# echo "I will try and use a signed keypa
ir and cert"
I will try and use a signed keypair and cert
root@f21-mail-thegummibear:/etc/dovecot#

joe — root@f21-mail-thegummibear: /etc/dovecot — ssh ◂ ssh yavin — 80×24

```
root@f21-mail-thegummibear:/etc/dovecot# apt install letsencrypt
```


joe — root@f21-mail-thegummibear: /etc/dovecot — ssh ◂ ssh yavin — 80×24
root@f21-mail-thegummibear:/etc/dovecot# sudo certbot certonly --standalone -d m
ail.thegummibear.com

```
root@f21-mail-thegummibear:/etc/dovecot# sudo certbot certonly --standalone -d m
ail.thegummibear.com
Saving debug log to /var/log/letsencrypt/letsencrypt.log
Plugins selected: Authenticator standalone, Installer None
Enter email address (used for urgent renewal and security notices) (Enter 'c' to
cancel): joe@thegummibear.com

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
Please read the Terms of Service at
https://letsencrypt.org/documents/LE-SA-v1.2-November-15-2017.pdf. You must
agree in order to register with the ACME server at
https://acme-v02.api.letsencrypt.org/directory
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
(A)gree/(C)ancel: A
```


joe — root@f21-mail-thegummibear: /etc/dovecot — ssh ◂ ssh yavin — 80×24
root@f21-mail-thegummibear:/etc/dovecot# sudo certbot certonly --standalone -d mail.thegummibear.com
Saving debug log to /var/log/letsencrypt/letsencrypt.log
Plugins selected: Authenticator standalone, Installer None
Enter email address (used for urgent renewal and security notices) (Enter 'c' to cancel): joe@thegummibear.com
- -
Please read the Terms of Service at https://letsencrypt.org/documents/LE-SA-v1.2-November-15-2017.pdf. You must agree in order to register with the ACME server at https://acme-v02.api.letsencrypt.org/directory
- -
(A)gree/(C)ancel: A
- -
Would you be willing to share your email address with the Electronic Frontier Foundation, a founding partner of the Let's Encrypt project and the non-profit organization that develops Certbot? We'd like to send you email about our work encrypting the web, EFF news, campaigns, and ways to support digital freedom.
- -
(Y)es/(N)o: N

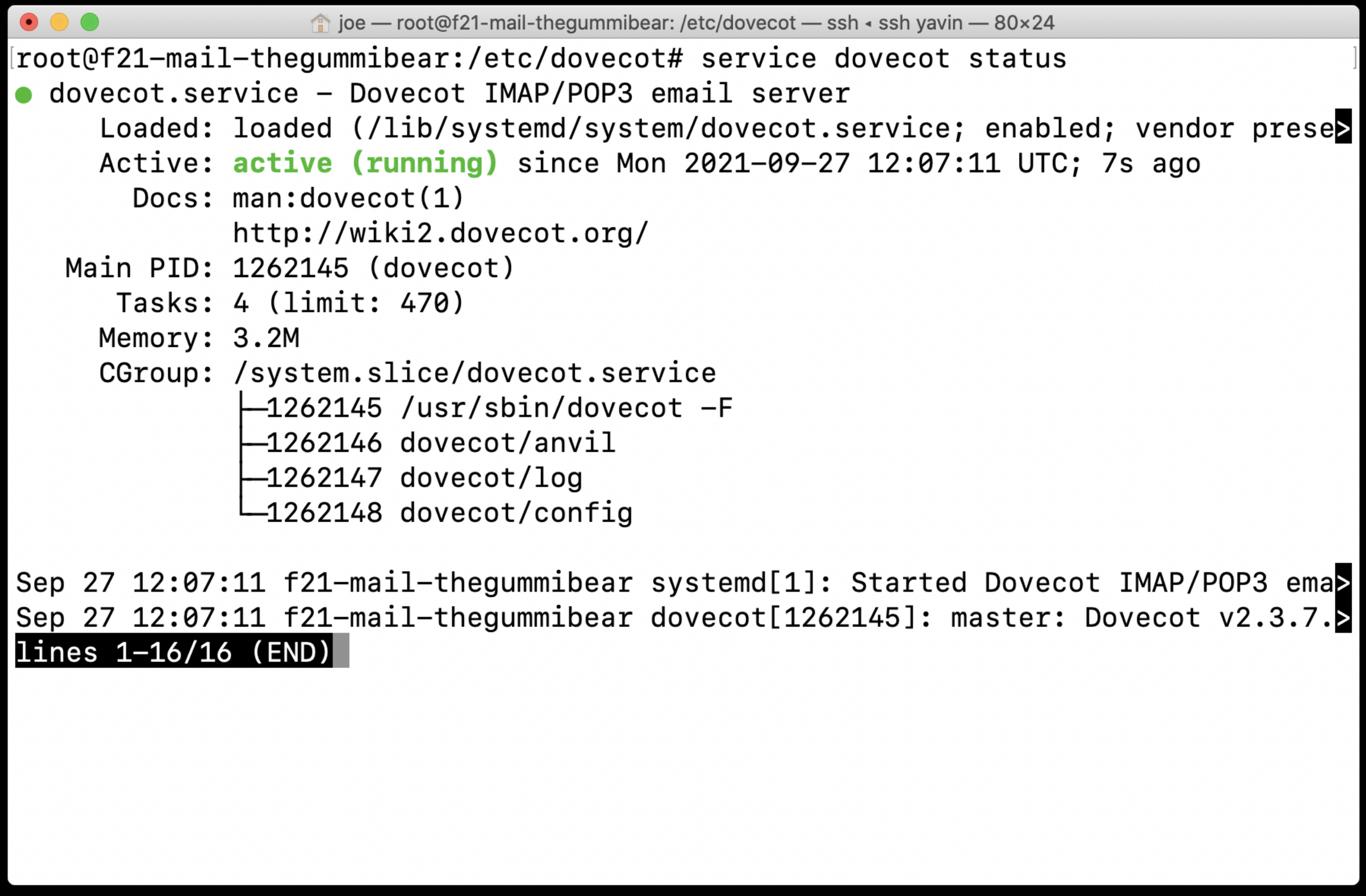
```
http-01 challenge for mail.thegummibear.com
Waiting for verification...
Cleaning up challenges

IMPORTANT NOTES:
 - Congratulations! Your certificate and chain have been saved at:
   /etc/letsencrypt/live/mail.thegummibear.com/fullchain.pem
   Your key file has been saved at:
   /etc/letsencrypt/live/mail.thegummibear.com/privkey.pem
   Your cert will expire on 2021-12-26. To obtain a new or tweaked
   version of this certificate in the future, simply run certbot
   again. To non-interactively renew *all* of your certificates, run
   "certbot renew"
 - Your account credentials have been saved in your Certbot
   configuration directory at /etc/letsencrypt. You should make a
   secure backup of this folder now. This configuration directory will
   also contain certificates and private keys obtained by Certbot so
   making regular backups of this folder is ideal.
 - If you like Certbot, please consider supporting our work by:

   Donating to ISRG / Let's Encrypt:   https://letsencrypt.org/donate
   Donating to EFF:                    https://eff.org/donate-le

root@f21-mail-thegummibear:/etc/dovecot#
```

joe — root@f21-mail-thegummibear: /etc/dovecot — ssh ◂ ssh yavin — 80×24

```
root@f21-mail-thegummibear:/etc/dovecot# vi conf.d/10-ssl.conf
```

```
##
## SSL settings
##

# SSL/TLS support: yes, no, required. <doc/wiki/SSL.txt>
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
#
# Edit these two lines to point to the new letsencrypt files
ssl_cert = </etc/letsencrypt/live/mail.thegummibear.com/fullchain.pem
ssl_key = </etc/letsencrypt/live/mail.thegummibear.com/privkey.pem



# If key file is password protected, give the password here. Alternatively
# give it when starting dovecot with -p parameter. Since this file is often
# world-readable, you may want to place this setting instead to a different
# root owned 0600 file by using ssl_key_password = <path.
#ssl_key_password =
"conf.d/10-ssl.conf" 82L, 3294C                              13,60         Top
```


joe — root@f21-mail-thegummibear: /etc/dovecot — ssh ◂ ssh yavin — 80×24
root@f21-mail-thegummibear:/etc/dovecot# vi conf.d/10-ssl.conf
[1]+ Stopped   vi conf.d/10-ssl.conf
root@f21-mail-thegummibear:/etc/dovecot# fg
vi conf.d/10-ssl.conf
root@f21-mail-thegummibear:/etc/dovecot# vi conf.d/10-ssl.conf
root@f21-mail-thegummibear:/etc/dovecot# service dovecot restart


joe — root@f21-mail-thegummibear: /etc/dovecot — ssh ◂ ssh yavin — 80×24
root@f21-mail-thegummibear:/etc/dovecot# service dovecot status
● dovecot.service - Dovecot IMAP/POP3 email server
Loaded: loaded (/lib/systemd/system/dovecot.service; enabled; vendor prese>
Active: active (running) since Mon 2021-09-27 12:07:11 UTC; 7s ago
Docs: man:dovecot(1)
http://wiki2.dovecot.org/
Main PID: 1262145 (dovecot)
Tasks: 4 (limit: 470)
Memory: 3.2M
CGroup: /system.slice/dovecot.service
├─1262145 /usr/sbin/dovecot -F
├─1262146 dovecot/anvil
├─1262147 dovecot/log
└─1262148 dovecot/config
Sep 27 12:07:11 f21-mail-thegummibear systemd[1]: Started Dovecot IMAP/POP3 ema>
Sep 27 12:07:11 f21-mail-thegummibear dovecot[1262145]: master: Dovecot v2.3.7.>
lines 1-16/16 (END)

joe — root@f21-mail-thegummibear: /etc/dovecot — ssh ◂ ssh yavin — 80×24

```
root@f21-mail-thegummibear:/etc/dovecot# netstat -atup
```


joe — root@f21-mail-thegummibear: /etc/dovecot — ssh ◂ ssh yavin — 80×24
root@f21-mail-thegummibear:/etc/dovecot# echo "We dont want imap 2, it is insecu
re"
We dont want imap 2, it is insecure
root@f21-mail-thegummibear:/etc/dovecot#

joe — root@f21-mail-thegummibear: /etc/dovecot — ssh ◂ ssh yavin — 80×24

```
root@f21-mail-thegummibear:/etc/dovecot# vi conf.d/10-master.conf
```

```
# Default VSZ (virtual memory size) limit for service processes. This is mainly
# intended to catch and kill processes that leak memory before they eat up
# everything.
#default_vsz_limit = 256M

# Login user is internally used by login processes. This is the most untrusted
# user in Dovecot system. It shouldn't have access to anything at all.
#default_login_user = dovenull

# Internal user is used by unprivileged processes. It should be separate from
# login user, so that login processes can't disturb other processes.
#default_internal_user = dovecot

service imap-login {
  inet_listener imap {
    #port = 143
    #disable insecure port
    port = 0
  }
  inet_listener imaps {
    #port = 993
    #ssl = yes
  }
"conf.d/10-master.conf" 132L, 3609C written                    21,12         2%
```

joe — root@f21-mail-thegummibear: /etc/dovecot — ssh ◂ ssh yavin — 80×24

```
root@f21-mail-thegummibear:/etc/dovecot# service dovecot restart
```

joe — root@f21-mail-thegummibear: /etc/dovecot — ssh ◂ ssh yavin — 80×24

```
root@f21-mail-thegummibear:/etc/dovecot# netstat -atup
```

joe — root@f21-mail-thegummibear: /etc/dovecot — ssh ◂ ssh yavin — 80×24

```
root@f21-mail-thegummibear:/etc/dovecot# echo "Make sure imap2 isn't listed"
Make sure imap2 isn't listed
root@f21-mail-thegummibear:/etc/dovecot#
```

joe — joe@f21-mail-thegummibear: ~ — ssh ◂ ssh yavin — 80×24

```
joe@f21-mail-thegummibear:~$ echo "Configure exim to send from remote clients, i
f authenticated"
Configure exim to send from remote clients, if authenticated
joe@f21-mail-thegummibear:~$
```

joe — joe@f21-mail-thegummibear: ~ — ssh ◂ ssh yavin — 80×24

```
joe@f21-mail-thegummibear:~$ sudo apt instll exim4-daemon-heavy
```

joe — joe@f21-mail-thegummibear: ~ — ssh ◂ ssh yavin — 80×24

```
joe@f21-mail-thegummibear:~$ echo "install secure authentication service"
install secure authentication service
joe@f21-mail-thegummibear:~$ sudo apt install sasl2-bin
```

joe — joe@f21-mail-thegummibear: ~ — ssh ◂ ssh yavin — 80×24

```
joe@f21-mail-thegummibear:~$ sudo vi /etc/default/saslauthd
```

joe — joe@f21-mail-thegummibear: ~ — ssh ◂ ssh yavin — 80×24

```
#
# Settings for saslauthd daemon
# Please read /usr/share/doc/sasl2-bin/README.Debian for details.
#

# Should saslauthd run automatically on startup? (default: no)
START=yes

# Description of this saslauthd instance. Recommended.
# (suggestion: SASL Authentication Daemon)
DESC="SASL Authentication Daemon"

# Short name of this saslauthd instance. Strongly recommended.
# (suggestion: saslauthd)
NAME="saslauthd"

# Which authentication mechanisms should saslauthd use? (default: pam)
#
# Available options in this Debian package:
# getpwent  -- use the getpwent() library function
# kerberos5 -- use Kerberos 5
# pam       -- use PAM
# rimap     -- use a remote IMAP server
"/etc/default/saslauthd" 62L, 2315C written                    7,9           Top
```


joe — joe@f21-mail-thegummibear: ~ — ssh ◂ ssh yavin — 80×24
joe@f21-mail-thegummibear:~$ sudo service saslauthd restart

joe — joe@f21-mail-thegummibear: ~ — ssh ◂ ssh yavin — 80×24

```
joe@f21-mail-thegummibear:~$ ps aux | grep sasl
root      1263525  0.0  0.6  21656  2960 ?        Ss   12:16   0:00 /usr/sbin/sas
lauthd -a pam -c -m /var/run/saslauthd -n 5
root      1263526  0.0  0.2  21656  1064 ?        S    12:16   0:00 /usr/sbin/sas
lauthd -a pam -c -m /var/run/saslauthd -n 5
root      1263527  0.0  0.2  21656  1064 ?        S    12:16   0:00 /usr/sbin/sas
lauthd -a pam -c -m /var/run/saslauthd -n 5
root      1263528  0.0  0.2  21656  1064 ?        S    12:16   0:00 /usr/sbin/sas
lauthd -a pam -c -m /var/run/saslauthd -n 5
root      1263529  0.0  0.2  21656  1064 ?        S    12:16   0:00 /usr/sbin/sas
lauthd -a pam -c -m /var/run/saslauthd -n 5
joe       1263531  0.0  0.1   5192   664 pts/0    S+   12:16   0:00 grep --color=
auto sasl
joe@f21-mail-thegummibear:~$
```

joe — joe@f21-mail-thegummibear: ~ — ssh ◂ ssh yavin — 80×24

```
joe@f21-mail-thegummibear:~$ echo "now some detailed edits"
```

joe — joe@f21-mail-thegummibear: ~ — ssh ◂ ssh yavin — 80×24

```
joe@f21-mail-thegummibear:~$ sudo vi /etc/exim4/exim4.conf.template
```

joe — joe@f21-mail-thegummibear: ~ — ssh ◂ ssh yavin — 80×24

```
### main/03_exim4-config_tlsoptions
#################################
#
#
#
# Locate this section of the file
# ADDED BY JOE TO ENABLE TLS AUTH
MAIN_TLS_ENABLE = yes
#ENABLE STANDARD TLS PORTS
daemon_smtp_ports = 25 : 465 : 587
tls_on_connect_ports = 465

#FORCE ENCRYPTION BEFORE AUTH
auth_advertise_hosts = ${if eq{$tls_cipher}{}{}{*}}
# END OF JOES ADDITION




# TLS/SSL configuration for exim as an SMTP server.
# See /usr/share/doc/exim4-base/README.Debian.gz for explanations.

-- INSERT --                                          344,52          15%
```

joe — joe@f21-mail-thegummibear: ~ — ssh ◂ ssh yavin — 80×24

```
# Here is an example of CRAM-MD5 authentication against PostgreSQL:
#
# psqldb_auth_server:
#   driver = cram_md5
#   public_name = CRAM-MD5
#   server_secret = ${lookup pgsql{SELECT pw FROM users WHERE username = '${quot
e_pgsql:$auth1}'}{$value}fail}
#   server_set_id = $auth1

# Authenticate against local passwords using sasl2-bin
# Requires exim_uid to be a member of sasl group, see README.Debian.gz
#
# FIND THE FOLLOWING LINES AND UNCOMMENT
#
# plain_saslauthd_server:
#   driver = plaintext
#   public_name = PLAIN
#   server_condition = ${if saslauthd{{$auth2}{$auth3}}{1}{0}}
#   server_set_id = $auth2
#   server_prompts = :
#   .ifndef AUTH_SERVER_ALLOW_NOTLS_PASSWORDS
#   server_advertise_condition = ${if eq{$tls_in_cipher}{}{}{*}}
#   .endif
<c/exim4/exim4.conf.template" 2153L, 80258C written          1967,40       91%
```

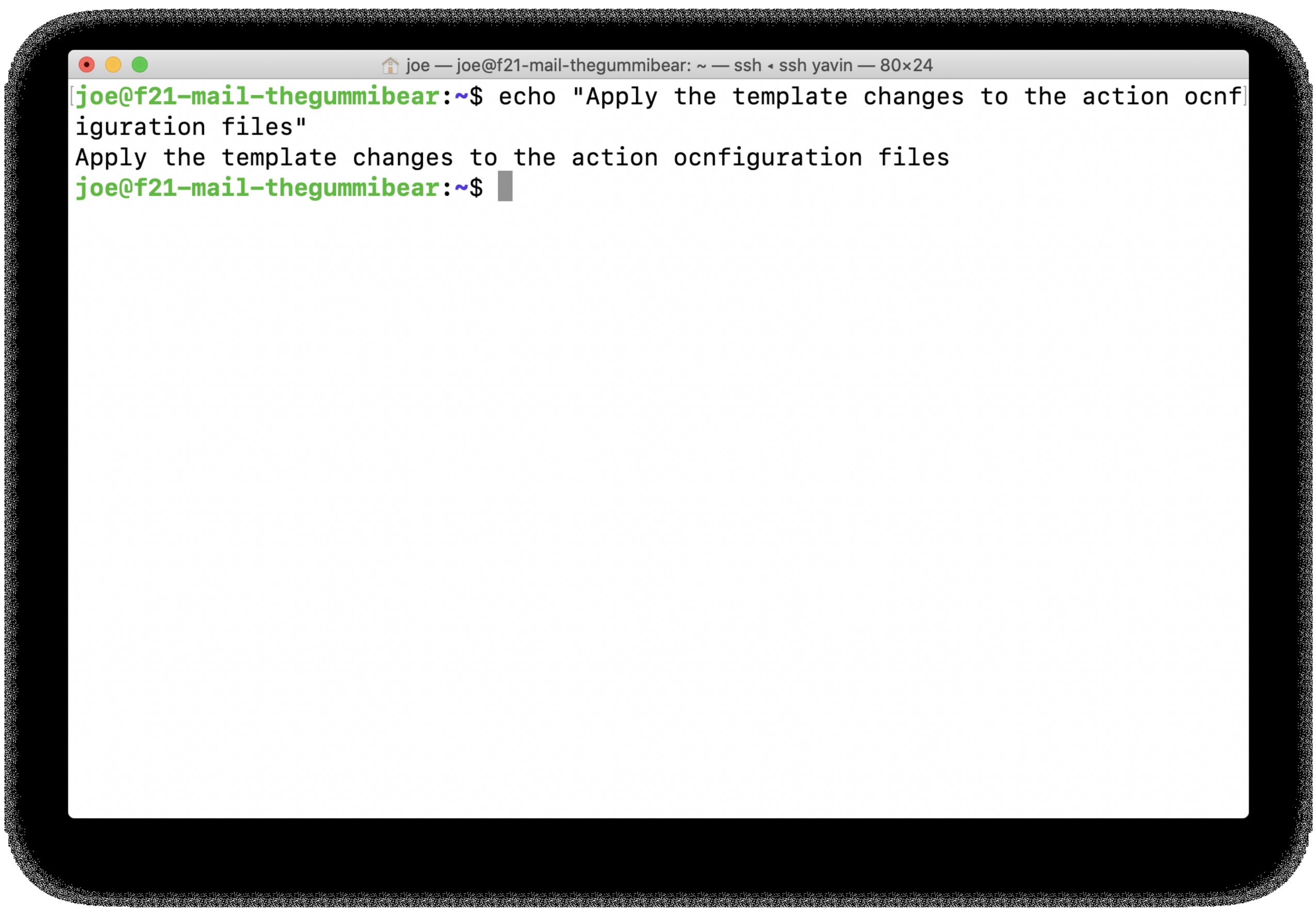
joe — joe@f21-mail-thegummibear: ~ — ssh ◂ ssh yavin — 80×24

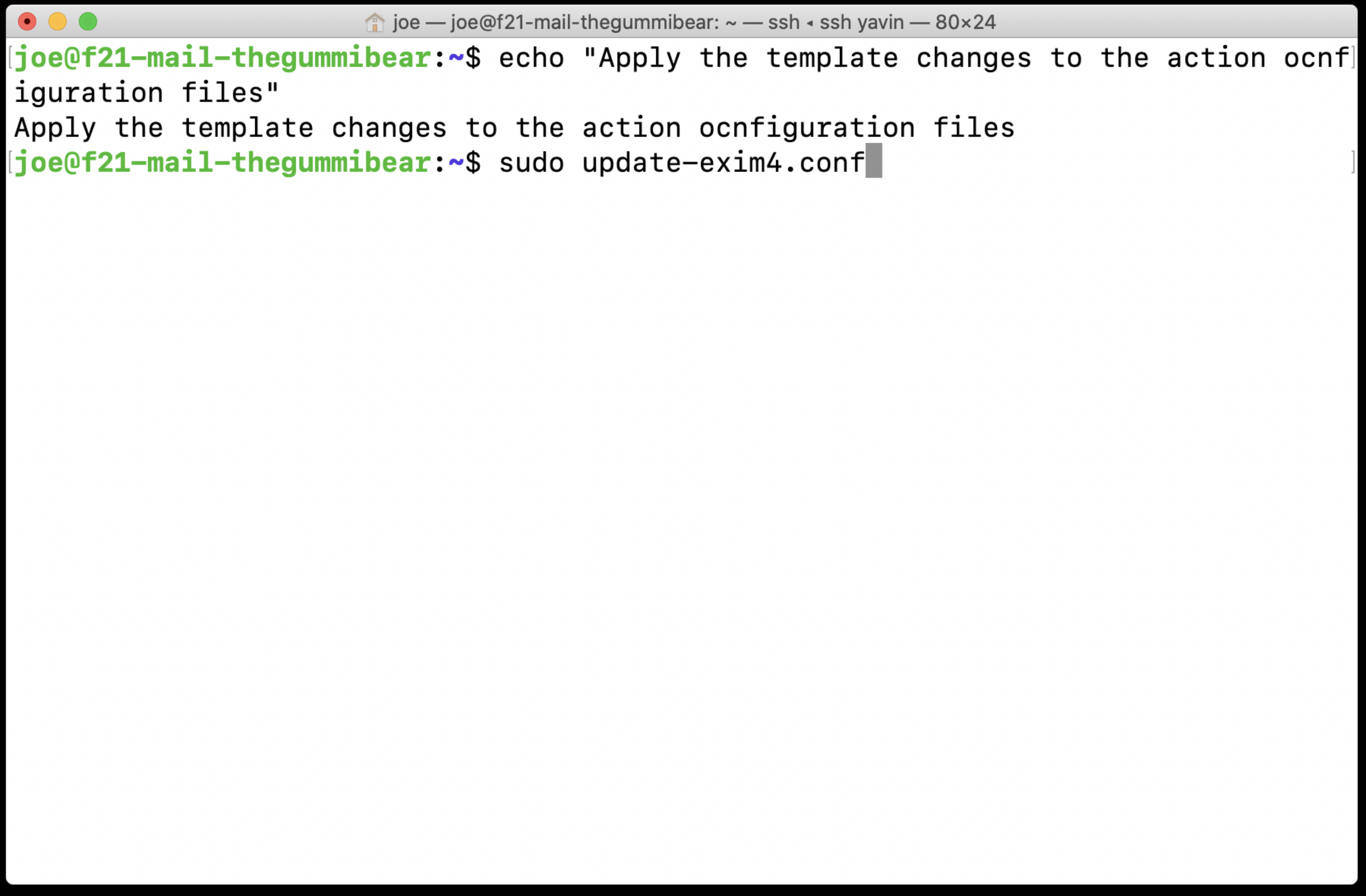
```
#   server_secret = ${lookup pgsql{SELECT pw FROM users WHERE username = '${quot
e_pgsql:$auth1}'}{$value}fail}
#   server_set_id = $auth1

# Authenticate against local passwords using sasl2-bin
# Requires exim_uid to be a member of sasl group, see README.Debian.gz
#
# FIND THE FOLLOWING LINES AND UNCOMMENT
#
 plain_saslauthd_server:
   driver = plaintext
   public_name = PLAIN
   server_condition = ${if saslauthd{{$auth2}{$auth3}}{1}{0}}
   server_set_id = $auth2
   server_prompts = :
   .ifndef AUTH_SERVER_ALLOW_NOTLS_PASSWORDS
   server_advertise_condition = ${if eq{$tls_in_cipher}{}{}{*}}
   .endif
#
# login_saslauthd_server:
#   driver = plaintext
#   public_name = LOGIN
#   server_prompts = "Username:: : Password::"
                                                    1977,1        91%
```

joe — joe@f21-mail-thegummibear: ~ — ssh ◂ ssh yavin — 80×24

```
joe@f21-mail-thegummibear:~$ echo "Now to allow exim to use the sasl service"
Now to allow exim to use the sasl service
joe@f21-mail-thegummibear:~$
```


joe — joe@f21-mail-thegummibear: ~ — ssh ◂ ssh yavin — 80×24
joe@f21-mail-thegummibear:~$ echo "Now to allow exim to use the sasl service"
Now to allow exim to use the sasl service
joe@f21-mail-thegummibear:~$ sudo adduser Debian-exim sasl
Adding user `Debian-exim' to group `sasl' ...
Adding user Debian-exim to group sasl
Done.
joe@f21-mail-thegummibear:~$


joe — joe@f21-mail-thegummibear: ~ — ssh ◂ ssh yavin — 80×24
joe@f21-mail-thegummibear:~$ echo "Apply the template changes to the action ocnf
iguration files"
Apply the template changes to the action ocnfiguration files
joe@f21-mail-thegummibear:~$

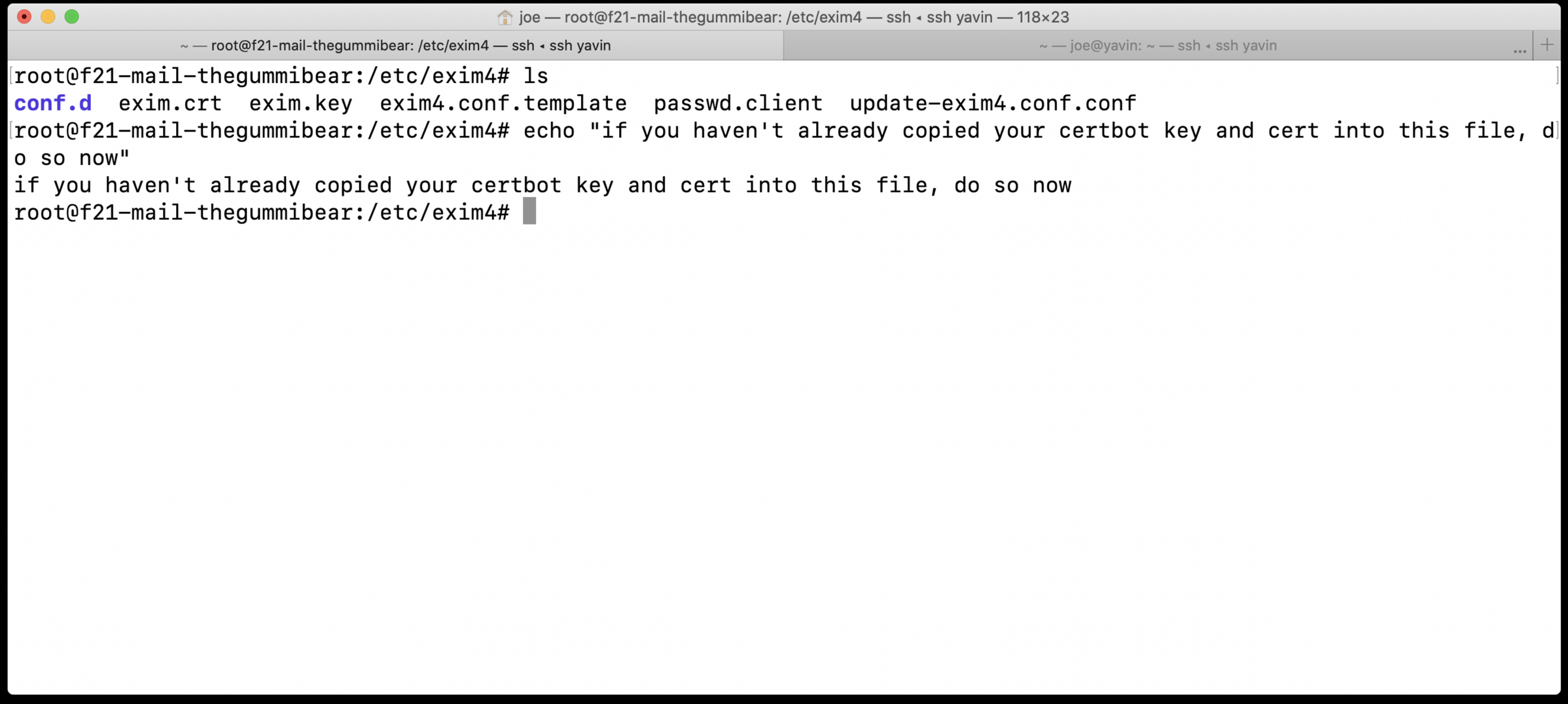

joe — joe@f21-mail-thegummibear: ~ — ssh ◂ ssh yavin — 80×24
joe@f21-mail-thegummibear:~$ echo "Apply the template changes to the action ocnf
iguration files"
Apply the template changes to the action ocnfiguration files
joe@f21-mail-thegummibear:~$ sudo update-exim4.conf

joe — joe@f21-mail-thegummibear: ~ — ssh ◂ ssh yavin — 80×24

```
joe@f21-mail-thegummibear:~$ echo "Restart MTA to use these settings"
Restart MTA to use these settings
joe@f21-mail-thegummibear:~$ sudo service exim4 restart
joe@f21-mail-thegummibear:~$
```

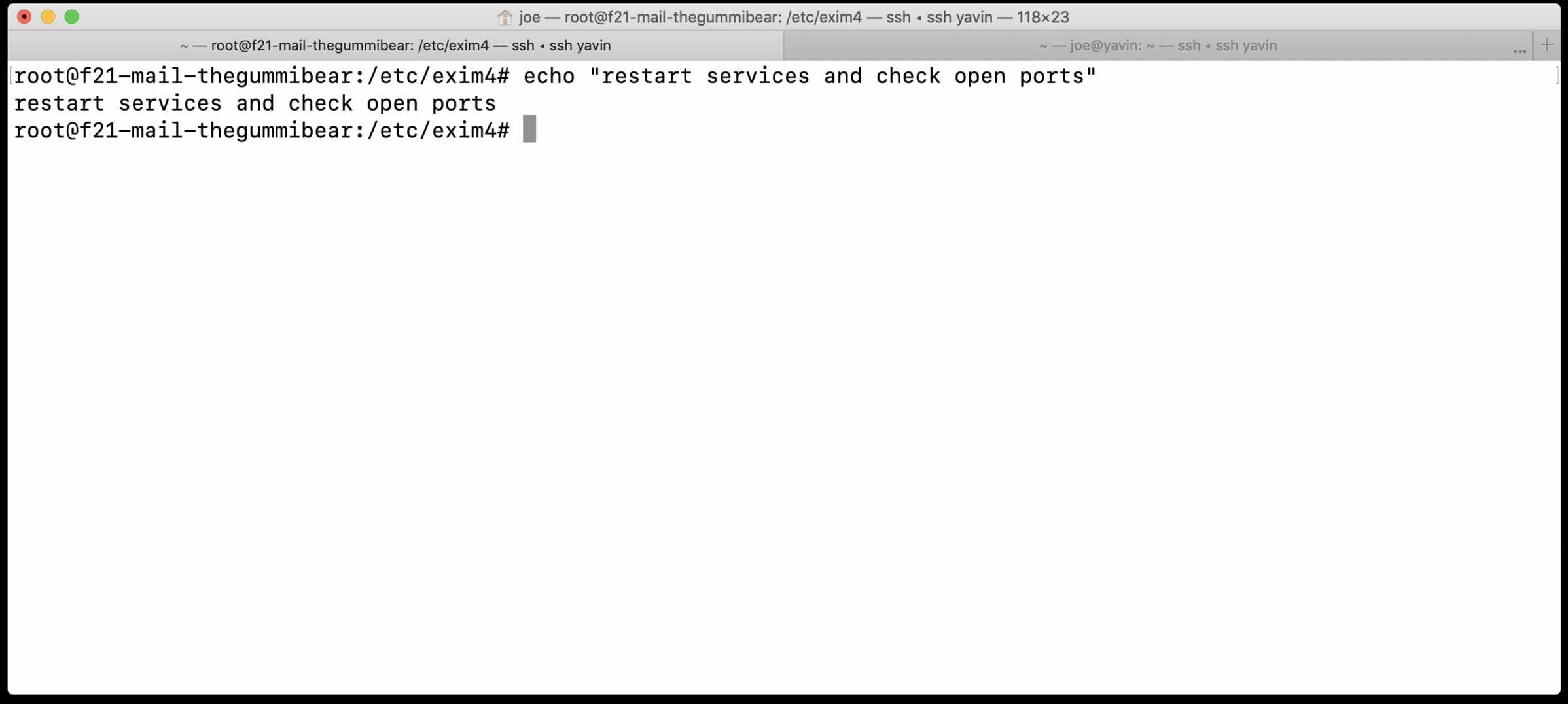
joe — joe@f21-mail-thegummibear: ~ — ssh ◂ ssh yavin — 80×24

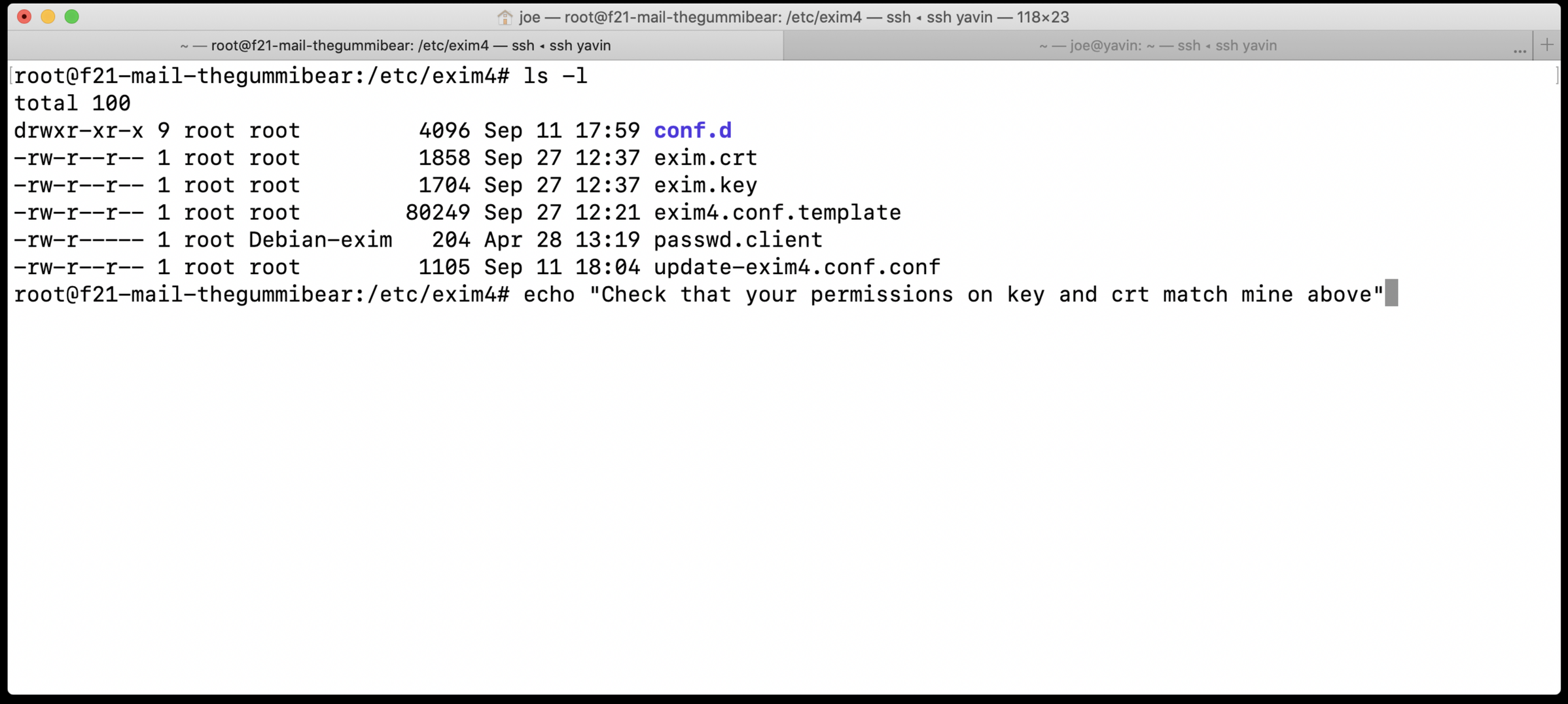
```
joe@f21-mail-thegummibear:~$ netstat -ntl
Active Internet connections (only servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
tcp        0      0 144.38.199.52:25        0.0.0.0:*               LISTEN
tcp        0      0 127.0.0.1:25            0.0.0.0:*               LISTEN
tcp        0      0 0.0.0.0:993             0.0.0.0:*               LISTEN
tcp        0      0 144.38.199.52:587       0.0.0.0:*               LISTEN
tcp        0      0 127.0.0.1:587           0.0.0.0:*               LISTEN
tcp        0      0 144.38.199.52:465       0.0.0.0:*               LISTEN
tcp        0      0 127.0.0.1:465           0.0.0.0:*               LISTEN
tcp        0      0 127.0.0.53:53           0.0.0.0:*               LISTEN
tcp        0      0 0.0.0.0:22              0.0.0.0:*               LISTEN
tcp6       0      0 ::1:25                  :::*                    LISTEN
tcp6       0      0 :::993                  :::*                    LISTEN
tcp6       0      0 ::1:587                 :::*                    LISTEN
tcp6       0      0 ::1:465                 :::*                    LISTEN
tcp6       0      0 :::22                   :::*                    LISTEN
joe@f21-mail-thegummibear:~$
```

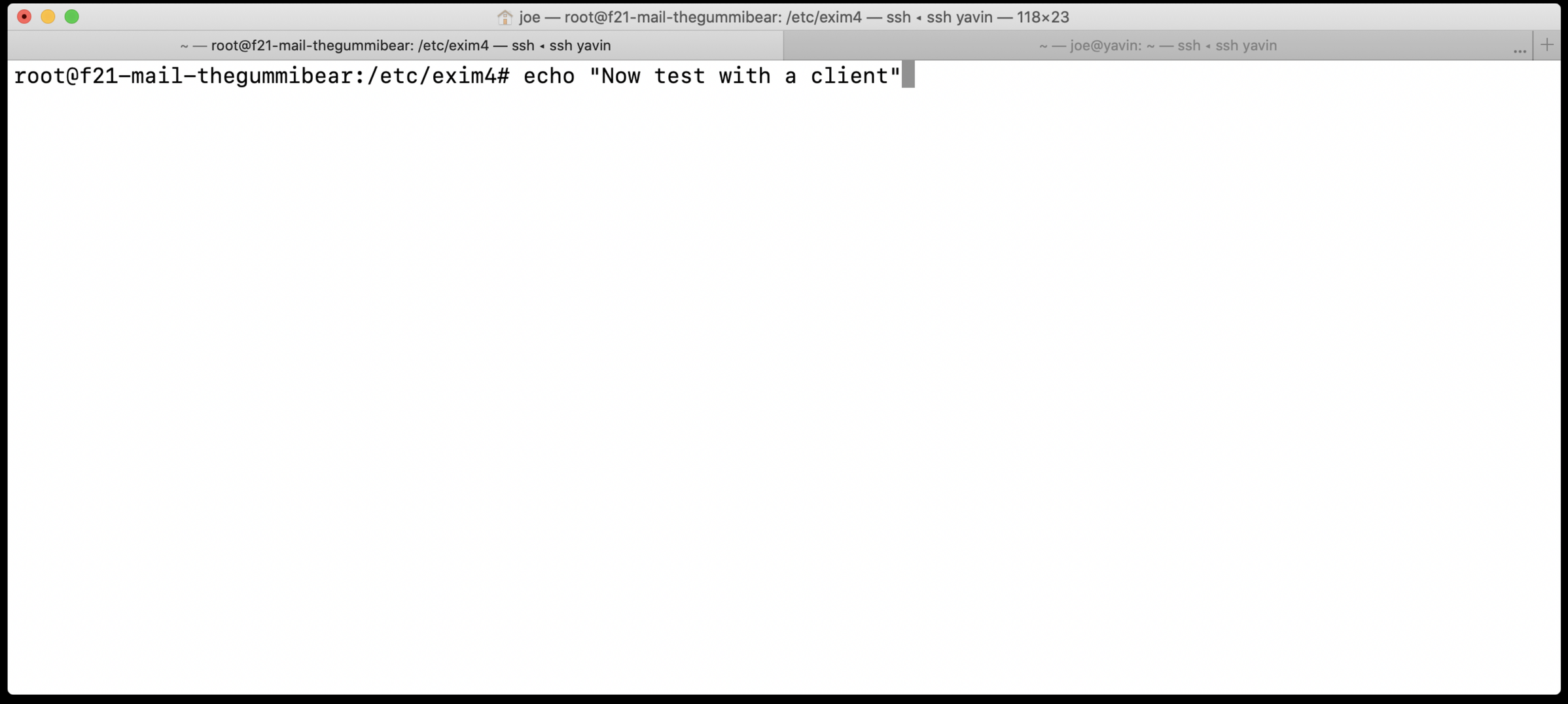

joe — root@f21-mail-thegummibear: /etc/exim4 — ssh ◂ ssh yavin — 118×23
~ — root@f21-mail-thegummibear: /etc/exim4 — ssh ◂ ssh yavin
~ — joe@yavin: ~ — ssh ◂ ssh yavin
root@f21-mail-thegummibear:/etc/exim4# ls
conf.d exim.crt exim.key exim4.conf.template passwd.client update-exim4.conf.conf
root@f21-mail-thegummibear:/etc/exim4# echo "if you haven't already copied your certbot key and cert into this file, do so now"
if you haven't already copied your certbot key and cert into this file, do so now
root@f21-mail-thegummibear:/etc/exim4#


joe — root@f21-mail-thegummibear: /etc/exim4 — ssh ◂ ssh yavin — 118×23
~ — root@f21-mail-thegummibear: /etc/exim4 — ssh ◂ ssh yavin
~ — joe@yavin: ~ — ssh ◂ ssh yavin
root@f21-mail-thegummibear:/etc/exim4# cp /etc/letsencrypt/live/mail.thegummibear.com/cert.pem exim.crt


joe — root@f21-mail-thegummibear: /etc/exim4 — ssh ◂ ssh yavin — 118×23
~ — root@f21-mail-thegummibear: /etc/exim4 — ssh ◂ ssh yavin
~ — joe@yavin: ~ — ssh ◂ ssh yavin
root@f21-mail-thegummibear:/etc/exim4# cp /etc/letsencrypt/live/mail.thegummibear.com/privkey.pem exim.key


joe — root@f21-mail-thegummibear: /etc/exim4 — ssh ◂ ssh yavin — 118×23
~ — root@f21-mail-thegummibear: /etc/exim4 — ssh ◂ ssh yavin
~ — joe@yavin: ~ — ssh ◂ ssh yavin
root@f21-mail-thegummibear:/etc/exim4# echo "restart services and check open ports"
restart services and check open ports
root@f21-mail-thegummibear:/etc/exim4#


joe — root@f21-mail-thegummibear: /etc/exim4 — ssh ◂ ssh yavin — 118×23
~ — root@f21-mail-thegummibear: /etc/exim4 — ssh ◂ ssh yavin
~ — joe@yavin: ~ — ssh ◂ ssh yavin
root@f21-mail-thegummibear:/etc/exim4# ls -l
total 100
drwxr-xr-x 9 root root   4096 Sep 11 17:59 conf.d
-rw-r--r-- 1 root root   1858 Sep 27 12:37 exim.crt
-rw-r--r-- 1 root root   1704 Sep 27 12:37 exim.key
-rw-r--r-- 1 root root   80249 Sep 27 12:21 exim4.conf.template
-rw-r----- 1 root Debian-exim   204 Apr 28 13:19 passwd.client
-rw-r--r-- 1 root root   1105 Sep 11 18:04 update-exim4.conf.conf
root@f21-mail-thegummibear:/etc/exim4# echo "Check that your permissions on key and crt match mine above"


joe — root@f21-mail-thegummibear: /etc/exim4 — ssh ◂ ssh yavin — 118×23
~ — root@f21-mail-thegummibear: /etc/exim4 — ssh ◂ ssh yavin
~ — joe@yavin: ~ — ssh ◂ ssh yavin
root@f21-mail-thegummibear:/etc/exim4# echo "Now test with a client"