Controller /etc/network/interfaces

```
auto ens33
iface ens33 inet static
    address 192.168.69.1/24
```

Controller DHCP Server install

```
root@controller:~# apt install isc-dhcp-server
```

Controller DHCP config /etc/dhcp/dhcpd.conf

```
subnet 192.168.69.0 netmask 255.255.255.0 {
  range 192.168.69.2 192.168.69.254
  option domain-name-servers “cometstar.net.id”;
  option domain-name “cometstar.net.id”;
# option routers 192.168.69.1;
  option broadcast-address 192.168.69.255;
  default-lease-time 600;
}

---

host web {
  hardware ethernet 00:00:00:00:00:00; # MAC address Web VM
  fixed-address 192.168.69.2;
}

host operator {
  hardware ethernet 00:00:00:00:00:00; # MAC address Operator VM
  fixed-address 192.168.69.3;
}
```

Install Ansible on operator

```
root@operator:~$ apt install ansible sudo
root@operator:~$ usermod -a -G sudo ops
```

Operator Hosts file /etc/hosts

```
192.168.69.1 controller
192.168.69.2 web
```

Ansible inventory file /home/ops/hosts.ini

```
[servers]
controller
web
```

Ansible playbook file /home/ops/create_300_users.yaml

```
- name: Create 300 users
  hosts: servers
  become: yes
  gather_facts: no

  tasks:
    - name: Create 300 users
      user:
        name: "user{{ '%03d' | format (item) }}"
        password: "{{ 'password' | password_hash('sha512') }}"
        home: "/home/user{{ '%03d' | format (item) }}"
      loop: "{{ range(0, 300) }}"
      async: 60
      poll: 0
```

Ansible playbook file /home/ops/dns_server.yaml

```
- name: Install DNS server
  hosts: servers
  become: yes
  tasks:
    - name: Install bind9
      apt:
        name: bind9
        state: latest

    - name: Copy DNS database
      copy: src=db.internal dest=/etc/bind/db.internal
      when: "{{inventory_hostname=='controller'}}"

    - name: Copy DNS master config
      copy: src=named.conf.master dest=/etc/bind/named.conf.local
      when: "{{inventory_hostname=='controller'}}"

    - name: Copy DNS slave config
      copy: src=named.conf.slave dest=/etc/bind/named.conf.local
      when: "{{inventory_hostname=='web'}}"

    - name: Restart the bind9 service
      service:
        name: bind9
        state: restarted
```

Operator SSH public key generate

```
ops@operator:~$ ssh-keygen
```

Operator SSH public key copy to servers

```
ops@operator:~$ ssh-copy-id controller
ops@operator:~$ ssh-copy-id web
```

DNS config master (`/home/ops/named.conf.master` > Controller `/etc/bind/named.conf.local`)

```
zone "cometstar.net.id" {
     type master;
     file "/etc/bind/db.internal";
     allow-transfer { 192.168.69.2; };
     also-notify { 192.168.69.2; };
};
```

DNS config slave (`/home/ops/named.conf.slave` > Web `/etc/bind/named.conf.local`)

```
zone "cometstar.net.id" {
     type slave;
     file "/var/cache/bind/db.internal";
     masters { 192.168.69.1; };
};
```

Copy default DNS config (install bind9 on operator for config)

```
ops@operator:~$ sudo apt install bind9
ops@operator:~$ cp /etc/bind/db.local /home/ops/db.internal
```

DNS config record (/etc/bind/db.internal)

```
$TTL 604800
@    IN   SOA  cometstar.net.id. cometstar.net.id. (
                    2       ; Serial
                604800       ; Refresh
                 86400       ; Retry
                2419200       ; Expire
                 604800 ); Negative Cache TTL
;
@               IN   NS   controller.cometstar.net.id.
@               IN   A    192.168.69.2
www             IN   A    192.168.69.2
mail            IN   A    192.168.69.2
controller      IN   A    192.168.69.1
web             IN   A    192.168.69.2
operator        IN   A    192.168.69.3
```

Run playbook on operator with

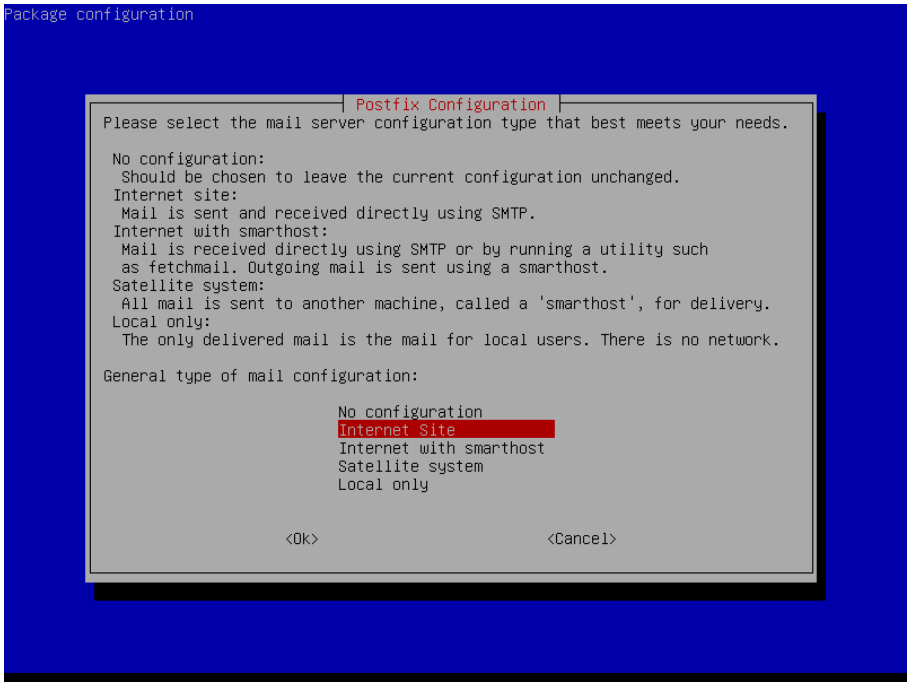
```
ops@operator:~$ ansible-playbook -i hosts.ini -K
create_300_users.yaml
ops@operator:~$ ansible-playbook -i hosts.ini -K dns_server.yaml
```

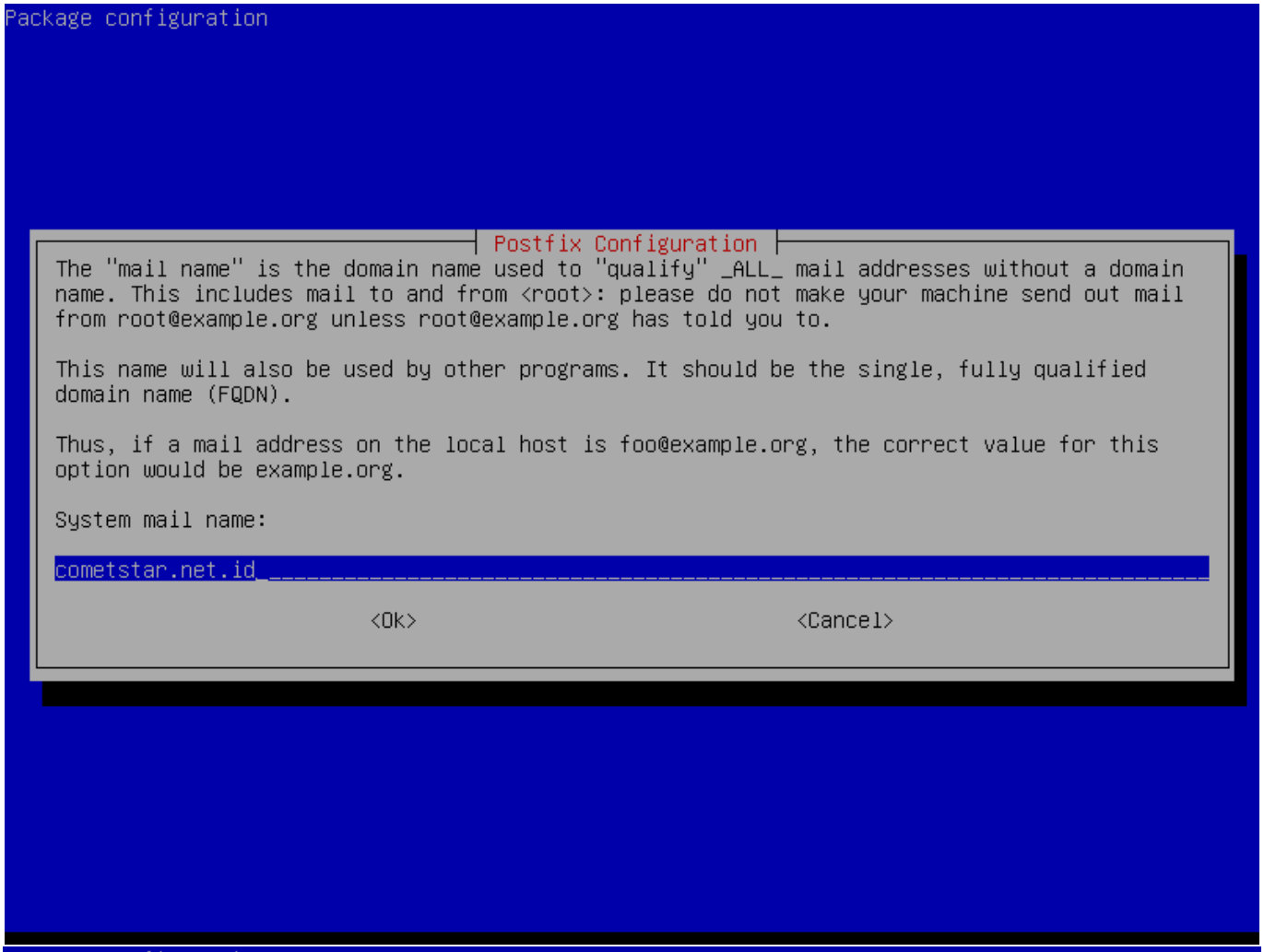
Check users on controller with

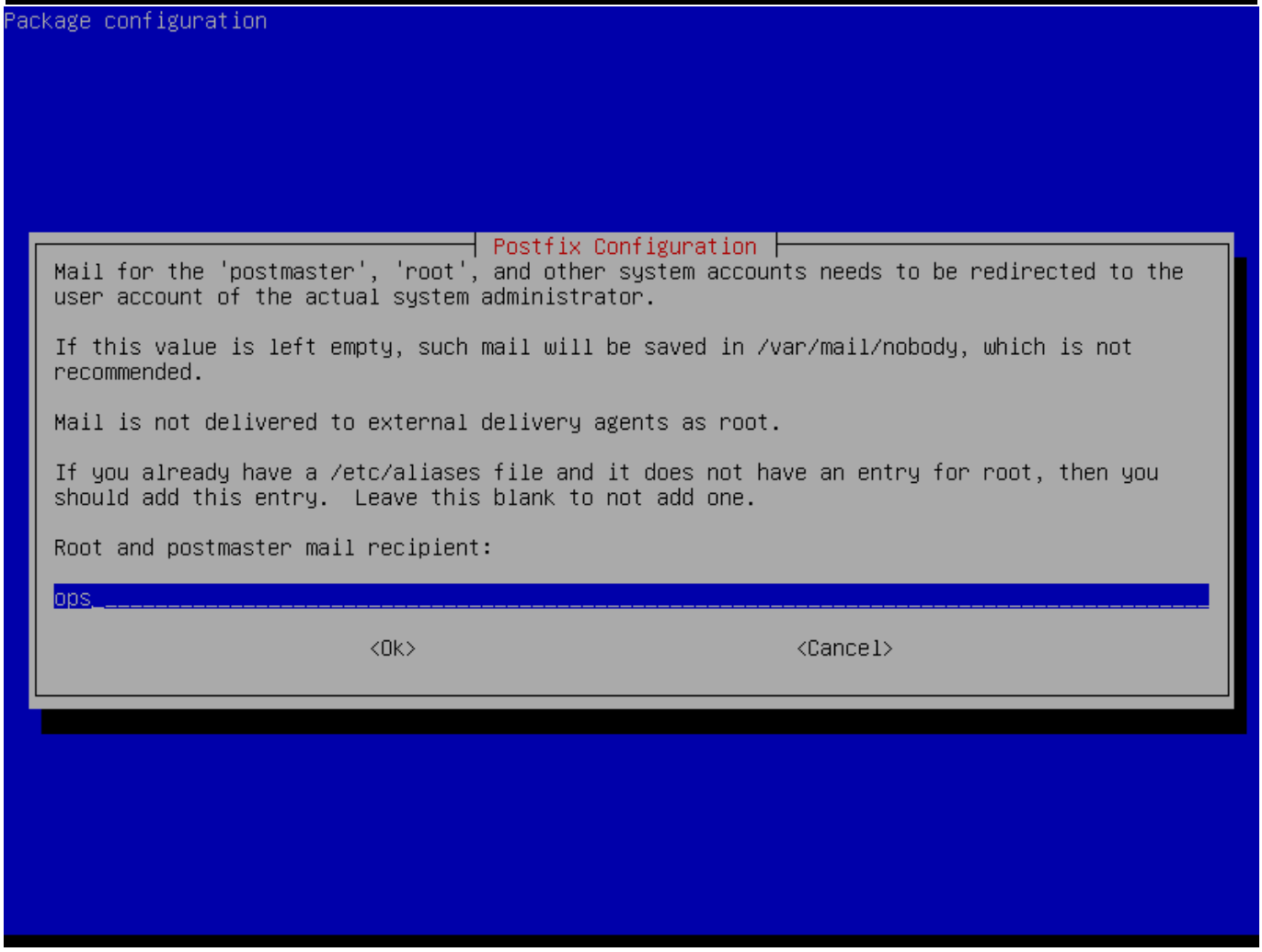
```
root@controller:~# ls /home
```

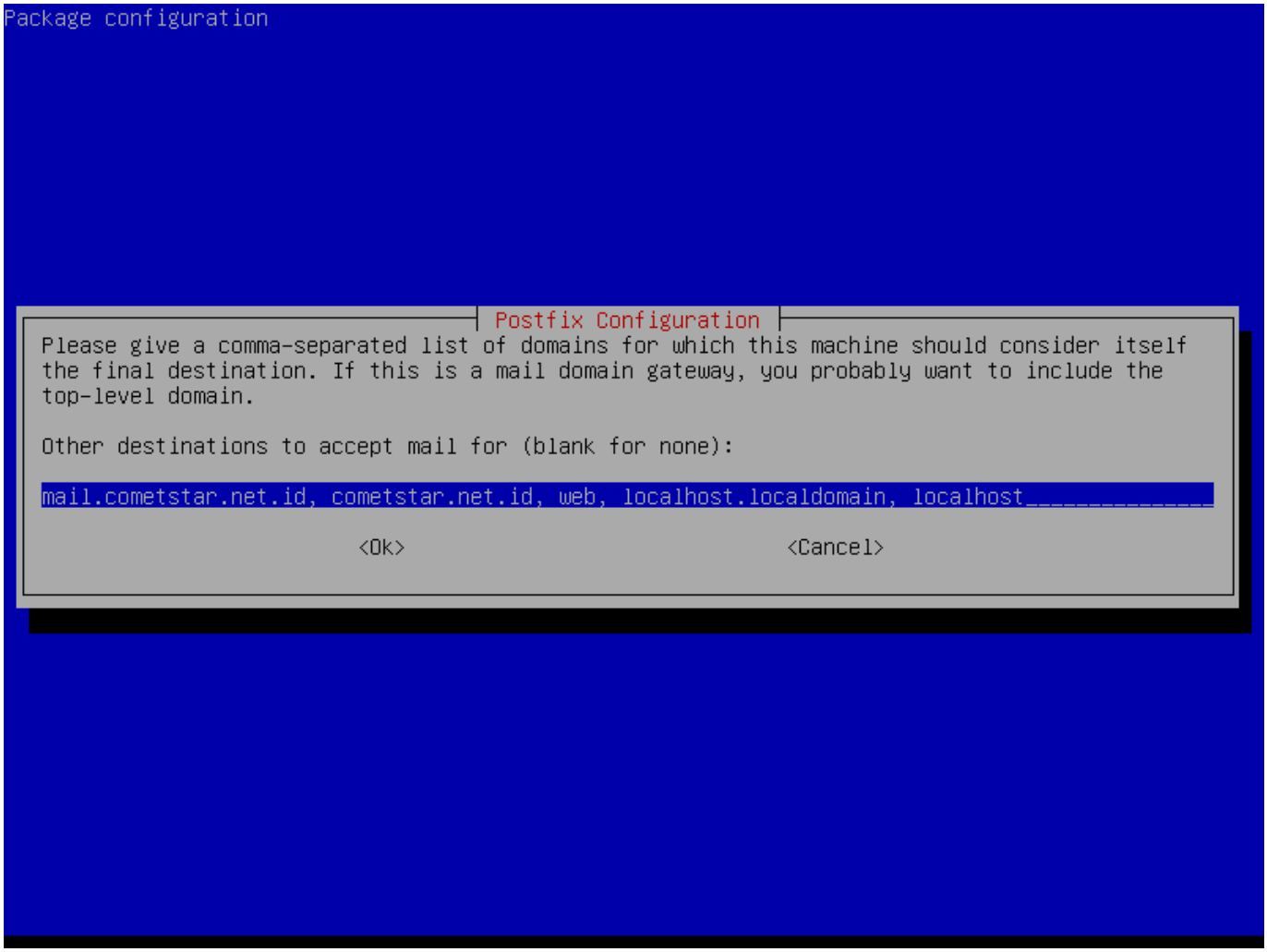
Install postfix, dovecot on web

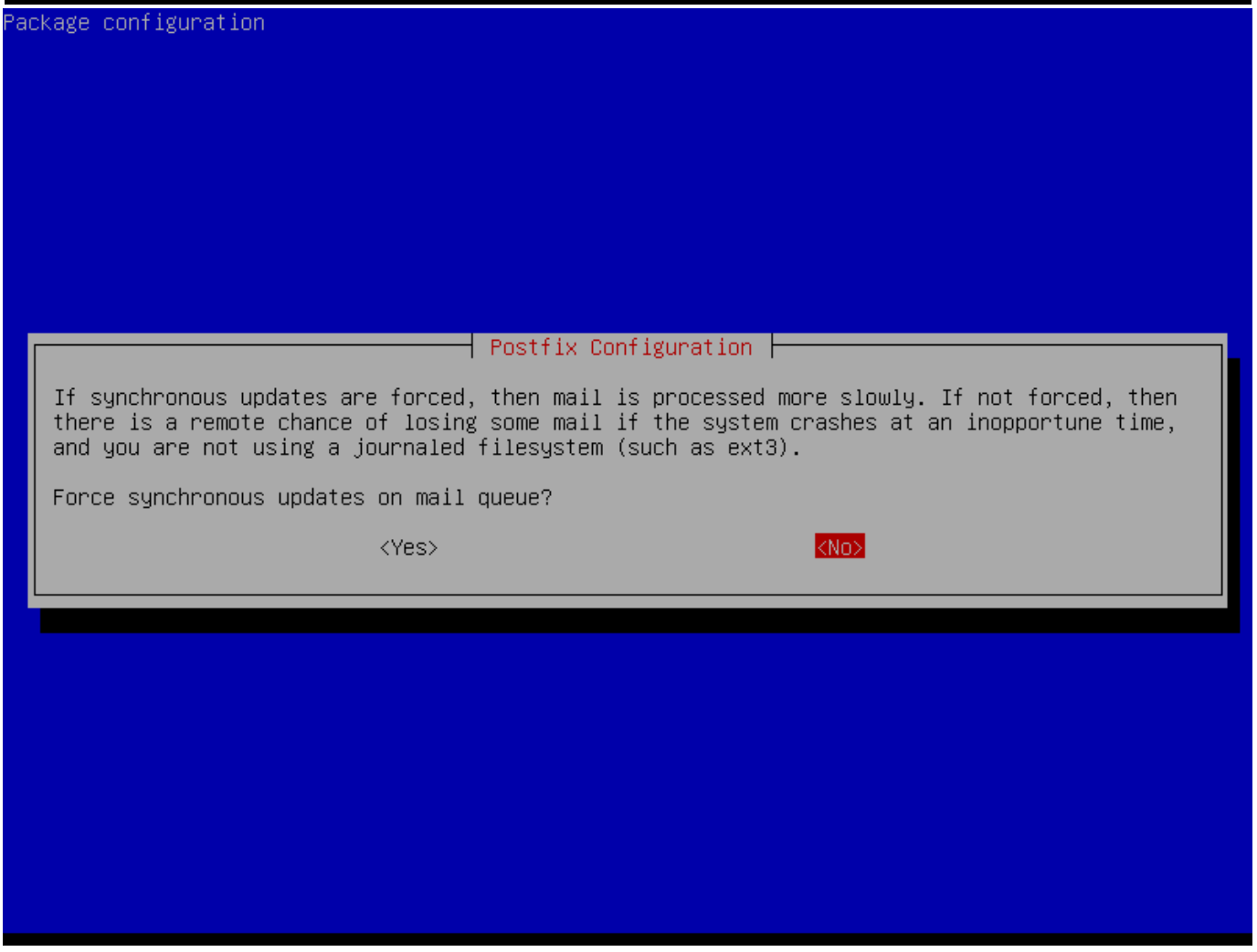
```
root@web:~# apt install postfix dovecot-imapd dovecot-pop3d
root@web:~# dpkg-reconfigure postfix
```

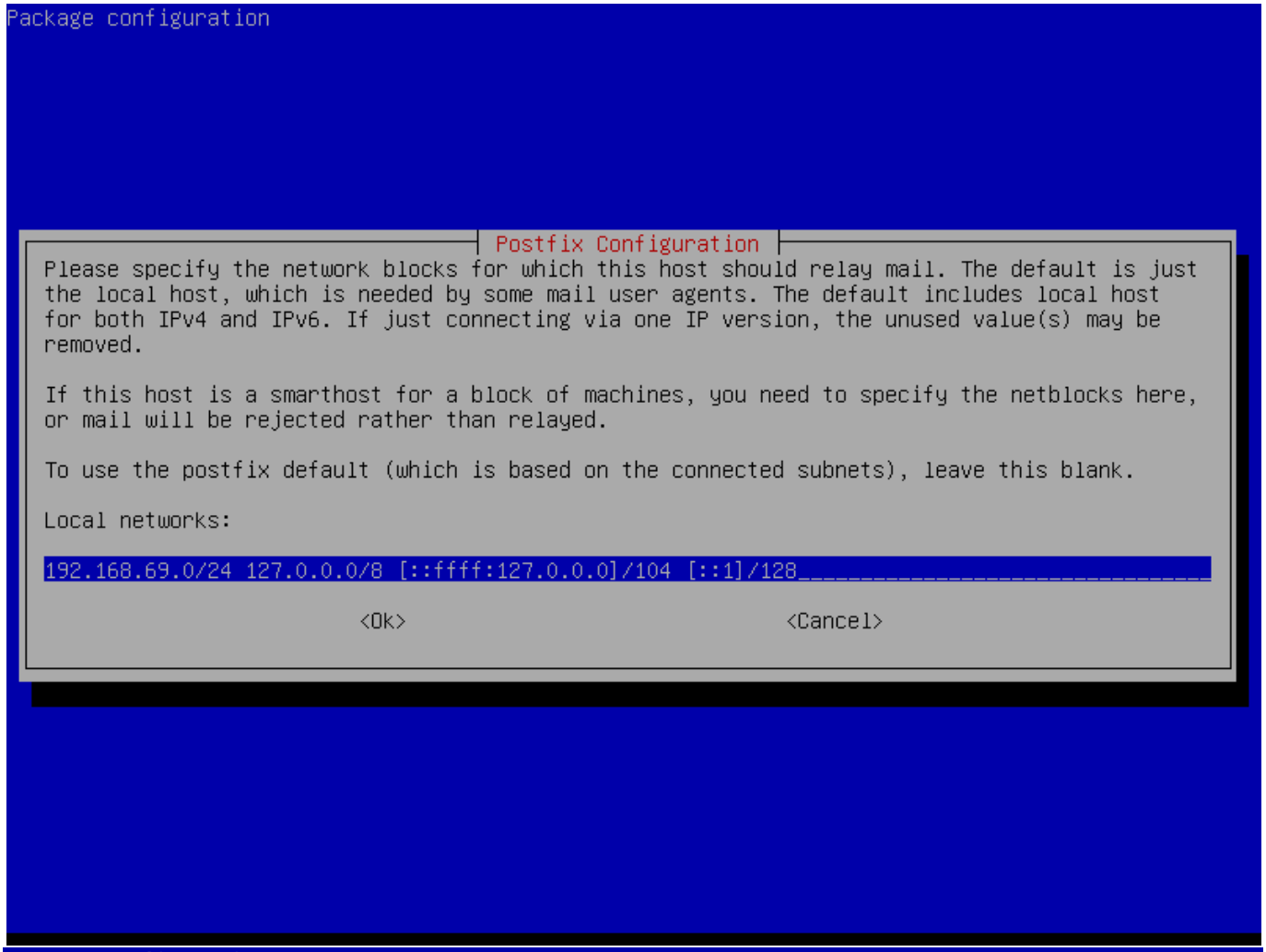


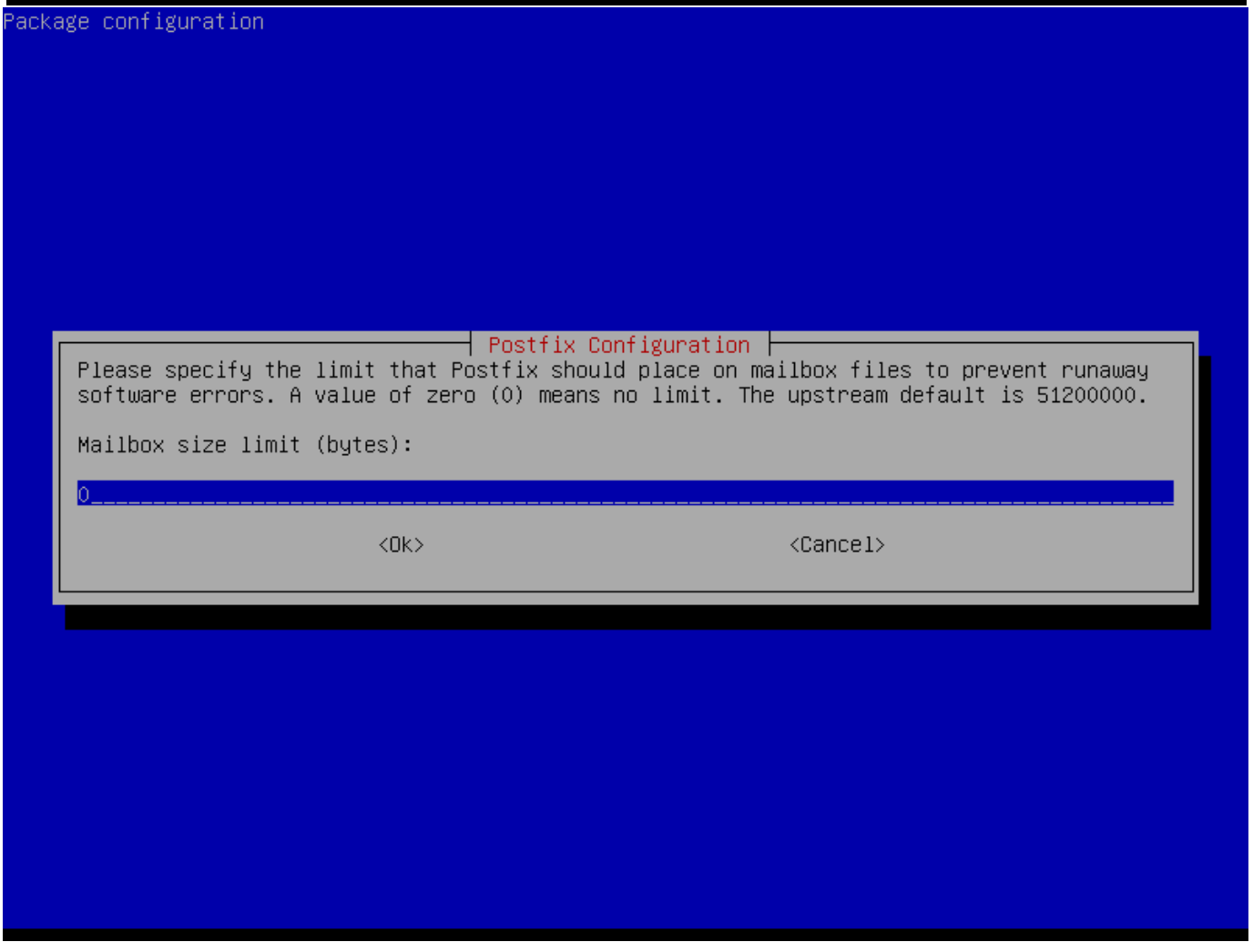

Package configuration
Postfix Configuration
The "mail name" is the domain name used to "qualify" _ALL_ mail addresses without a domain name. This includes mail to and from <root>: please do not make your machine send out mail from root@example.org unless root@example.org has told you to.
This name will also be used by other programs. It should be the single, fully qualified domain name (FQDN).
Thus, if a mail address on the local host is foo@example.org, the correct value for this option would be example.org.
System mail name:
cometstar.net.id
<Ok>
<Cancel>

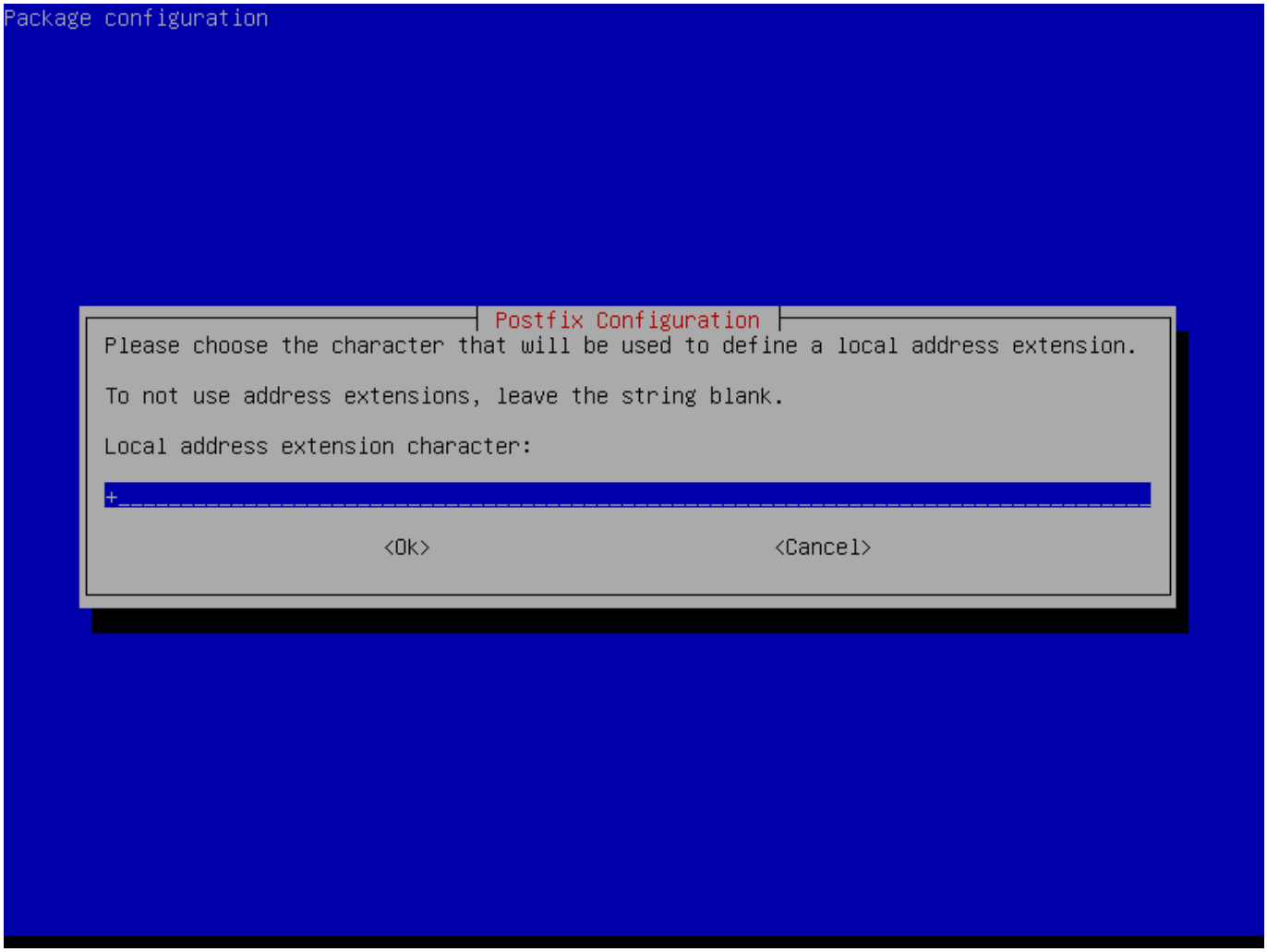

Package configuration
Postfix Configuration
Mail for the 'postmaster', 'root', and other system accounts needs to be redirected to the user account of the actual system administrator.
If this value is left empty, such mail will be saved in /var/mail/nobody, which is not recommended.
Mail is not delivered to external delivery agents as root.
If you already have a /etc/aliases file and it does not have an entry for root, then you should add this entry. Leave this blank to not add one.
Root and postmaster mail recipient:
ops
<Ok>
<Cancel>

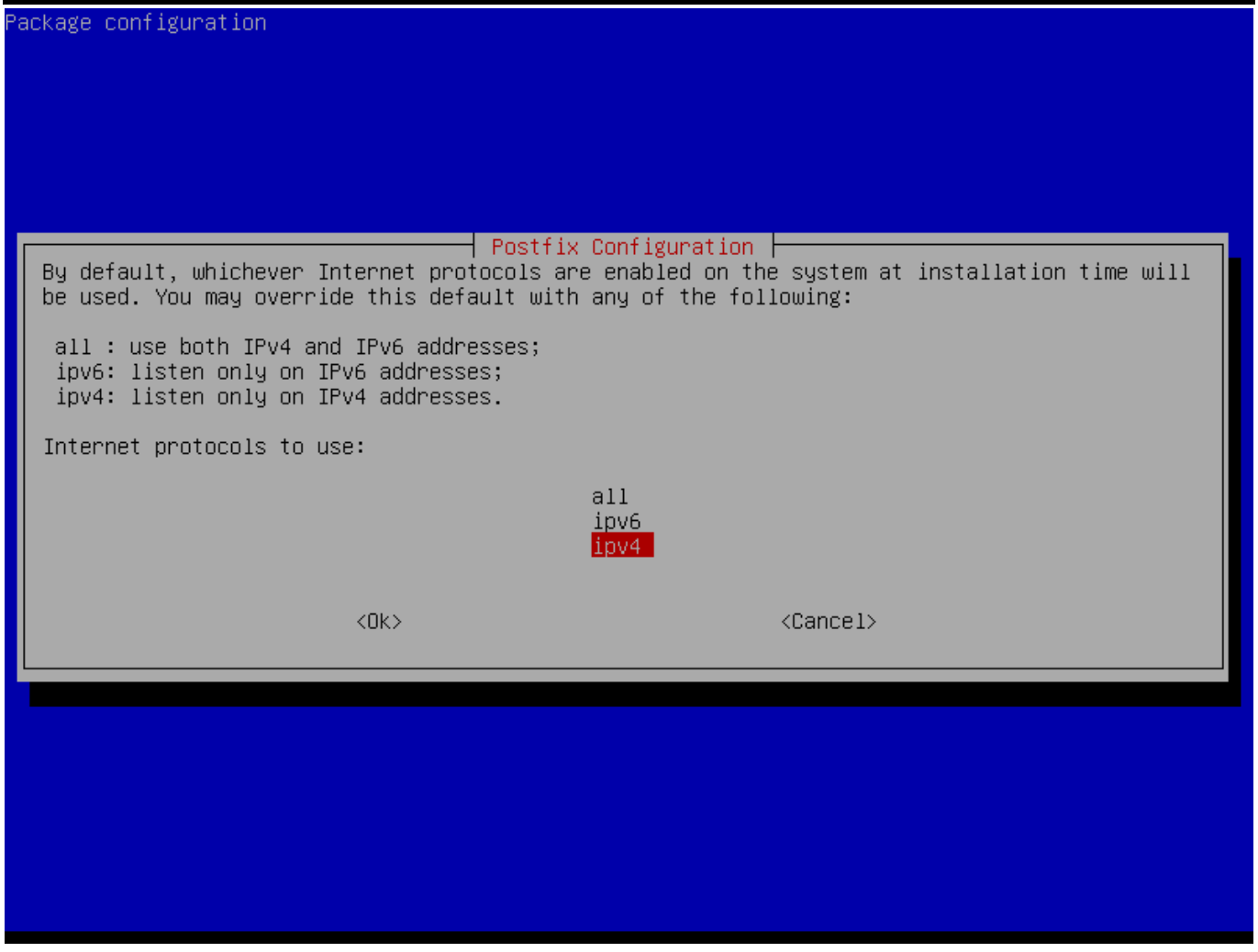

Package configuration
Postfix Configuration
Please give a comma-separated list of domains for which this machine should consider itself the final destination. If this is a mail domain gateway, you probably want to include the top-level domain.
Other destinations to accept mail for (blank for none):
mail.cometstar.net.id, cometstar.net.id, web, localhost.localdomain, localhost
<Ok>
<Cancel>


Package configuration
Postfix Configuration
If synchronous updates are forced, then mail is processed more slowly. If not forced, then there is a remote chance of losing some mail if the system crashes at an inopportune time, and you are not using a journaled filesystem (such as ext3).
Force synchronous updates on mail queue?
<Yes>
<No>


Package configuration
Postfix Configuration
Please specify the network blocks for which this host should relay mail. The default is just the local host, which is needed by some mail user agents. The default includes local host for both IPv4 and IPv6. If just connecting via one IP version, the unused value(s) may be removed.
If this host is a smarthost for a block of machines, you need to specify the netblocks here, or mail will be rejected rather than relayed.
To use the postfix default (which is based on the connected subnets), leave this blank.
Local networks:
192.168.69.0/24 127.0.0.0/8 [::ffff:127.0.0.0]/104 [::1]/128
<Ok>
<Cancel>


Package configuration
Postfix Configuration
Please specify the limit that Postfix should place on mailbox files to prevent runaway software errors. A value of zero (0) means no limit. The upstream default is 51200000.
Mailbox size limit (bytes):
0
<Ok>
<Cancel>


Package configuration
Postfix Configuration
Please choose the character that will be used to define a local address extension.
To not use address extensions, leave the string blank.
Local address extension character:
+
<Ok>
<Cancel>


Package configuration
Postfix Configuration
By default, whichever Internet protocols are enabled on the system at installation time will be used. You may override this default with any of the following:
all : use both IPv4 and IPv6 addresses;
ipv6: listen only on IPv6 addresses;
ipv4: listen only on IPv4 addresses.
Internet protocols to use:
all
ipv6
ipv4
<Ok>
<Cancel>

Make sure Email has either STARTTLS or SSL/TLS authentication enabled and working.

Postfix config /etc/postfix/main.cf

```
home_mailbox = Maildir/
```

Postfix config /etc/postfix/master.cf

```
submission inet n       -       y       -       -       smtpd
#  -o syslog_name=postfix/submission
  -o smtpd_tls_security_level=encrypt
  -o smtpd_sasl_auth_enable=yesWWW index /var/www/html/index.html

---

smtps     inet  n       -       y       -       -       smtpd
#  -o syslog_name=postfix/smtps
  -o smtpd_tls_wrappermode=yes
  -o smtpd_sasl_auth_enable=yes
```

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

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

Dovecot config /etc/dovecot/conf.d/10-ssl.conf

```
ssl_cert = </etc/dovecot/private/dovecot.pem
ssl_key = </etc/dovecot/private/dovecot.key
```

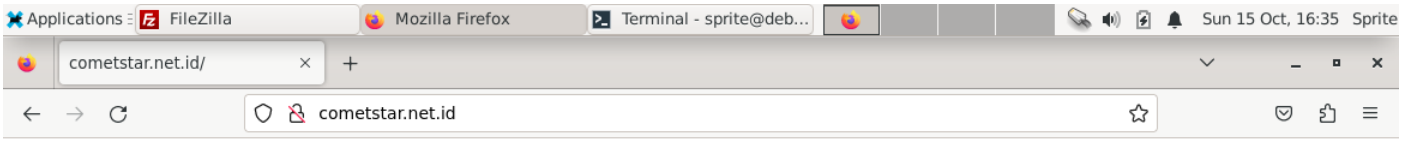
Install web server

```
root@web:~# apt install apache2
```

Web server content

```
# echo “<h1>Welcome to the night sky</h1>” >
/var/www/html/index.html
```

You can check index.html if it contains or if accessed shows “Welcome to the night sky” and check if https is working.



Welcome to the night sky

Install mariadb and roundcube

```
root@web:~# apt install mariadb-server
root@web:~# apt install roundcube
```

/etc/apache2/sites-available/mail.conf

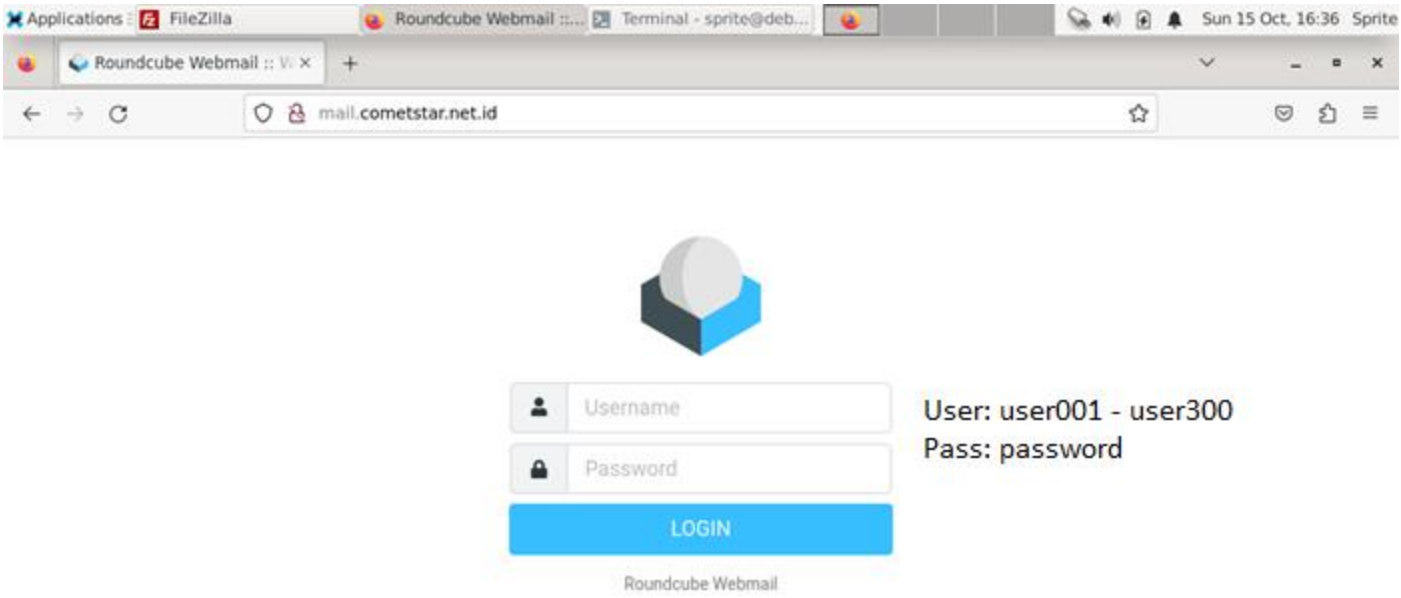
```
ServerName mail.cometstar.net.id

ServerAdmin webmaster@cometstar.net.id
DocumentRoot /var/lib/roundcube/public_html
```

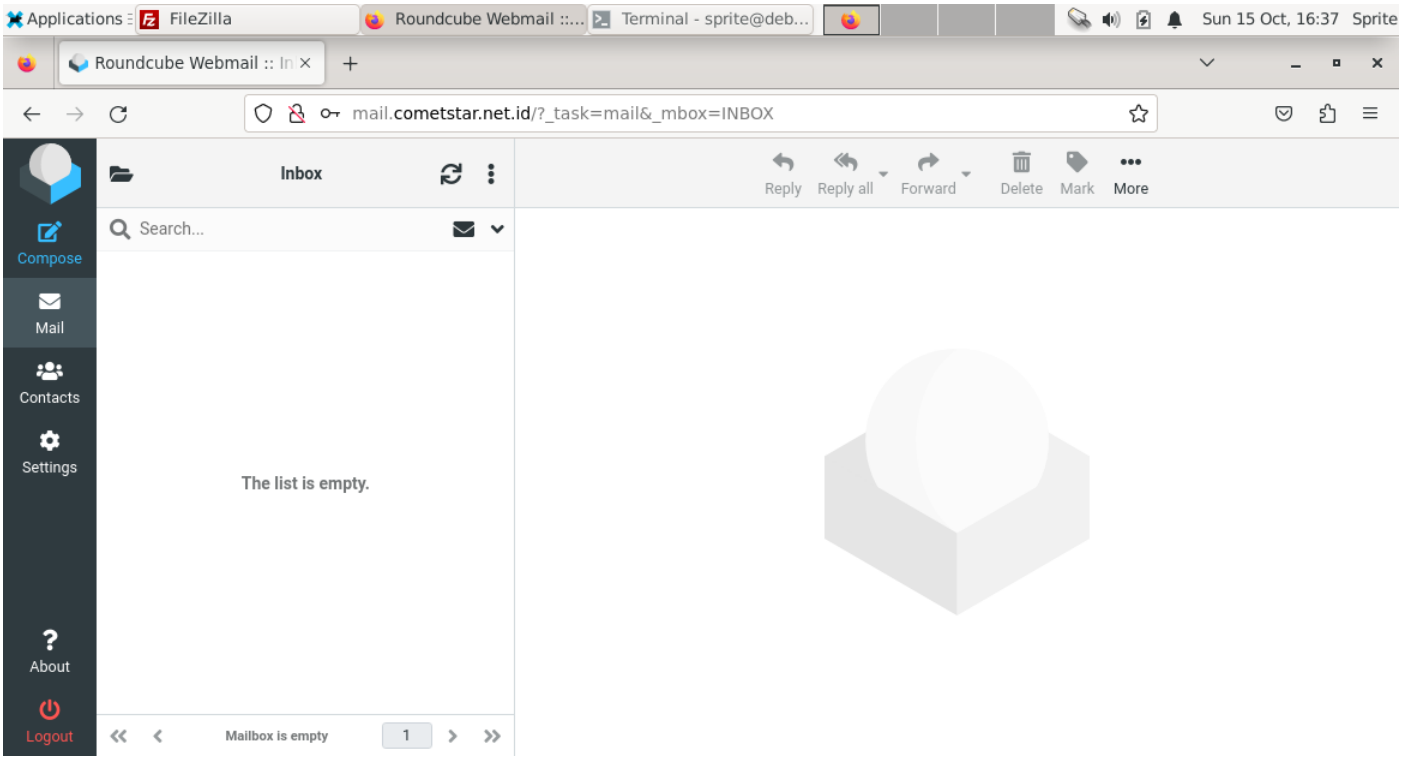
Install mariadb and roundcube

```
root@web:~# a2ensite mail
```

/etc/roundcube/config.inc.php

```
$config['default_host'] = 'mail.cometstar.net.id';
$config['smtp_server'] = 'mail.cometstar.net.id';
$config['smtp_port'] = 25;
$config['smtp_user'] = '';
$config['smtp_pass'] = '';
```





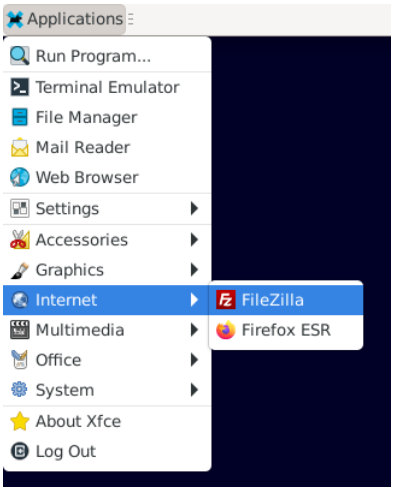
ProFTPD is recommended, but if user has already configured vsftpd/pureftpd or similar software skip to testing.

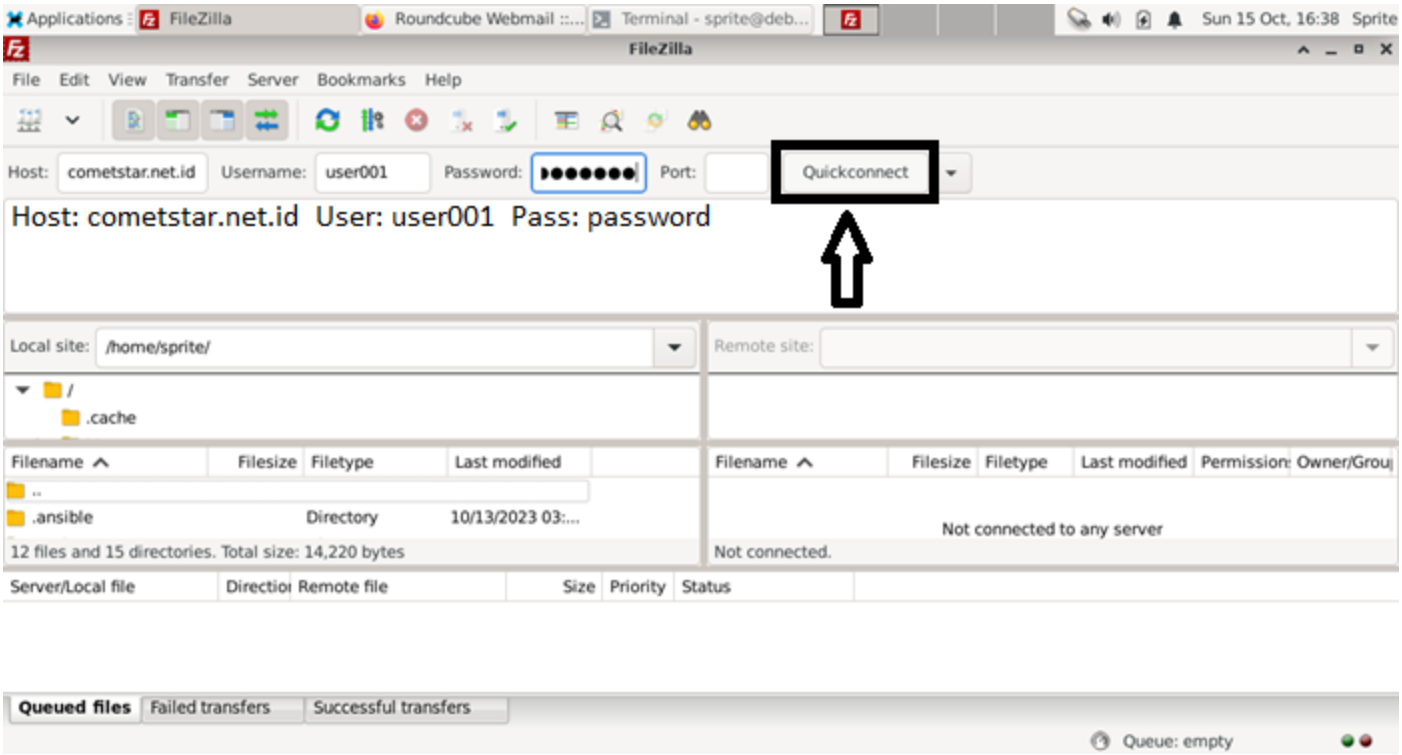
`/etc/proftpd/proftpd.conf`

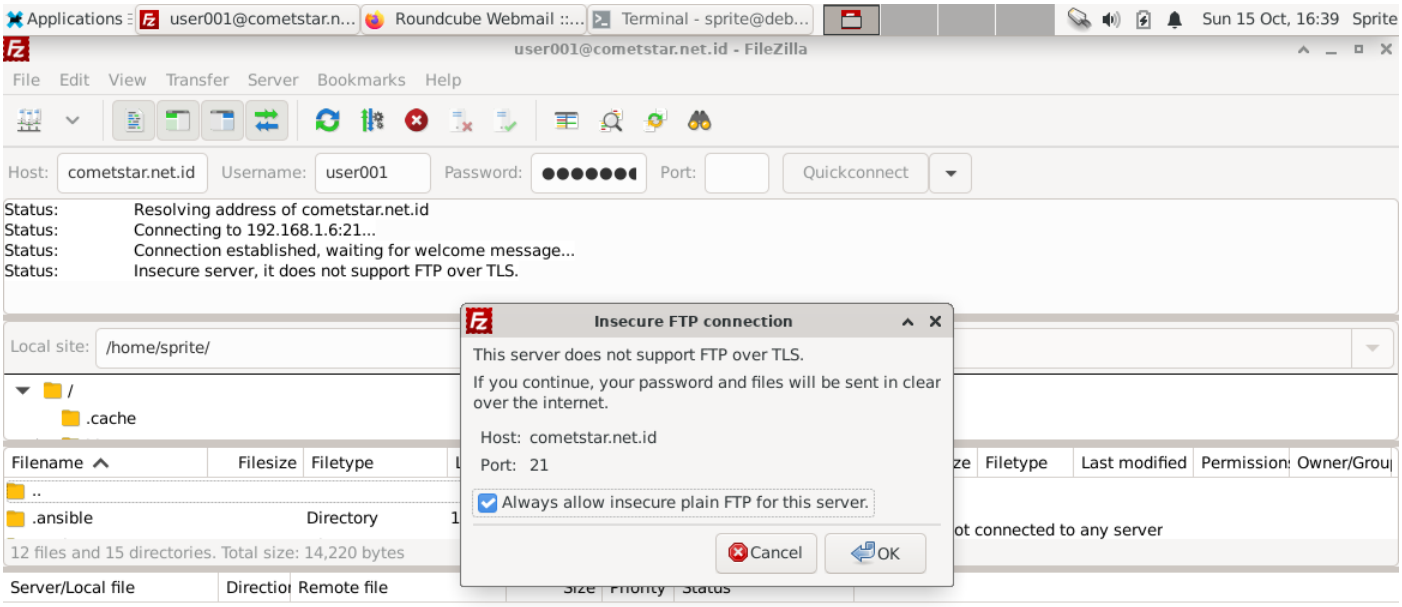
```
DefaultRoot ~
```

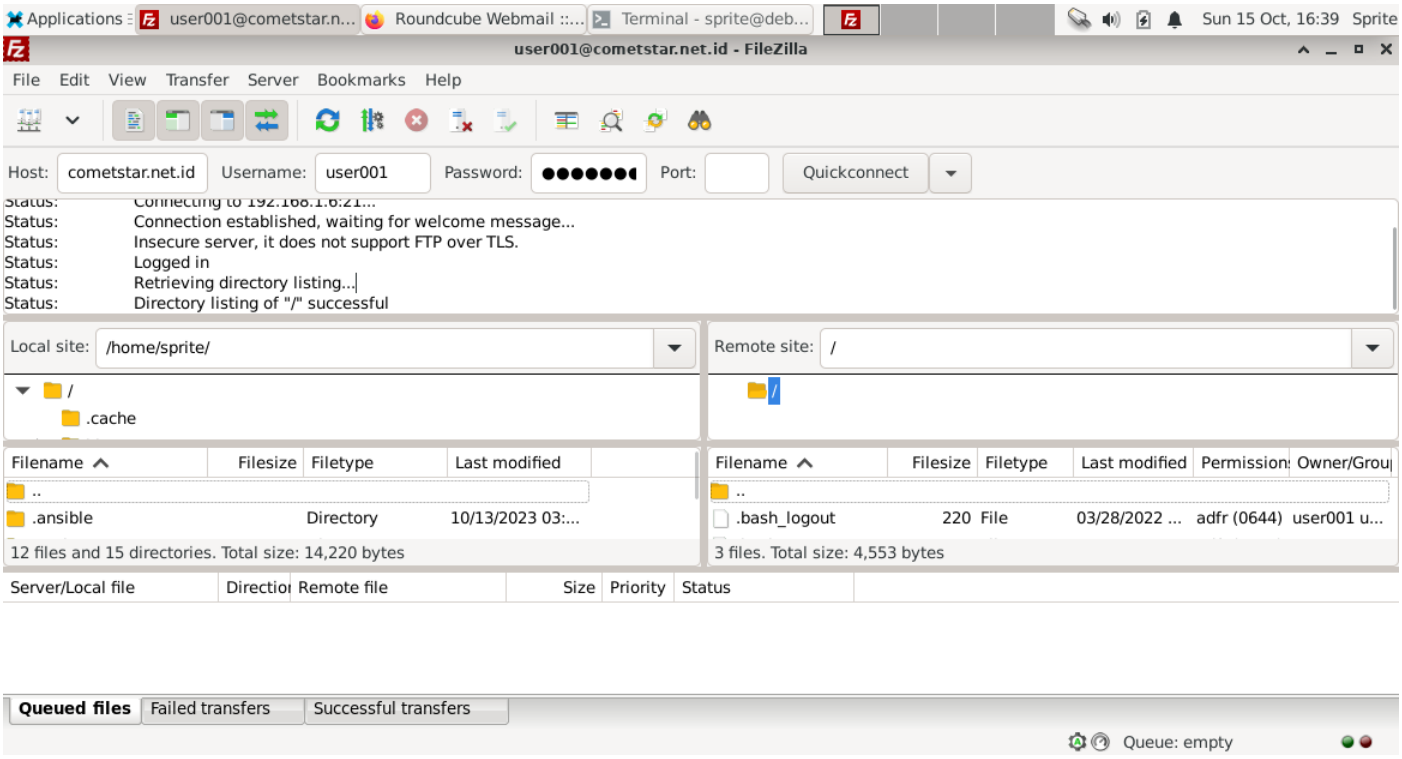
Make sure FTP can login using users created by ansible and read/write into the nested directory. You can use FileZilla program on Operator.

```
ops@operator:~$ sudo apt install filezilla
```


Applications
Run Program...
Terminal Emulator
File Manager
Mail Reader
Web Browser
Settings
Accessories
Graphics
Internet
Multimedia
Office
System
About Xfce
Log Out
FileZilla
Firefox ESR


Applications
FileZilla
Roundcube Webmail ::...
Terminal - sprite@deb...
Sun 15 Oct, 16:38
Sprite
FileZilla
File Edit View Transfer Server Bookmarks Help
Host: cometstar.net.id
Username: user001
Password:
Port:
Quickconnect
Host: cometstar.net.id User: user001 Pass: password
Local site: /home/sprite/
Remote site:
/
.cache
Filename
Filesize
Filetype
Last modified
..
.ansible
Directory
10/13/2023 03:...
12 files and 15 directories. Total size: 14,220 bytes
Filename
Filesize
Filetype
Last modified
Permission
Owner/Grou
Not connected to any server
Not connected.
Server/Local file
Direction
Remote file
Size
Priority
Status
Queued files
Failed transfers
Successful transfers
Queue: empty


Applications
user001@cometstar.n...
Roundcube Webmail ::...
Terminal - sprite@deb...
Sun 15 Oct, 16:39
Sprite
user001@cometstar.net.id - FileZilla
File Edit View Transfer Server Bookmarks Help
Host: cometstar.net.id
Username: user001
Password:
Port:
Quickconnect
Status: Resolving address of cometstar.net.id
Status: Connecting to 192.168.1.6:21...
Status: Connection established, waiting for welcome message...
Status: Insecure server, it does not support FTP over TLS.
Insecure FTP connection
This server does not support FTP over TLS.
If you continue, your password and files will be sent in clear over the internet.
Host: cometstar.net.id
Port: 21
Always allow insecure plain FTP for this server.
Cancel
OK
Local site: /home/sprite/
/
.cache
Filename
Filesize
Filetype
Last modified
Permissions
Owner/Grou
..
.ansible
Directory
ot connected to any server
12 files and 15 directories. Total size: 14,220 bytes
Server/Local file
Direction
Remote file
Queued files
Failed transfers
Successful transfers
Queue: empty


Applications
user001@cometstar.n...
Roundcube Webmail ::...
Terminal - sprite@deb...
Sun 15 Oct, 16:39
Sprite
user001@cometstar.net.id - FileZilla
File Edit View Transfer Server Bookmarks Help
Host: cometstar.net.id
Username: user001
Password:
Port:
Quickconnect
Status: Connecting to 192.168.1.6:21...
Status: Connection established, waiting for welcome message...
Status: Insecure server, it does not support FTP over TLS.
Status: Logged in
Status: Retrieving directory listing...
Status: Directory listing of "/" successful
Local site: /home/sprite/
Remote site: /
/
.cache
Filename
Filesize
Filetype
Last modified
Permissions
Owner/Grou
..
.ansible
Directory
10/13/2023 03:...
.bash_logout
220
File
03/28/2022 ...
adfr (0644)
user001 u...
12 files and 15 directories. Total size: 14,220 bytes
3 files. Total size: 4,553 bytes
Server/Local file
Direction
Remote file
Size
Priority
Status
Queued files
Failed transfers
Successful transfers
Queue: empty