



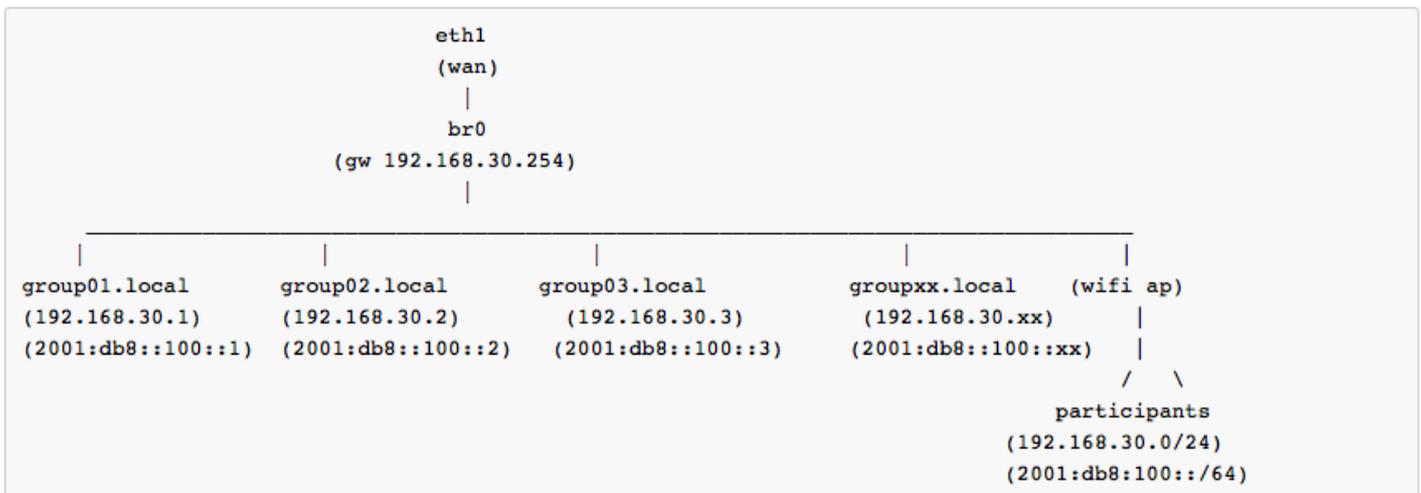
Module: Deploy Mail server

Objective: As part of this hands-on module, you will be installing and configuring POSTFIX mail server.

Prerequisites: Knowledge of IPv6, DNS, reverse lookup and SMTP concepts.

Topology

The following will be the topology used for this lab. Note that the IP addresses are examples only. When working on the lab, use the actual IP addresses as indicated by the instructors. For the purpose of this guide, the IP address of 192.168.30.X or 2001:db8:100::X will refer to your Virtual Machine (VM).



Lab Notes

- Confirm interface name:
 - On the VM, check the IP configuration to see the interface Name

```
ifconfig
OR
ip route show | grep " src " | cut -d " " -f 3,12
```

- In this guide the interface name is `eth0`. Depending on the version of Ubuntu the interface name may be `enp0s3` or something different. Where `eth0` is used in this guide replace it with your interface name.

- Virtual Machine details
 - Ubuntu 16.04 LTS/LXC
 - Hostname = groupXX.apnictraining.net
 - Domain name = apnictraining.net
 - IPv4 Address = 192.168.30.xx
 - IPv6 Address = 2001:db8:100::xx
 - xx = group ID as allocated by the instructor

NOTE: The screenshots show an IPv6 prefix `2001:db8:1:::`, this is for demonstration purposes only. You should use the IPv6 prefix of `2001:db8:100:::`

Lab Exercise - POSTFIX Installation

Part 1. Confirm DNS settings

1. Confirm MX (mail server) record for `groupXX.net` and try to resolve to an IPv6 address

```
dig -t MX @192.168.30.XX groupXX.net
ping6 mail.groupXX.net
```

```

apnic@group29:~$ clear
apnic@group29:~$ sudo named -c /var/named/named.conf
apnic@group29:~$ dig -t MX @192.168.30.29 group29.net

; <<>> DiG 9.10.3-P4-Ubuntu <<>> -t MX @192.168.30.29 group29.net
; (1 server found)
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 65143
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 1, ADDITIONAL: 5

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 4096
;; QUESTION SECTION:
;group29.net.                IN      MX

;; ANSWER SECTION:
group29.net.                 300     IN      MX      10 mail.group29.net.

;; AUTHORITY SECTION:
group29.net.                 300     IN      NS      ns.group29.net.

;; ADDITIONAL SECTION:
mail.group29.net.           300     IN      A       192.168.30.29
mail.group29.net.           300     IN      AAAA    2001:db8:1::29
ns.group29.net.             300     IN      A       192.168.30.29
ns.group29.net.             300     IN      AAAA    2001:db8:1::29

```

Part 2. Installation of POSTFIX

1. To install POSTFIX via a package manager type the following command:

```

sudo apt-get update
sudo DEBIAN_PRIORITY=low apt-get install postfix

```

This will start the Package Configuration for POSTFIX. Press enter for the first screen.

Package configuration

Postfix Configuration

Please select the mail server configuration type that best meets your needs.

No configuration:

Should be chosen to leave the current configuration unchanged.

Internet site:

Mail is sent and received directly using SMTP.

Internet with smarthost:

Mail is received directly using SMTP or by running a utility such as fetchmail. Outgoing mail is sent using a smarthost.

Satellite system:

All mail is sent to another machine, called a 'smarthost', for delivery.

Local only:

<Ok>

Select option and press enter

Postfix Configuration

General type of mail configuration:

No configuration

Internet Site

Internet with smarthost

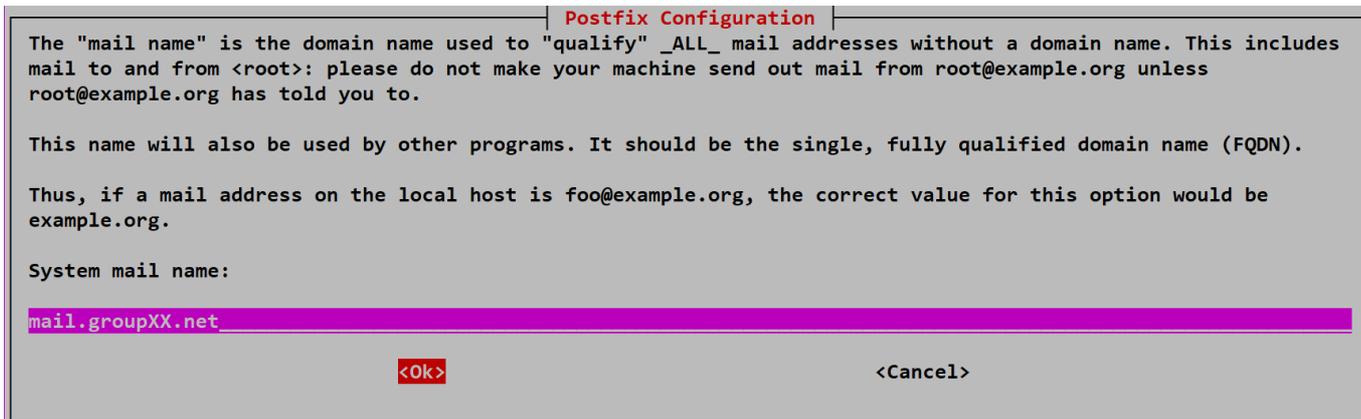
Satellite system

Local only

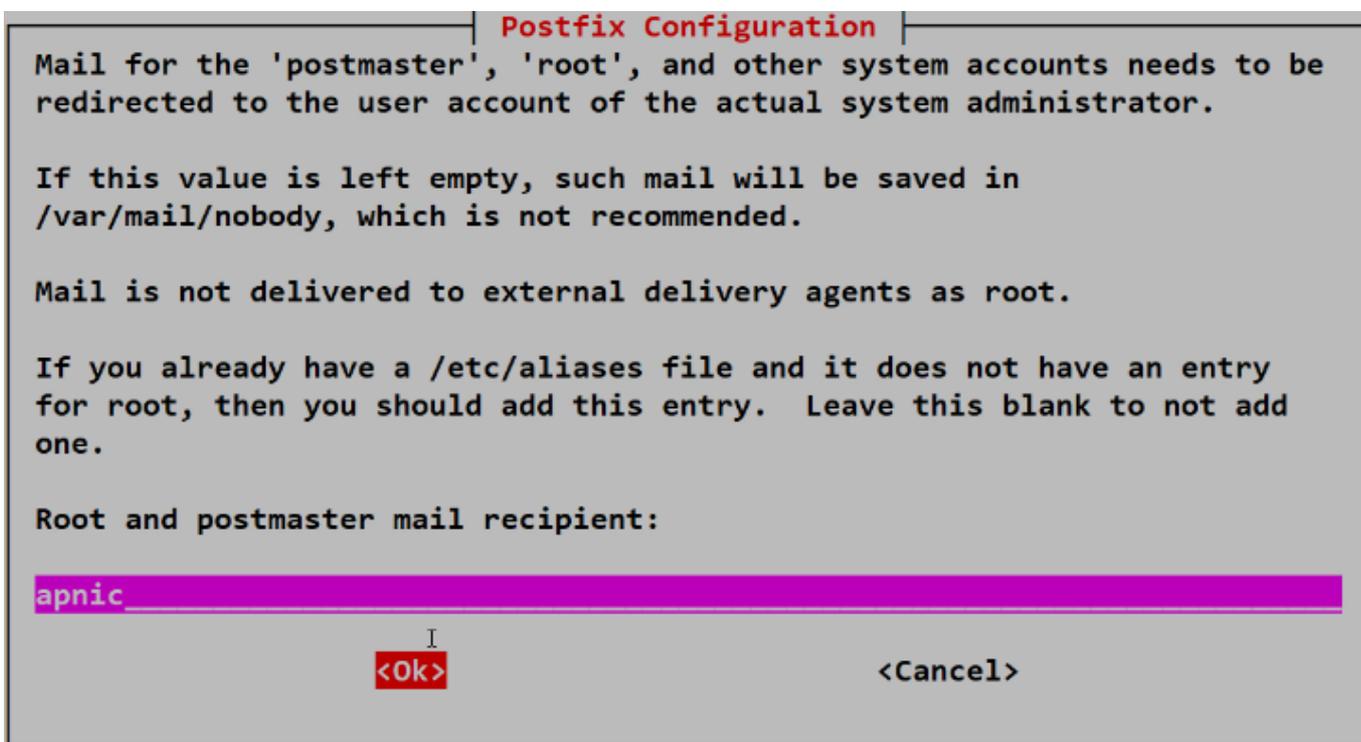
<OK>

<Cancel>

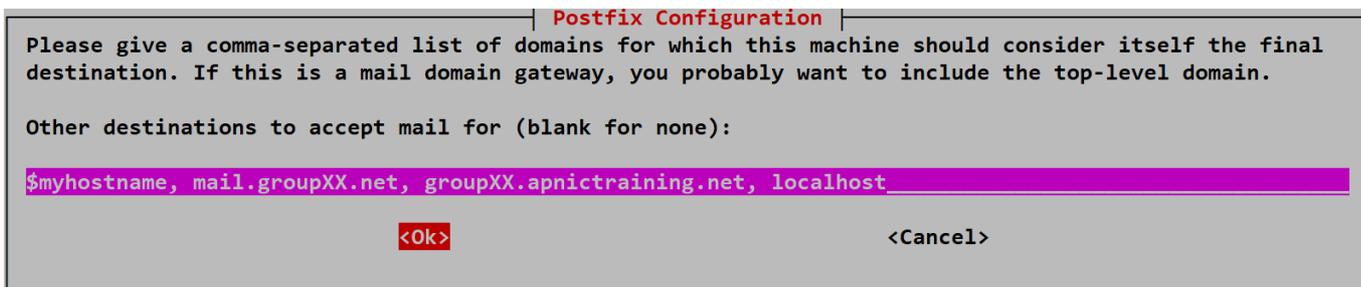
Type in the mail server's Fully Qualified Domain Name (FQDN) and press enter.



Type in the account to be used for the alias emails for postmaster and root. In this example `apnic` will be used. Press enter to continue to the next screen.



Confirm all the Domain Names to be used for mail delivery. Make sure `mail.groupXX.net` is listed and press enter.



Select `No` and press enter.

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>

[Optional] Add the network blocks to be used for mail delivery. If you want to allow email delivery for all the lab servers then use a `/24` for IPv4 and a `/64` for IPv6.

```
192.168.30.0/24
2001:db8:100::/64
```

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:

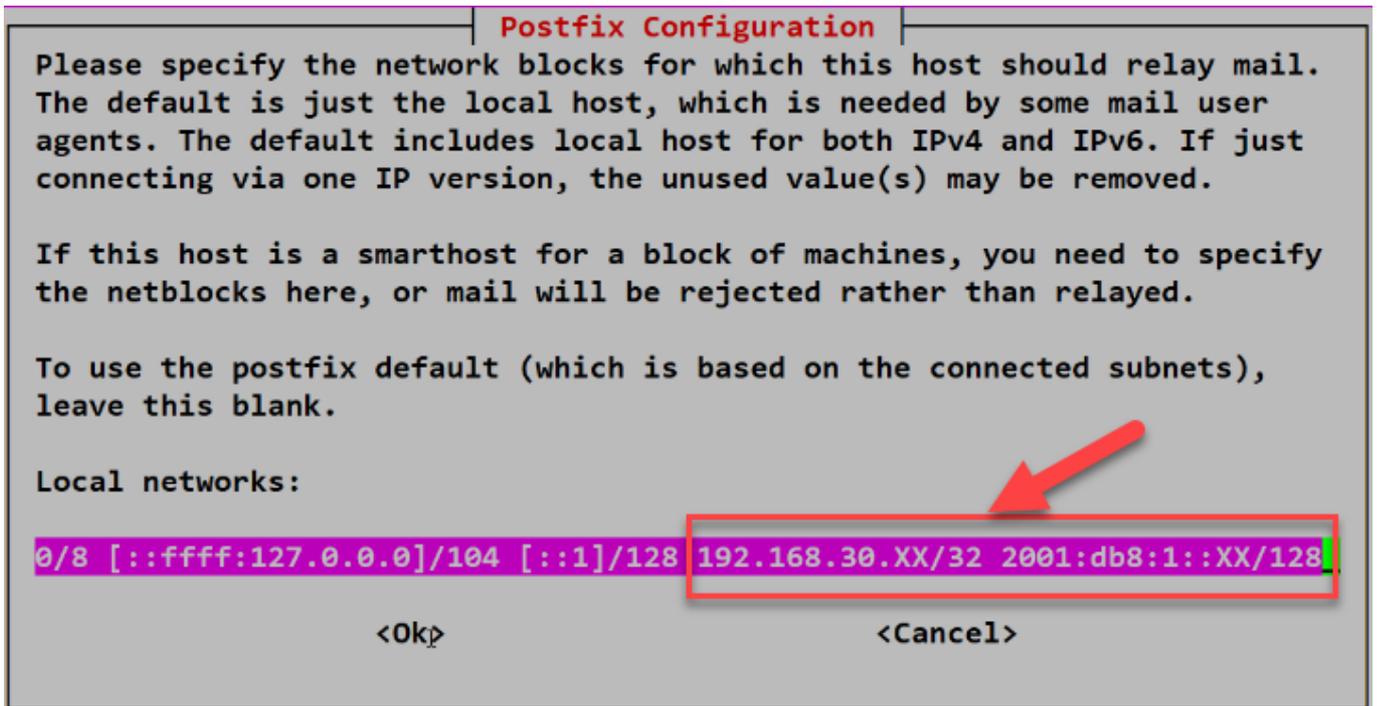
```
.0/8 [::ffff:127.0.0.0]/104 [::1]/128 192.168.30.XX/24 2001:db8:1::XX/64
```

<Ok>

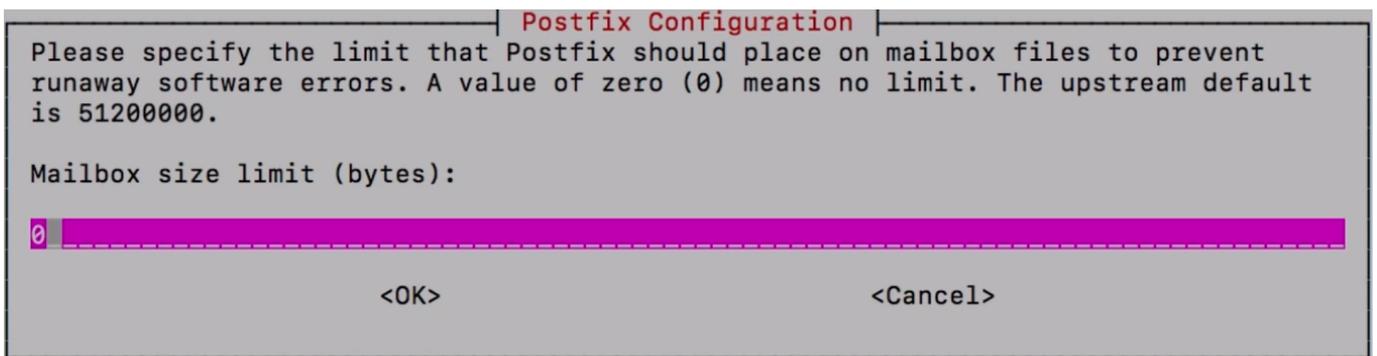
<Cancel>

For the network blocks to be used for mail delivery. We will restrict it to our own mail server by adding the following blocks and press enter to continue.

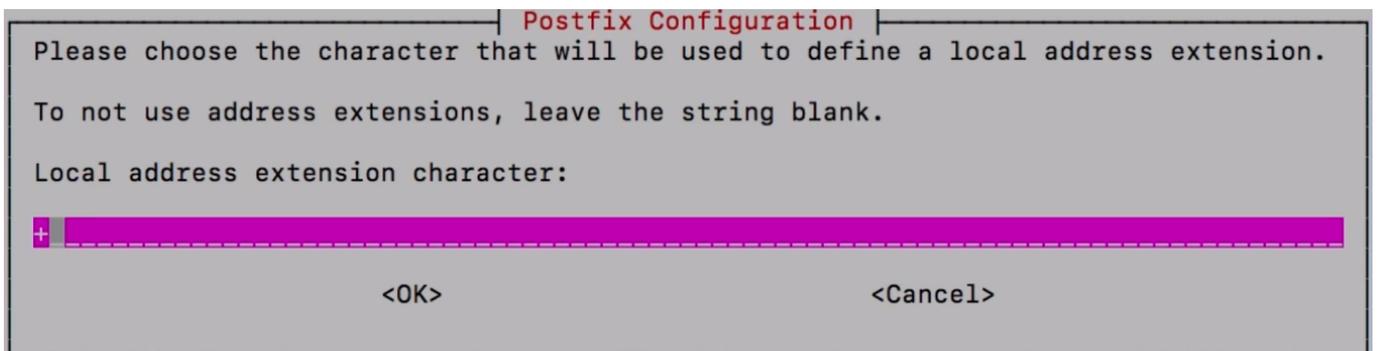
```
192.168.30.XX/32
2001:db8:100::XX/128
```



Press enter to continue.



Press enter to continue.



Select `all` and press enter to continue.

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>

The POSTFIX installation will then complete.

```
insserv: can not symlink(../init.d/rc.local, ../rc5.d/S05rc.local): File exists
insserv: can not symlink(../init.d/cron, ../rc5.d/S04cron): File exists
insserv: can not symlink(../init.d/umountfs, ../rc6.d/K07umountfs): File exists
insserv: can not symlink(../init.d/umountnfs.sh, ../rc6.d/K05umountnfs.sh): File exists
insserv: can not symlink(../init.d/sendsigs, ../rc6.d/K03sendsigs): File exists
insserv: can not symlink(../init.d/rsyslog, ../rc6.d/K04rsyslog): File exists
insserv: can not symlink(../init.d/networking, ../rc6.d/K06networking): File exists
insserv: can not symlink(../init.d/hwclock.sh, ../rc6.d/K05hwclock.sh): File exists
insserv: can not symlink(../init.d/umountroot, ../rc6.d/K08umountroot): File exists
insserv: can not symlink(../init.d/reboot, ../rc6.d/K09reboot): File exists
Adding group `postfix' (GID 113) ...
Done.
Adding system user `postfix' (UID 108) ...
Adding new user `postfix' (UID 108) with group `postfix' ...
Not creating home directory `/var/spool/postfix'.
setting synchronous mail queue updates: false
Creating /etc/postfix/dynamicmaps.cf
Adding group `postdrop' (GID 114) ...
Done.
```

2. The default location of the POSTFIX configuration files are as follows:

```
/etc/postfix/master.cf #Defines daemons and how they are reached
/etc/postfix/main.cf   #site specific information
/var/log/maillog       #Log file for mail related events
```

3. To view a summary of all the changed variables, type the following:

```
postconf -n
```

```
apnic@group29:~$ postconf -n
alias_database = hash:/etc/aliases
alias_maps = hash:/etc/aliases
append_dot_mydomain = no
biff = no
inet_interfaces = all
inet_protocols = all
mailbox_size_limit = 0
mydestination = $myhostname, mail.group29.net, group29.apnictraining.net, localhost
myhostname = group29.apnictraining.net
mynetworks = 127.0.0.0/8 [::ffff:127.0.0.0]/104 [::1]/128 192.168.30.29/32 2001:db8:1::29/128
myorigin = /etc/mailname
readme_directory = no
recipient_delimiter = +
relayhost =
smtp_tls_session_cache_database = btree:${data_directory}/smtp_scache
smtpd_banner = $myhostname ESMTTP $mail_name (Ubuntu)
smtpd_relay_restrictions = permit_mynetworks permit_sasl_authenticated defer_unauth_destination
smtpd_tls_cert_file = /etc/ssl/certs/ssl-cert-snakeoil.pem
smtpd_tls_key_file = /etc/ssl/private/ssl-cert-snakeoil.key
smtpd_tls_session_cache_database = btree:${data_directory}/smtpd_scache
smtpd_use_tls = yes
```

Part 3. Send an Email

1. To install a simple mail client, type the following:

```
sudo apt-get install -y s-nail
```

2. Send a test email:

```
mailx -s 'test message' apnic

This is a test message
.
```

View the mail log to confirm the message was delivered.

```
sudo tail /var/log/mail.log
```

Use `mailx` to view the incoming email.

```
apnic@group29:~$ mailx -s 'test message' apnic ← 1
This is a test message
.
apnic@group29:~$ sudo tail /var/log/mail.log ← 2
Feb 14 11:14:22 group29 postfix/master[913]: daemon started -- version 3.1.0, configuration /etc/postfix
Feb 14 11:15:10 group29 postfix[465]: Postfix is running with backwards-compatible default settings
Feb 14 11:15:10 group29 postfix[465]: See http://www.postfix.org/COMPATIBILITY_README.html for details
Feb 14 11:15:10 group29 postfix[465]: To disable backwards compatibility use "postconf compatibility_level=2" and
"postfix reload"
Feb 14 11:15:10 group29 postfix/master[502]: daemon started -- version 3.1.0, configuration /etc/postfix
Feb 14 11:16:57 group29 postfix/pickup[503]: CDC2AE00A04: uid=1000 from=<apnic>
Feb 14 11:16:57 group29 postfix/cleanup[554]: CDC2AE00A04: message-id=<20190214111657.CDC2AE00A04@group29.apnictraining.net>
Feb 14 11:16:57 group29 postfix/qmgr[504]: CDC2AE00A04: from=<apnic@mail.group29.net>, size=366, nrcpt=1 (queue active)
Feb 14 11:16:57 group29 postfix/local[556]: CDC2AE00A04: to=<apnic@mail.group29.net>, orig_to=<apnic>, relay=local, delay=0.02, delays=0.01/0/0/0, dsn=2.0.0, status=sent (delivered to mailbox)
Feb 14 11:16:57 group29 postfix/qmgr[504]: CDC2AE00A04: removed
apnic@group29:~$ mailx ← 3
s-nail version v14.8.6. Type ? for help.
"/var/mail/apnic": 1 message 1 new
>N 1 apnic@mail.group29 Thu Feb 14 11:16 15/507 test message
? 1
[-- Message 1 -- 15 lines, 507 bytes --]:
From apnic@mail.group29.net Thu Feb 14 11:16:57 2019
Date: Thu, 14 Feb 2019 11:16:57 +0000
To: apnic@mail.group29.net
Subject: test message
Message-Id: <20190214111657.CDC2AE00A04@group29.apnictraining.net>
From: apnic@mail.group29.net

This is a test message
```

Part 4. Set POSTFIX to only listen to IPv6

1. To view a summary of all the changed variables, type the following:

```
postconf -n
```

```
apnic@group29:~$ postconf -n ←
alias_database = hash:/etc/aliases
alias_maps = hash:/etc/aliases
append_dot_mydomain = no
biff = no
inet_interfaces = all
inet_protocols = all
mailbox_size_limit = 0
mydestination = $myhostname, mail.group29.net, group29.apnictraining.net, localhost
myhostname = group29.apnictraining.net
mynetworks = 127.0.0.0/8 [::ffff:127.0.0.0]/104 [::1]/128 192.168.30.29/32 2001:db8:1::29/128
myorigin = /etc/mailname
readme_directory = no
recipient_delimiter = +
relayhost =
smtp_tls_session_cache_database = btree:${data_directory}/smtp_scache
smtpd_banner = $myhostname ESMTPEX $mail_name (Ubuntu)
smtpd_relay_restrictions = permit_mynetworks permit_sasl_authenticated defer_unauth_destination
smtpd_tls_cert_file = /etc/ssl/certs/ssl-cert-snakeoil.pem
smtpd_tls_key_file = /etc/ssl/private/ssl-cert-snakeoil.key
smtpd_tls_session_cache_database = btree:${data_directory}/smtpd_scache
smtpd_use_tls = yes
```

Notice the value for the `inet_protocols` value is set to all.

- To update `inet_protocols` value to listen just for IPv6 protocol, type the following:

```
sudo postconf -e 'inet_protocols = ipv6'
```

Restart the POSTFIX service.

```
sudo systemctl restart postfix.service
```

- View a summary of all the changed variables.

```
postconf -n
```

Part 5. Send an Email via IPv6

- Send a test email:

```
mailx -s 'IPv6 test message' apnic
```

```
Test message using IPv6
```

```
.
```

View the mail log to confirm the message was delivered.

```
sudo tail /var/log/mail.log
```

Use `mailx` to view the incoming email.

```
apnic@group29:~$ mailx -s 'IPv6 test message' apnic
Test message using IPv6
.
apnic@group29:~$ sudo tail /var/log/mail.log
Feb 14 11:21:06 group29 postfix/master[502]: terminating on signal 15
Feb 14 11:21:37 group29 postfix[878]: Postfix is running with backwards-compatible default settings
Feb 14 11:21:37 group29 postfix[878]: See http://www.postfix.org/COMPATIBILITY_README.html for details
Feb 14 11:21:37 group29 postfix[878]: To disable backwards compatibility use "postconf compatibility_level=2" and
"postfix reload"
Feb 14 11:21:37 group29 postfix/master[915]: daemon started -- version 3.1.0, configuration /etc/postfix
Feb 14 11:23:44 group29 postfix/pickup[917]: 2F96EE00A09: uid=1000 from=<apnic>
Feb 14 11:23:44 group29 postfix/cleanup[930]: 2F96EE00A09: message-id=<20190214112344.2F96EE00A09@group29.apnictr
aining.net>
Feb 14 11:23:44 group29 postfix/qmgr[918]: 2F96EE00A09: from=<apnic@mail.group29.net>, size=372, nrcpt=1 (queue a
ctive)
Feb 14 11:23:44 group29 postfix/local[932]: 2F96EE00A09: to=<apnic@mail.group29.net>, orig_to=<apnic>, relay=loca
l, delay=0.02, delays=0.01/0.01/0/0, dsn=2.0.0, status=sent (delivered to mailbox)
Feb 14 11:23:44 group29 postfix/qmgr[918]: 2F96EE00A09: removed
apnic@group29:~$ mailx
s-nail version v14.8.6. Type ? for help.
"/var/mail/apnic": 2 messages 1 new
 0 1 apnic@mail.group29 Thu Feb 14 11:16 16/518 test message
>N 2 apnic@mail.group29 Thu Feb 14 11:23 15/513 IPv6 test message
```

NOTE: This is a very simple lab setup and doesn't cover all the complexities of setting up an IPv6 mail server. It is suggested that you read the following article from RIPE.

<https://labs.ripe.net/Members/mirjam/sending-and-receiving-emails-over-ipv6>