



Postfix

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# Postfix

## ❑ Postfix v2.9.2

- `/usr/ports/mail/postfix`

## ❑ <http://www.postfix.org>

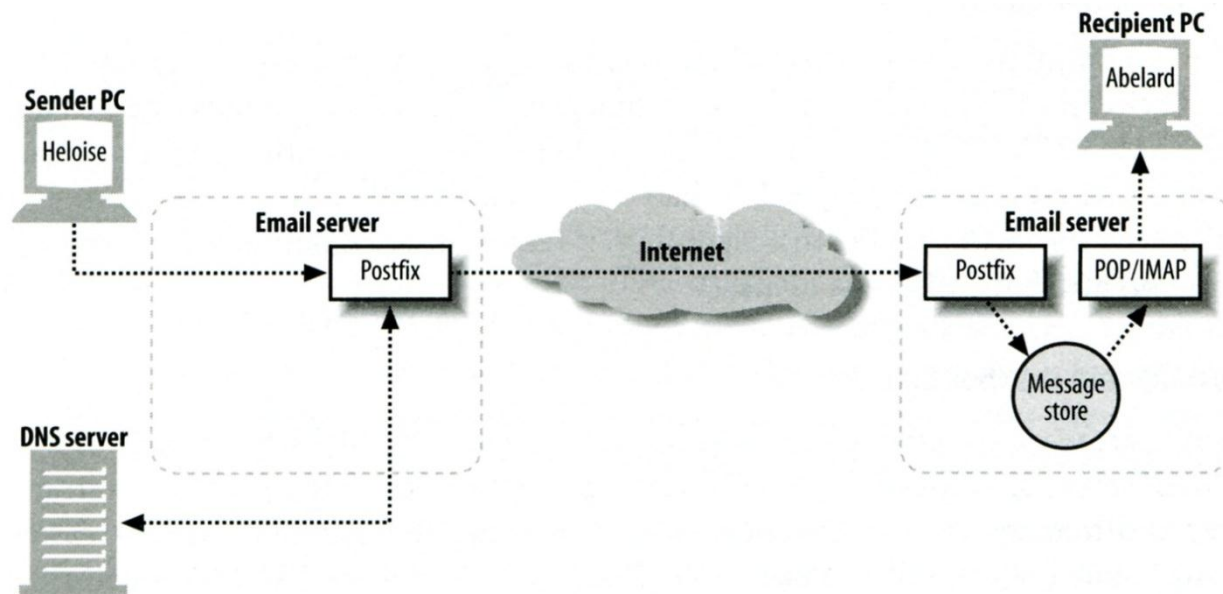
- <http://www.postfix.org/documentation.html>

General configuration	SMTP Relay/access control	Specific environments
<ul style="list-style-type: none"> <li>• <a href="#">Basic configuration</a></li> <li>• <a href="#">Small/home office hints and tips</a></li> <li>• <a href="#">Standard configuration examples</a></li> <li>• <a href="#">Address rewriting</a></li> <li>• <a href="#">Virtual domain hosting</a></li> <li>• <a href="#">SASL Authentication</a></li> <li>• <a href="#">IP Version 6 Support</a></li> <li>• <a href="#">TLS Encryption and authentication</a></li> <li>• <a href="#">Multiple-instance management</a></li> <li>• <a href="#">Installation from source code</a></li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">Relay/access control overview</a></li> <li>• <a href="#">Access policy delegation</a></li> <li>• <a href="#">Address verification</a></li> <li>• <a href="#">Per-client/user/etc. access</a></li> <li>• <a href="#">Zombie blocking with postfixscreen</a></li> <li>• <a href="#">ETRN Support</a></li> <li>• <a href="#">LAN connected via UUCP</a></li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">Linux issues</a></li> <li>• <a href="#">NFS issues</a></li> </ul>
<p><b>Problem solving</b></p> <ul style="list-style-type: none"> <li>• <a href="#">Bottleneck analysis</a></li> <li>• <a href="#">Stress-dependent configuration</a></li> <li>• <a href="#">Performance tuning</a></li> <li>• <a href="#">Debugging strategies</a></li> </ul>	<p><b>Lookup tables (databases)</b></p> <ul style="list-style-type: none"> <li>• <a href="#">Lookup table overview</a></li> <li>• <a href="#">CDB Howto</a></li> <li>• <a href="#">Berkeley DB Howto</a></li> <li>• <a href="#">LDAP Howto</a></li> <li>• <a href="#">Memcache Howto</a></li> <li>• <a href="#">MySQL Howto</a></li> <li>• <a href="#">PCRE Howto</a></li> <li>• <a href="#">PostgreSQL Howto</a></li> <li>• <a href="#">SQLite Howto</a></li> </ul>	<p><b>Other mail delivery agents</b></p> <ul style="list-style-type: none"> <li>• <a href="#">Maildrop</a></li> </ul>
<p><b>Content inspection</b></p> <ul style="list-style-type: none"> <li>• <a href="#">Content inspection overview</a></li> <li>• <a href="#">Stopping backscatter mail</a></li> <li>• <a href="#">Built-in content inspection</a></li> <li>• <a href="#">After-queue content filter</a></li> <li>• <a href="#">Before-queue content filter</a></li> <li>• <a href="#">Before-queue Milter applications</a></li> </ul>	<p><b>Mailing list support</b></p> <ul style="list-style-type: none"> <li>• <a href="#">VERP Support</a></li> </ul>	<p><b>Other topics</b></p> <ul style="list-style-type: none"> <li>• <a href="#">Architecture overview</a></li> <li>• <a href="#">All main.cf parameters</a></li> <li>• <a href="#">All Postfix manual pages</a></li> <li>• <a href="#">Rejecting Unknown Local Recipients</a></li> <li>• <a href="#">Address Classes</a></li> <li>• <a href="#">Connection cache howto</a></li> <li>• <a href="#">Postfix DSN support</a></li> <li>• <a href="#">Guidelines for Package Builders</a></li> <li>• <a href="#">Queue Scheduler</a></li> <li>• <a href="#">XCLIENT Command</a></li> <li>• <a href="#">XFORWARD Command</a></li> <li>• <a href="#">Work-in-progress</a></li> </ul>

# Role of Postfix

## □ MTA that

- Receive and deliver email over the network via SMTP
- Local delivery directly or use other mail delivery agent



- <http://www.postfix.org/OVERVIEW.html>

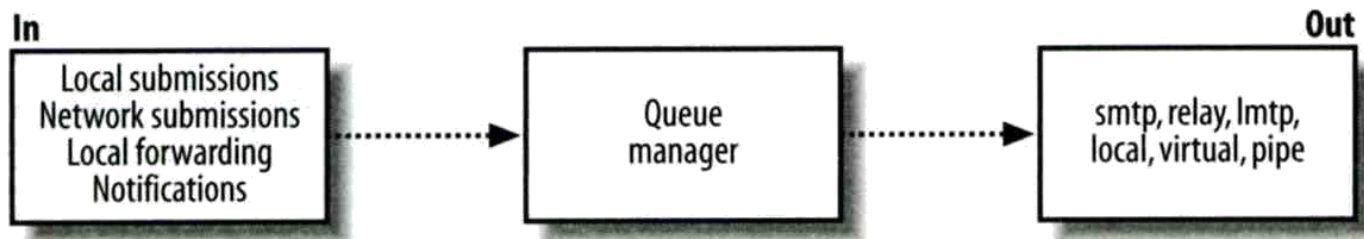
# Postfix Architecture

## ❑ Modular-design MTA

- Not like sendmail of monolithic system
- Decompose into several individual program that each one handle specific task
- The most important daemon: `master` daemon
  - Reside in memory
  - Get configuration information from `master.cf` and `main.cf`
  - Invoke other process to do jobs

## ❑ Major tasks

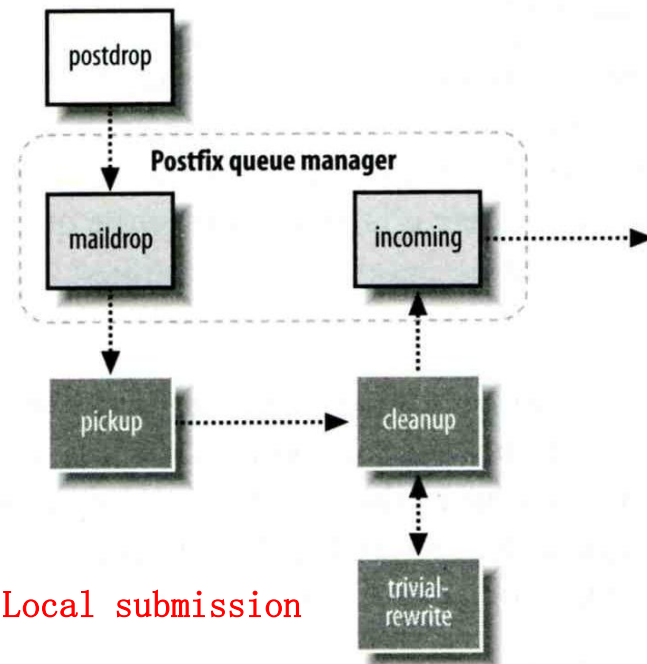
- Receive mail and put in **queue**
- Queue management
- Delivery mail from queue



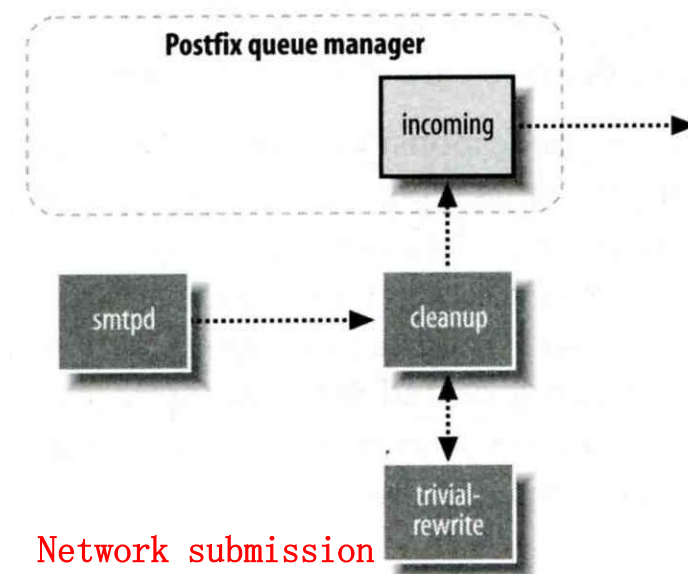
# Postfix Architecture – Message IN

## ❑ Four ways

- Local submission
  - postdrop command
  - maildrop queue
  - pickup daemon
  - cleanup daemon
    - Header validation
    - address translation
  - incoming queue
- Network submission
  - smtpd daemon
- Local forwarding
  - Resubmit for such as .forward
  - Envelope “to” is changed
- Notification



Local submission



Network submission

# Postfix Architecture – Queue

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## ❑ Five different queues

- incoming
  - The first queue that every incoming email will stay
- active
  - Queue manager will move message into active queue whenever there is enough system resources
  - Queue manager then invokes suitable DA to delivery it
- deferred
  - Messages that cannot be delivered are moved here
  - These messages are sent back either with bounce or defer daemons
- corrupt
  - Used to store damaged or unreadable message
- hold

# Postfix Architecture – Message OUT – Part I

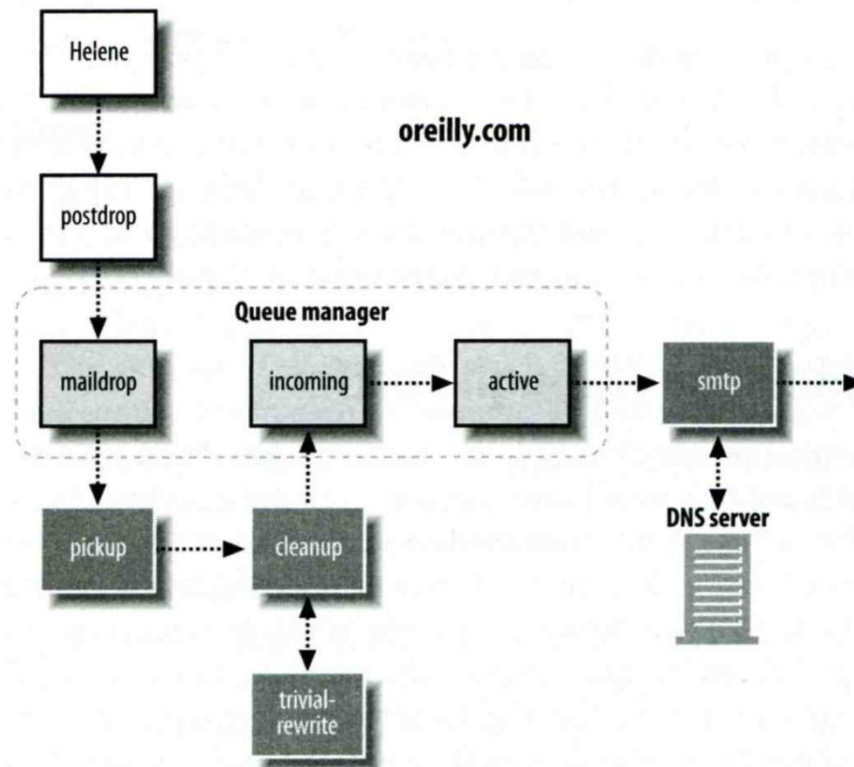
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- ❑ Address classes
  - Used to determine which destinations to accept for delivery
  - How the delivery take place
- ❑ Main address classes
  - Local delivery
    - Domain names in “mydestination” is local delivered
    - Ex:
      - mydestination = nasa.cs.nctu.edu.tw localhost
    - It will check alias and .forward file to do further delivery
  - Relay
    - Transfer mail for others to not your domain
    - It is common for centralize mail architecture to relay trusted domain
  - Deliver mail to other domains for authorized user
    - The queue manager will invoke the smtp DA to deliver this mail
  - Virtual alias
  - Virtual mailbox

# Message Flow in Postfix (1)

## □ Example

- `helene@oreilly.com` → `frank@postfix.org` (`doel@onlamp.com`)
- Phase1:
  - Helene compose mail using her MUA, and then call postfix's `sendmail` command to send it

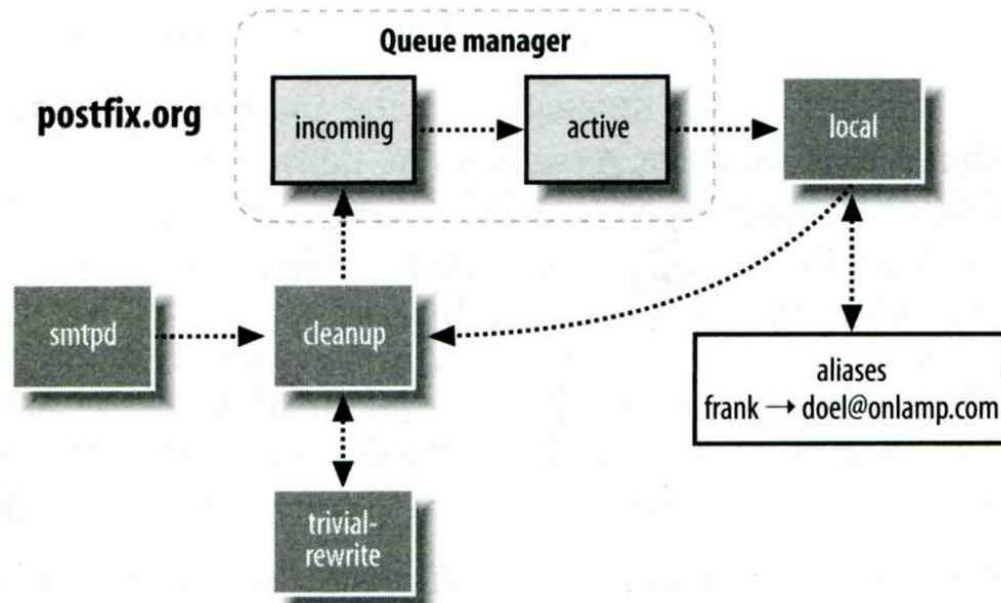




# Message Flow in Postfix (2)

## □ Example

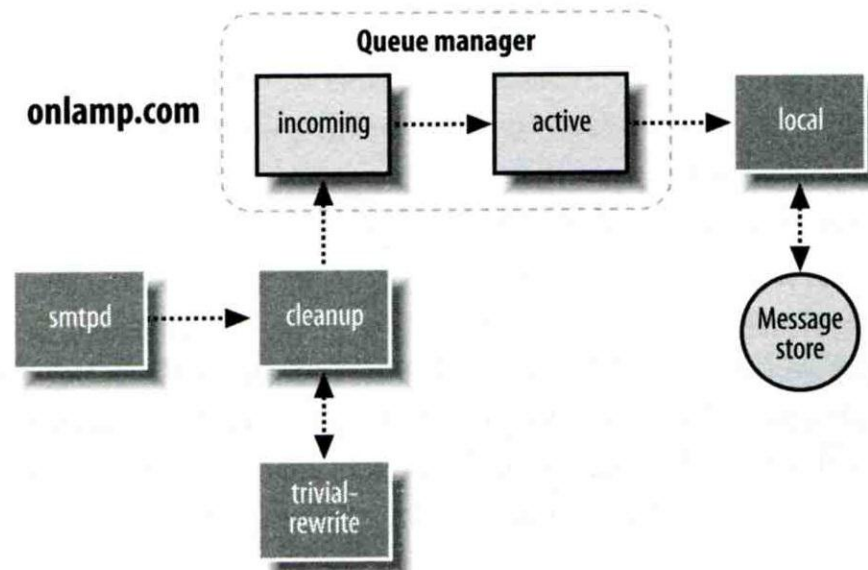
- frank@postfix.org → doel@onlamp.com
- Phase2:
  - The smtpd on postfix.org takes this message and invoke cleanup then put in incoming queue
  - The local DA find that frank is an alias, so it resubmits it through cleanup daemon for further delivery



# Message Flow in Postfix (3)

## □ Example

- frank@postfix.org → doel@onlamp.com
- Phase3
  - The smtpd on onlamp.com takes this message and invoke cleanup then put in incoming queue
  - Local delivery to message store



# Message Store Format

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## ❑ The Mbox format

- Store messages in **single file** for each user
- Each message start with “**From** ” line and continued with message headers and body
- Mbox format has **file-locking** problem

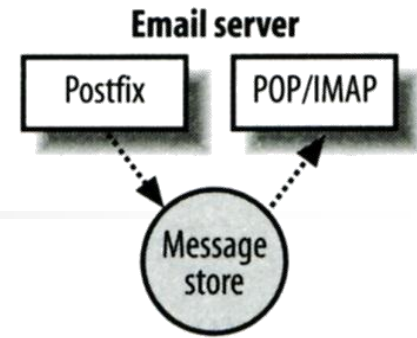
## ❑ The Maildir format

- Use **structure of directories** to store email messages
- Each message is in its owned file
- Three subdirectories - cur, new, and tmp
- Maildir format has **scalability** problem
  - locate and delete mails quickly, but waste amounts of fd, inodes, space
  - Problems of quota and backup

## ❑ Related parameters (in main.cf)

- `mail_spool_directory = /var/mail` (Mbox)
- `mail_spool_directory = /var/mail/` (Maildir)

# Postfix & POP3/IMAP

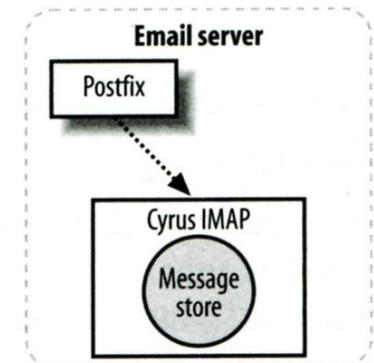


## ❑ POP3 vs. IMAP

- Both are used to retrieve mail from server for remote clients
- POP3 has to download entire message, while IMAP can download headers only
- POP3 can download only single mailbox, while IMAP can let you maintain multiple mailboxes and folders on server

## ❑ Postfix works together with POP3/IMAP

- Postfix and POP3/IMAP must agree on the type of **mailbox format** and style of **locking**
  - Standard message store
  - Non-standard message store (using LMTP)
    - Such as Cyrus IMAP or Dovecot



# Postfix Configuration

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## ❑ Two most important configuration files

- `/usr/local/etc/postfix/main.cf` – `postconf(5)`
  - Core configuration
- `/usr/local/etc/postfix/master.cf` – `master(5)`
  - Which postfix service should invoke which program

## ❑ Edit `main.cf`

- Using text editor
- `postconf`
  - `% postconf [-e] "myhostname = nasa.cs.nctu.edu.tw"`
  - `% postconf -d myhostname` (print default setting)
  - `% postconf myhostname` (print current setting)

## ❑ Reload postfix whenever there is a change

- `# postfix reload`

# Postfix Configuration – Lookup tables (1)

- ❑ Parameters that use external files to store values
  - Such as mydestination, mynetwork, relay\_domains
  - Text-based table is ok, but time-consuming when table is large
- ❑ Lookup tables syntax
  - Key values
- ❑ Database format
  - % postconf -m
    - List all available database format
  - In main.cf
    - default\_database\_type

```
% postconf default_database_type
default_database_type = hash
% postconf -h default_database_type
hash
```

```
% postconf -m
btree
cidr
environ
hash
internal
proxy
regexp
static
tcp
texthash
unix
```

- [http://www.postfix.org/DATABASE\\_README.html](http://www.postfix.org/DATABASE_README.html)

# Postfix Configuration – Lookup tables (2)

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## ❑ Use databased-lookup table in main.cf

- syntax  
parameter = type:name
- Ex:
  - In main.cf  
canonical\_maps = hash:/usr/local/etc/postfix/canonical
  - After execute postmap  
/usr/local/etc/postfix/canonical.db

## ❑ postmap command

- Generate database
  - # postmap hash:/usr/local/etc/postfix/canonical
- Query
  - % postmap -q nctu.edu.tw hash:/usr/local/etc/postfix/canonical

# Postfix Configuration – Lookup tables (3)

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## ❑ Regular expression tables

- More flexible for matching keys in lookup tables
  - Sometimes you cannot list all the possibilities
- Two regular expression libraries used in Postfix
  - POSIX extended regular expression (regexp, default)
  - Perl-Compatible regular expression (PCRE)
- Usage
  - /pattern/ value
  - Do some content checks, such as
    - header\_checks
    - body\_checks
  - Design some features
    - /(\S+)\.(\S+)\@nasa\.cs\.nctu\.edu\.tw/ \$1@nasa.cs.nctu.edu.tw



# Postfix Configuration – Categories

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## ❑ Categories

- Server identities
  - my...
- Mail rewriting
  - for incoming/outgoing mails
- Access control
  - restrictions
- Mail processing
  - filter
- Operation details
  - ...

# Postfix Configuration – MTA Identity

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## ❑ Four related parameters

- myhostname
  - myhostname = nasa.cs.nctu.edu.tw
  - If un-specified, postfix will use 'hostname' command
- mydestination
  - List all the domains that postfix should accept for local delivery
  - mydestination = \$myhostname, localhost.\$mydomain \$mydomain
    - This is the CS situation that mx will route mail to mailgate
  - mydestination = \$myhostname www.\$mydomain, ftp.\$mydomain
- mydomain
  - mydomain = cs.nctu.edu.tw
  - If un-specified, postfix use myhostname minus the first component
- myorigin
  - myorigin = \$mydomain (default is \$myhostname)

# Postfix Configuration – System-wide aliases files

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- ❑ Using aliases in Postfix (**first-matching**)
  - `alias_maps = hash:/etc/aliases`
  - `alias_maps = hash:/etc/aliases, nis:mail.aliases`
  - `alias_database = hash:/etc/aliases`
    - Tell `newaliases` command which aliases file to build
- ❑ To Build alias database file
  - `% postalias /etc/aliases`
- ❑ Alias file format (same as sendmail)
  - RHS can be
    - Email address, filename, |command, :include:
- ❑ Alias restriction
  - `allow_mail_to_commands = alias, forward`
  - `allow_mail_to_files = alias, forward`

# Postfix Configuration – Virtual Alias Maps

## ❑ Virtual Alias Map

- It recursively rewrites **envelope recipient** addresses for all local, all virtual, and all remote mail destinations.
- `virtual_alias_domains = $virtual_alias_maps` (default)
- `virtual_alias_maps = hash:/usr/local/etc/postfix/virtual`

➤ src-address	dst-address
<code>chwong@csie.nctu.edu.tw</code>	<code>@chbsd.cs.nctu.edu.tw</code>
<code>chwong</code>	<code>ch0nsi@gmail.com</code>
<code>@csie.nctu.edu.tw</code>	<code>@cs.nctu.edu.tw</code>
- Applying regular expression
 

➤ <code>virtual_alias_maps = pcre:/usr/local/etc/postfix/virtual</code>	
<code>/^root(\..+)?@(t)?(cs np)?bsd\d*\.\.cs\.nctu\.edu\.tw\$/</code>	<code>bsdta@cs.nctu.edu.tw</code>
<code>/^root(\..+)?@(t)?(cs np)?linux\d*\.\.cs\.nctu\.edu\.tw\$/</code>	<code>linuxta@cs.nctu.edu.tw</code>
<code>/^root(\..+)?@(t)?csmail\w*\d*\.\.cs\.nctu\.edu\.tw\$/</code>	<code>mailta@cs.nctu.edu.tw</code>

# Postfix Configuration – Relay Control (1)

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## ❑ Open relay

- A mail server that permit anyone to relay mails
- By default, postfix is not an open relay

## ❑ A mail server should

- Relay mail for trusted user
  - Such as `liuyh@smtp.cs.nctu.edu.tw`
- Relay mail for trusted domain
  - Ex. `smtp.cs.nctu.edu.tw` trusts `nctu.edu.tw`

# Postfix Configuration – Relay Control (2)

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- ❑ Restricting relay access by `mynetworks_style`
  - `mynetworks_style = subnet`
    - Allow relaying from other hosts in the same `subnet`, configured in this machine
  - `mynetworks_style = host`
    - Allow relaying for only local machine
  - `mynetworks_style = class`
    - Any host in the same class A, B or C
- ❑ Restricting relay access by `mynetworks` (override `mynetworks_style`)
  - List individual IP or subnets in `network/netmask` notation
  - Ex: in `/usr/local/etc/postfix/mynetworks`
    - `127.0.0.0/8`
    - `140.113.0.0/16`
    - `10.113.0.0/16`
- ❑ Relay depends on the type of your mail server
  - `smtp.cs.nctu.edu.tw` will be different from `csmx1.cs.nctu.edu.tw`

# Postfix Configuration – Receiving limits

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- ❑ Enforce limits on incoming mail
  - The number of recipients for single delivery
    - `smtpd_recipient_limit = 1000`
  - Message size
    - `message_size_limit = 10240000`

# Postfix Configuration – Rewriting address (1)

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## ❑ For unqualified address

- To append “myorigin” to local name.
  - `append_at_myorigin = yes`
- To append “mydomain” to address that contain only host.
  - `append_dot_mydomain = yes`

## ❑ Masquerading hostname

- Hide the names of internal hosts to make all addresses appear as if they come from the same mail server
- It is often used in out-going mail gateway
  - `masquerade_domains = cs.nctu.edu.tw`
  - `masquerade_domains = !chairman.cs.nctu.edu.tw cs.nctu.edu.tw`
  - `masquerade_exceptions = admin, root`
- Rewrite to all envelope and header address **excepts** envelope recipient address
  - `masquerade_class = envelope_sender, header_sender, header_recipient`



# Postfix Configuration – Rewriting address (2)

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## ❑ Canonical address – canonical(5)

- Rewrite both `header` and `envelope` recursively invoked by `cleanup` daemon
- In `main.cf`
  - `canonical_maps = hash:/usr/local/etc/postfix/canonical`
  - `canonical_classes = envelope_sender, envelope_recipient, header_sender, header_recipient`
- In `canonical`  
`/^(.*)@(t)?(cs)?(bsd|linux|sun)\d*\.\cs\.\nctu\.\edu\.\tw$/ $1@cs.nctu.edu.tw`
- Similar configurations
  - `sender_canonical_maps` 、 `sender_canonical_classes`
  - `recipient_canonical_maps` 、 `recipient_canonical_classes`

# Postfix Configuration – Rewriting address (3)

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## ❑ Relocated users

- Used to inform sender that the recipient is moved
- In main.cf
  - `relocated_maps = hash:/usr/local/etc/postfix/relocated`
- In relocated

<code>andy@nasa.cs.nctu.edu.tw</code>	<code>andyliu@abc.com</code>
<code>liuyh</code>	<code>EC319, NCTU, ROC</code>
<code>@nabsd.cs.nctu.edu.tw</code>	<code>zfs.cs.nctu.edu.tw</code>

## ❑ Unknown users

- Not local user and not found in maps
- Default action: reject

# Postfix Configuration – master.cf (1)

## ❑ /usr/local/etc/postfix/master.cf

- Define services that **master** daemon can invoke
- Each row defines a service and
- Each column contains a specific configuration option

```
# =====
# service type  private unpriv  chroot  wakeup  maxproc  command + args
#              (yes)   (yes)   (yes)   (never) (100)
# =====
smtp          inet    n        -       n       -       -       smtpd
pickup       fifo    n        -       n       60      1       pickup
cleanup      unix    n        -       n       -       0       cleanup
rewrite      unix    -        -       n       -       -       trivial-rewrite
smtp         unix    -        -       n       -       -       smtp
local        unix    -        n       n       -       -       local
virtual      unix    -        n       n       -       -       virtual
relay        unix    -        -       n       -       -       smtp
              -o smtp_fallback_relay=
lmtp         unix    -        -       n       -       -       lmtp
maildrop     unix    -        n       n       -       -       pipe
              flags=DRhu user=vmail argv=/usr/local/bin/maildrop -d ${recipient}
```

# Postfix Configuration – master.cf (2)

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## ❑ Configuration options

- Service name
- Service type
  - inet, unix, fifo, or pass
- Private
  - Access to this component is restricted to the Postfix system
    - inet cannot be private
- Unprivileged
  - Run with the least amount of privilege required
    - y will run with the account defined in “mail\_owner”
    - n will run with root privilege
      - » local, pipe, spawn, and virtual

# Postfix Configuration – master.cf (3)

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## ❑ Configuration options

- Chroot
  - chroot location is defined in “queue\_directory”
- Wake up time
  - Automatically wake up the service after the number of seconds
- Process limit
  - Number of processes that can be executed simultaneously
  - Default count is defined in “default\_process\_limit”
- command + args
  - Default path is defined in “daemon\_directory”
    - /usr/libexec/postfix

# Postfix Architecture – Message OUT – Part II

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- ❑ Local delivery
- ❑ Relay to the destinations
- ❑ Other delivery agent (MDA)
  - Specify in `/usr/local/etc/postfix/master.cf`
    - How a client program connects to a service and what daemon program runs when a service is requested
  - `lmtp`
    - Local Mail Transfer Protocol (Limited SMTP)
      - No queue
      - One recipient at once
    - Used to deliver to mail systems on the same network or even the same host
  - `pipe`
    - Used to deliver message to external program

# Mail Relaying – Transport Maps (1)

## ❑ Transport maps – transport(5)

- It **override default** transport method to deliver messages
- In main.cf
  - `transport_maps = hash:/usr/local/etc/postfix/transport`

- In transport file

- `domain_or_address           transport:nexthop`

`csie.nctu.edu.tw                   smtp:[mailgate.csie.nctu.edu.tw]`

`cs.nctu.edu.tw                   smtp:[csmailgate.cs.nctu.edu.tw]`

`cis.nctu.edu.tw                   smtp:[mail.cis.nctu.edu.tw]`

`example.com                   smtp:[192.168.23.56]:20025`

`orillynet.com                   smtp`

`ora.com                   maildrop`

`kdent@ora.com                   error:no mail accepted for kdent`

# Mail Relaying – Transport Maps (2)

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## □ Usage in transport map

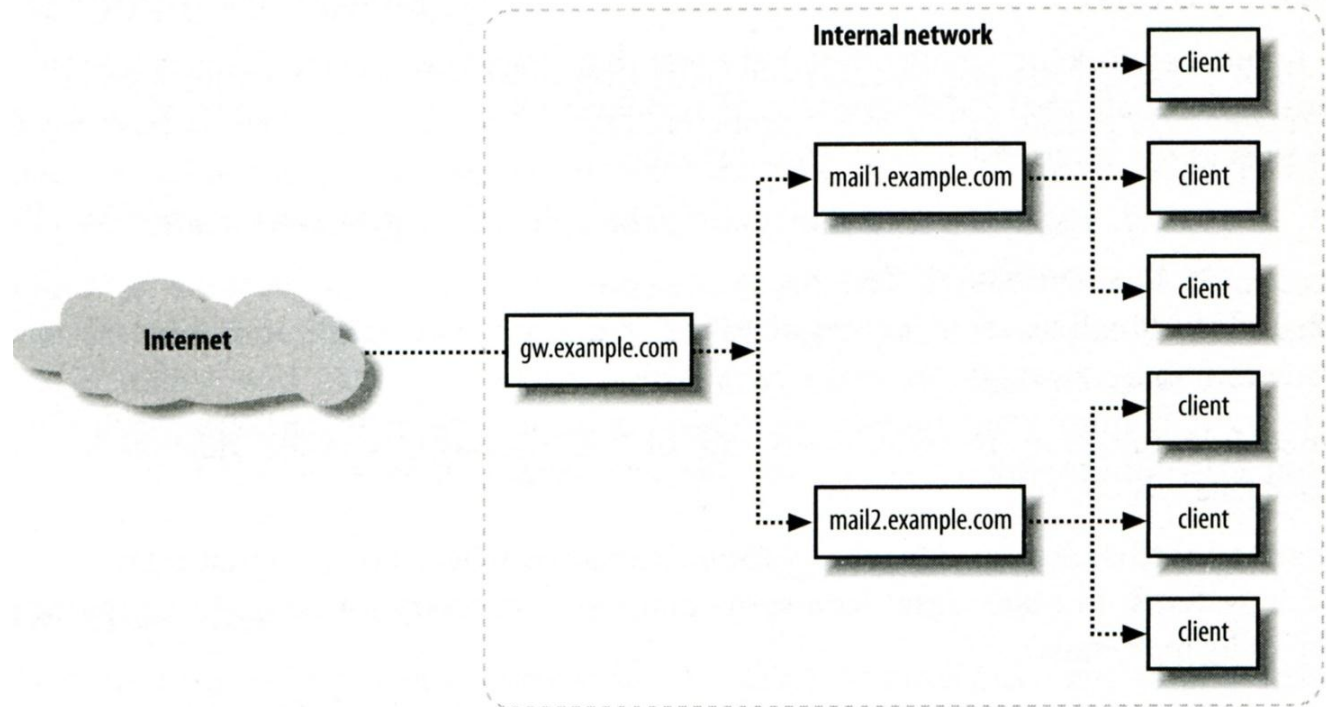
- MX → Local delivery mail server
- mailpost to bbs/news
- Postponing mail relay
  - Such as ISP has to postpone until customer network is online
  - In transport:  
abc.com                    ondemand
  - In /usr/local/etc/postfix/master.cf  
ondemand    unix   - -   n   - -   smtp
  - In /usr/local/etc/postfix/main.cf  
defer\_transports = ondemand  
transport\_maps = hash:/usr/local/etc/postfix/transport
  - Whenever the customer network is online, do
    - # postqueue -s abc.com



# Mail Relaying – Inbound Mail Gateway (1)

## ❑ Inbound Mail Gateway (MX)

- Accept all mail for a network from the Internet and relays it to internal mail systems
- Ex:
  - csmx1.cs.nctu.edu.tw is a IMG
  - csmailgate.cs.nctu.edu.tw is internal mail system



# Mail Relaying – Inbound Mail Gateway (2)

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- ❑ To be IMG, suppose
  - You are administrator for cs.nctu.edu.tw
  - You have to be the IMG for secureLab.cs.nctu.edu.tw and javaLab.cs.nctu.edu.tw
    - Firewall only allow outsource connect to IMG port 25
  
- 1. The MX record for secureLab.cs.nctu.edu.tw and javaLab.cs.nctu.edu.tw should point to csmx1.cs.nctu.edu.tw
- 2. In csmx1.cs.nctu.edu.tw,
  - relay\_domains = secureLab.cs.nctu.edu.tw javaLab.cs.nctu.edu.tw
  - transport\_maps = hash:/usr/local/etc/postfix/transport
  - secureLab.cs.nctu.edu.tw            relay:[secureLab.cs.nctu.edu.tw]
  - javaLab.cs.nctu.edu.tw            relay:[javaLab.cs.nctu.edu.tw]
- 3. In secureLab.cs.nctu.edu.tw ( and so do javaLab.cs.nctu.edu.tw)
  - mydestination = secureLab.cs.nctu.edu.tw

# Mail Relaying – Outbound Mail Gateway

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- ❑ Outbound Mail Gateway
  - Accept mails from inside network and relay them to Internet hosts
- ❑ To be OMG, suppose
  - You are administrator for cs.nctu.edu.tw
  - You have to be the OMG for secureLab.cs.nctu.edu.tw and javaLab.cs.nctu.edu.tw
  - 1. In main.cf of csmailer.cs.nctu.edu.tw
    - `mynetworks = hash:/usr/local/etc/postfix/mynetworks`
    - `secureLab.cs.nctu.edu.tw`
    - `javaLab.cs.nctu.edu.tw`
  - 2. All students in secureLab/javaLab will configure there MUA to use secureLab/javaLab.cs.nctu.edu.tw to be the SMTP server
  - 3. In main.cf of secureLab/javaLab.cs.nctu.edu.tw,
    - `relayhost = [csmailer.cs.nctu.edu.tw]`

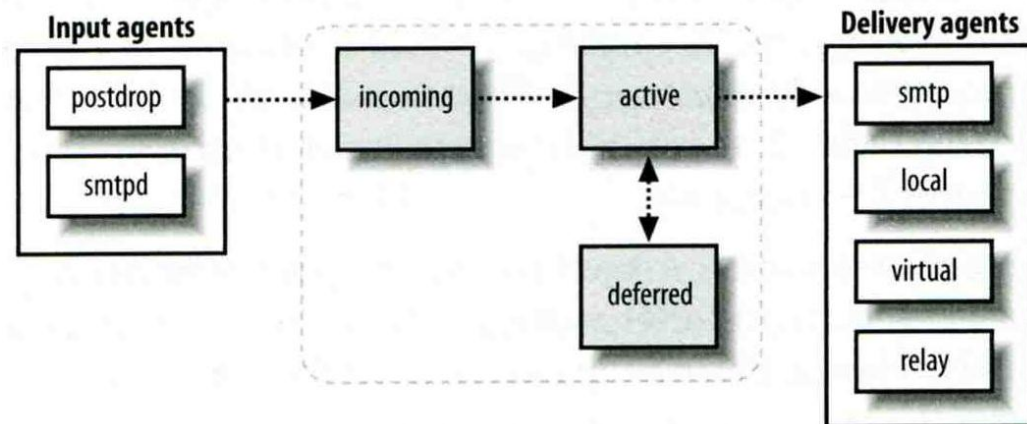
# Queue Management

## ❑ The queue manage daemon

- qmgr daemon
- Unique queue ID
- Queue directories (/var/spool/postfix/\*)
  - active, bounce, corrupt, deferred, hold

## ❑ Message movement between queues

- Temporary problem → deferred queue
- qmgr takes messages alternatively between incoming and deferred queue to active queue



# Queue Management – Queue Scheduling

---

## ❑ Double delay in deferred messages

- Between
  - `minimal_backoff_time = 300s`
  - `maximal_backoff_time = 4000s`
- `qmgr` daemon periodically scan deferred queue for reborn messages
  - `queue_run_delay = 300s`

## ❑ Deferred → bounce

- `maximal_queue_lifetime = 5d`

# Queue Management – Message Delivery

---

## ❑ Controlling outgoing messages

- When there are lots of messages in queue for the same destination, it should be careful not to overwhelm it
- If concurrent delivery is success, postfix can increase concurrency between:
  - `initial_destination_concurrency = 5`
  - `default_destination_concurrency_limit = 20`
  - Under control by
    - `maxproc` in `/usr/local/etc/postfix/master.cf`
  - You can override the `default_destination_concurrency_limit` for any transport mailer:
    - `smtp_destination_concurrency_limit = 25`
    - `local_destination_concurrency_limit = 10`
- Control how many recipients for a single outgoing message
  - `default_destination_recipient_limit = 50`
  - You can override it for any transport mailer in the same idea:
    - `smtp_destination_recipient_limit = 100`

# Queue Management – Error Notification

## ❑ Sending error messages to administrator

- Set `notify_classes` parameter to list error classes that should be generated and sent to administrator
  - Ex: `notify_classes = resource, software`
- Error classes

Error Class	Description	Noticed Recipient (all default to postmaster)
bounce	Send headers of bounced mails	bounce_notice_recipient
2bounce	Send undeliverable bounced mails	2bounce_notice_recipient
delay	Send headers of delayed mails	delay_notice_recipient
policy	Send transcript when mail is reject due to anti-spam restrictions	error_notice_recipient
protocol	Send transcript that has SMTP error	error_notice_recipient
resource	Send notice because of resource pro.	error_notice_recipient
software	Send notice because of software pro.	error_notice_recipient

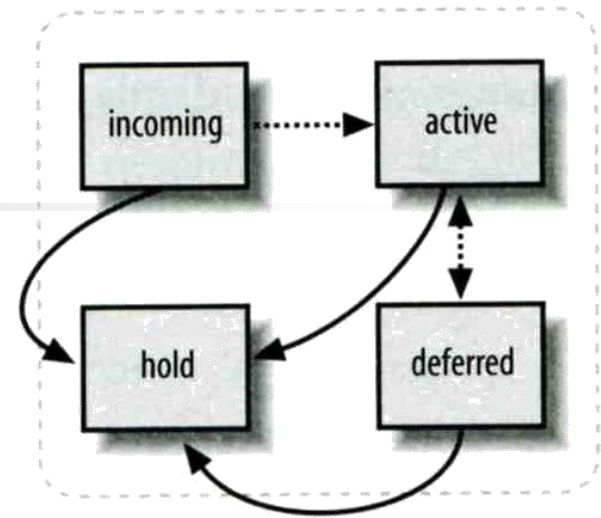
# Queue Management – Queue Tools (1)

## ❑ postqueue command

- `postqueue -p`
  - Generate sendmail mailq output
- `postqueue -f`
  - Attempt to flush(deliver) all queued mail
- `postqueue -s cs.nctu.edu.tw`
  - Schedule immediate delivery of all mail queued for site

## ❑ postsuper command

- Delete queued messages
  - `postsuper -d E757A3428C6` (from incoming, active, deferred, hold)
  - `postsuper -d ALL`
- Put messages "on hold" so that no attempt is made to deliver it
  - `postsuper -h E757A3428C6` (from incoming, active, deferred)
- Release messages in hold queue
  - `postsuper -H ALL`
- Requeue messages into maildrop queue (maildrop → pickup → cleanup → incoming)
  - `postsuper -r E757A3428C6`
  - `postsuper -r ALL`





# Queue Management – Queue Tools (2)

- ❑ postcat
  - Display the contents of a queue file

```
nasa [/home/liuyh] -liuyh- mailq
-Queue ID- --Size-- ----Arrival Time---- -Sender/Recipient-----
3314234284A   602 Sat May 19 04:16:20 root@nasa.cs.nctu.edu.tw
(connect to csmx1.cs.nctu.edu.tw[140.113.235.104]:25: Operation timed out)
liuyh@cs.nctu.edu.tw
```

```
nasa [/home/liuyh] -liuyh- sudo postcat -q 3314234284A
*** ENVELOPE RECORDS deferred/3/3314234284A ***
message_size:      602      214      1      0      602
message_arrival_time: Sat May 19 04:16:20 2012
create_time: Sat May 19 04:16:20 2012
sender: root@nasa.cs.nctu.edu.tw
named_attribute: rewrite_context=local
original_recipient: root
recipient: liuyh@cs.nctu.edu.tw
*** MESSAGE CONTENTS deferred/3/3314234284A ***
Received: by nasa.cs.nctu.edu.tw (Postfix)
       id 3314234284A; Sat, 19 May 2012 04:16:20 +0800 (CST)
Delivered-To: root@nasa.cs.nctu.edu.tw
Received: by nasa.cs.nctu.edu.tw (Postfix, from userid 0)
       id 2CB713427A5; Sat, 19 May 2012 04:16:20 +0800 (CST)
To: root@nasa.cs.nctu.edu.tw
Subject: nasa.cs.nctu.edu.tw weekly run output
Message-Id: <20120518201620.2CB713427A5@nasa.cs.nctu.edu.tw>
Date: Sat, 19 May 2012 04:16:20 +0800 (CST)
From: root@nasa.cs.nctu.edu.tw (NASA Root)
```

Rebuilding locate database:

Rebuilding whatis database:

...

# Multiple Domains

---

- ❑ Use single system to host many domains
  - Ex:
    - We use csmailgate.cs.nctu.edu.tw to host both
      - cs.nctu.edu.tw
      - csie.nctu.edu.tw
  - Purpose
    - Can be used for final delivery on the machine or
    - Can be used for forwarding to destination elsewhere
- ❑ Important considerations
  - Does the same user id with different domain should go to the same mailbox or different mailbox ?
    - YES (shared domain)
    - NO (Separate domain)
  - Does every user require a system account in /etc/passwd ?
    - YES (system account)
    - NO (virtual account)

# Multiple Domains –

## Shared Domain with System Account

---

### ❑ Situation

- The mail system should accept mails for both canonical and virtual domains and
- The same mailbox for the same user id

### ❑ Procedure

- Modify “mydomain” to canonical domain
- Modify “mydestination” parameter to let mails to virtual domain can be local delivered
- Ex:
  - mydomain = cs.nctu.edu.tw
  - mydestination = \$myhostname, \$mydomain, csie.nctu.edu.tw

※ In this way, mail to both [chwong@cs.nctu.edu.tw](mailto:chwong@cs.nctu.edu.tw) and [chwong@csie.nctu.edu.tw](mailto:chwong@csie.nctu.edu.tw) will go to csmailgate:/var/mail/chwong

### ❑ Limitation

- Can not separate [chwong@cs.nctu.edu.tw](mailto:chwong@cs.nctu.edu.tw) from [chwong@csie.nctu.edu.tw](mailto:chwong@csie.nctu.edu.tw)

# Multiple Domains –

## Separate Domains with System Accounts

---

### ❑ Situation

- The mail system should accept mails for both canonical and virtual domains and
- Mailboxes are not necessarily the same for the same user id

### ❑ Procedure

- Modify “mydomain” to canonical domain
- Modify “virtual\_alias\_domains” to accept mails to virtual domains
- Create “virtual\_alias\_maps” map
- Ex:
  - mydomain = cs.nctu.edu.tw
  - virtual\_alias\_domains = abc.com.tw, xyz.com.tw
  - virtual\_alias\_maps = hash:/usr/local/etc/postfix/virtual
    - In /usr/local/etc/postfix/virtual
      - CEO@abc.com.tw andy
      - @xyz.com.tw jack

### ❑ Limitation

- Need to maintain UNIX account for virtual domain user

# Multiple Domains –

## Separate Domains with Virtual Accounts (1)

- ❑ Useful when users in virtual domains:
  - Do not need to login to system
  - Only need to retrieve mail through POP/IMAP server
- ❑ Procedure
  - Modify “virtual\_mailbox\_domains” to let postfix know what mails it should accepts
  - Modify “virtual\_mailbox\_base” and create related directory to put mails
  - Create “virtual\_mailbox\_maps” map
  - Ex:
    - virtual\_mailbox\_domain = abc.com.tw, xyz.com.tw
    - virtual\_mailbox\_base = /var/vmail
    - Create /var/vmail/abc-domain and /var/vmail/xyz-domain
    - virtual\_mailbox\_maps = hash:/usr/local/etc/postfix/vmailbox
  - In /usr/local/etc/postfix/vmailbox
    - CEO@abc.com.tw                      abc-domain/CEO                      (Mailbox format)
    - CEO@xyz.com.tw                      xyz-domain/CEO/                      (Maildir format)

# Multiple Domains –

## Separate Domains with Virtual Accounts (2)

---

### ❑ Ownerships of virtual mailboxes

- Simplest way:
  - The same owner of POP/IMAP Servers
- Flexibility in postfix
  - virtual\_uid\_maps and virtual\_gid\_maps
  - Ex:
    - virtual\_uid\_maps = static:1003
    - virtual\_gid\_maps = static:105
  
    - virtual\_uid\_maps = hash:/usr/local/etc/postfix/virtual\_uids
    - virtual\_gid\_maps = hash:/usr/local/etc/postfix/virtual\_uids static:1003
  
    - In /usr/local/etc/postfix/virtual\_uids
      - » CEO@abc.com.tw            1004
      - » CEO@xyz.com.tw            1008