

# Postfix MTA

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# Short history

- Originally developed in the late 90s at IBM by Wietse Venema, author of security software (SATAN, TCPwrappers, ...), as "IBM Secure Mailer"
- Place under an Open Source license, and renamed "Postfix"
- Intended as a replacement for then insecure mail systems, such as Sendmail

# Design goals

- Safety
- Robustness
- Performance
- Modularity
- Compatibility

# Safety

- Postfix makes it very hard to lose mails – many checks to ensure that mail has been written to disk or delivered
- Back off mechanisms in case of repeated failure

# Security

- Collection of daemons working together
- Doesn't use environment for communication
- Very paranoid about input checking, all allocation is dynamic (avoiding buffer overflows)
- chroot support out of the box for almost all processes & daemons
- No data is *ever* exchanged directly between processes – all is done via IPC, and files on disk
- Conservative resource usage

# Performance

- Designed to be fast from the ground up
- Also behaves well with neighbors, doesn't flood them with mail, and instead uses a throughput adaptation
- Will not block delivery for a message if one recipient domain fails

# Modular

- One program, one function
- All programs controlled from "master.cf"
- Many small programs working together, with limited privileges
- Compatible with Sendmail's /etc/aliases and .forward conventions

# Features

- Virtual domains – domains and users are completely independent of system (UNIX) users
- Aliases – sendmail compatible
- Rewriting – senders, recipients, globally
- RBL support (Realtime Blackhole Lists) support
- Content filtering using pipes, SMTP or milter
- Support for arbitrary mail manipulation with policy services (custom programs talking to postfix)



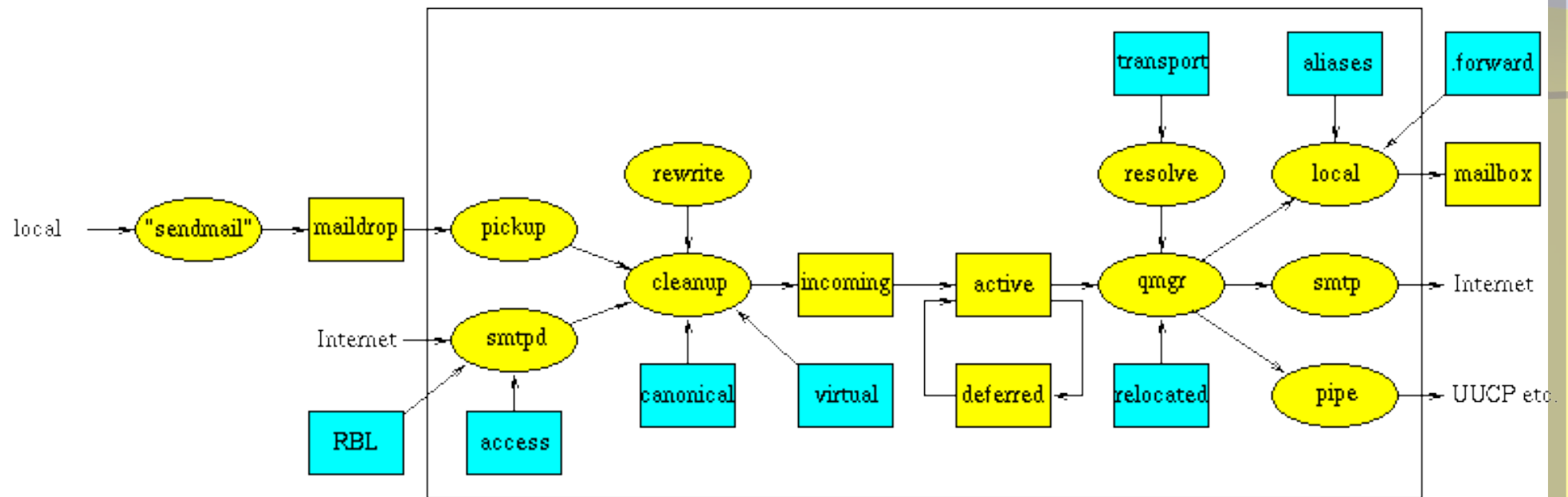
# More features

- Restriction classes
  - Conditional filtering
- Sender or recipient address verification (test email addresses before accepting mail from them)
- TLS support

# Core concept: maps

- In postfix, everything is looked up in a map (table)
- Maps can be in many formats or use many data sources:
  - hash/btree
  - regexp/PCRE
  - CIDR
  - NIS
  - LDAP, \*SQL (user defined queries)

# Architecture



# Basic Postfix configuration

- Two primary configuration files
  - `main.cf`
    - Main configuration file where all the subsystems are configured (smtp, smtpd, cleanup, routing, ...)
  - `master.cf`
    - File controlling how the "master" process of postfix will launch all the necessary postfix daemons to perform mail routing, on-demand

# Other configuration files

- Reside in "maps" mentioned earlier
- Tables containing values and conditions, referred to from main.cf, controlling all aspects such as:
  - Virtual and local domains
  - Routing rules
  - Access control
  - Rewriting
  - ...

# Configuration: postconf command

- postconf – used to view and edit configuration parameters
  - For changing the configuration, it is usually done vi editing "main.cf" directly

# Some basic main.cf

```
# what domains do I accept mail for (user@...)
mydestination = $myhostname, localhost, \
    bhutan.ws3.conference.sanog.org

# who do I send mail as ?
myorigin=          $mydomain

# what clients do I consider local (and trust them)
Mynetworks =      127.0.0.0/8 192.168.1.0/24

# Send all outgoing mail to this server
relayhost =        mail.example.com

# Aliases
alias_maps = hash:/etc/aliases
```

# Some basic main.cf (cont'd)

**\* in the file /etc/aliases:**

**root:** sysadm

**phil:** regnauld@nsrc.org



# More advanced main.cf

```
cf = $config_directory
smtpd_helo_required = yes
smtpd_client_restrictions = permit_mynetworks
smtpd_helo_restrictions = reject_invalid_hostname

smtpd_sender_restrictions = reject_non_fqdn_sender,
                           reject_unknown_sender_domain,
                           check_sender_access hash:$cf/sender-access,
                           check_client_access cidr:$cf/client-access,
                           reject_rbl_client cbl.abuseat.org

smtpd_recipient_restrictions =
                           reject_non_fqdn_recipient,
                           reject_unknown_recipient_domain,
                           permit_mynetworks,
                           check_recipient_access pcre:$cf/recipient-access,
```

# Contents of "sender-access", "recipient-access", "client-access"

## \* **sender-access** file:

spammer@aol.com	554 We don't want your mail
@aol.com	OK

## \* **recipient-access** file:

someuser@mydomain.com	554 User does not accept mail
@mydomain.com	OK

## \* **client-access** file:

119.2.100.0/24	REJECT no thank you
119.2.100.245	OK from you it's ok

# Actions in the "access" maps

REJECT

Go away

OK

Accept address/IP/...

DUNNO

Pretend you didn't find it and continue

HOLD

place in the HOLD queue

DISCARD

Trash. DISCARD 250 I took good care of your message!

FILTER transport:destination

Send the mail via transport to destination -- usually a content filter.

restriction...

Apply a restriction (UCE) / restriction class

# Virtual domains

- Allows having multiple mail domains on one machine
- They can be *completely* different than your own hostname/domainname
- Example:
  - **in main.cf:**  
virtual\_maps = \$cf/virtual-domains
  - **in virtual-domains file:**

superdomain.com	VIRTUAL
phil@superdomain.com	phil@nsrc.org, pr@eu.org
@superdmain.com	sysadm@localhost

# Rewriting

- Allows you to have multiple domains without having to configure them all
- Example:
  - **in main.cf:**  
recipient\_canonical\_maps = \$cf/**recipient-rewrite**
  - **in recipient-rewrite file:**

phil@superdomain.org

@superdomain.org

pr@superdomain.com

@superdomain.com

# Controlling postfix

- postfix start – start the postfix system
- postfix stop – stop the postfix system
- postfix check – verify the configuration
- newaliases – rebuild the local aliases
- mailq -- show the mails in the queue currently being processed

# References

- Links
  - <http://www.postfix.org/>
  - <http://www.ijs.si/software/amavisd/>
- Books:
  - "Postfix", Richard Blum, ed. Sams (1st ed. May 15, 2001), 624 p., ISBN: 0672321149
  - "The book of Postfix", Ralf Hildebrandt, Patrick Koetter ed. No Starch Press (October 2003), 328 p., ISBN: 1593270011