

Qmail

an internet mail transport agent

or

Qmail – fast, secure, reliable. Pick any three!

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Definitions

MUA

Mail user agent. Allows an end user to read incoming mail, respond to this mail and compose new messages.

MTA

Mail transport agent. Responsible for transporting electronic mail from one location to another.

MDA

Mail delivery agent. Responsible for delivering an electronic mail message to its final destination. May be part of the same software suite as the MTA.

Message components

ENVELOPE

Name and address of both the message originator and message recipient(s). Used during the transaction between MTAs.

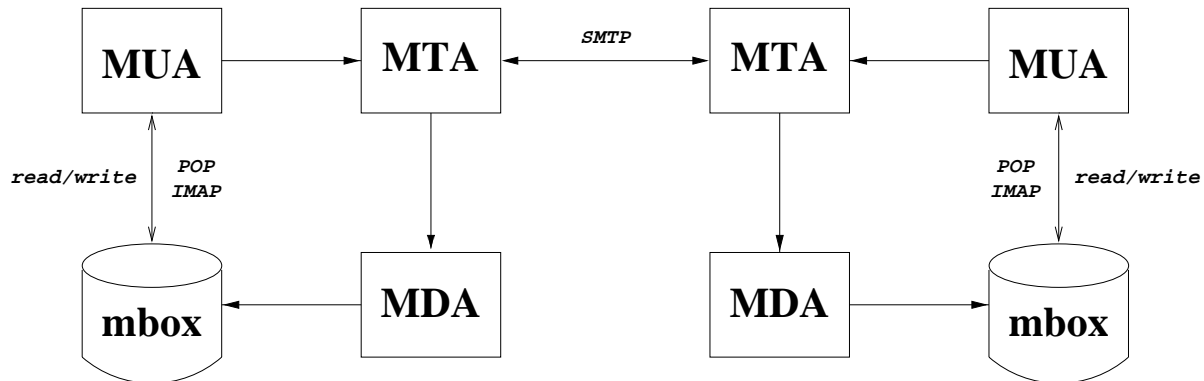
HEADERS

Name and address of both the message originator and message recipient(s) plus extra details such as the date, subject and delivery details.

BODY

Message data.

Simplified mail transaction



The user composes a message using an **MUA**.

The **MUA** gives it to the **MTA** to arrange delivery.

If the message is local, the **MTA** gives it to the local **MDA** which delivers it to the local mailbox where it is available for reading by the **MUA**.

If the message is for a remote recipient, the **MTA** gives it to a remote **MTA** which in turn gives it to that system's **MDA** which delivers it to the remote mailbox.

Qmail History¹

Dan Bernstein began developing qmail in 1995 in an attempt to avoid the security problems and other deficiencies he saw in sendmail.

The first beta version was 0.70 released in January 1996.

The first production version – 1.00 – was released in February 1997.

Version 1.03 was released in June 1998.

It should compile and run on almost any well behaved Unix system.

It is penetrating the sendmail market. Actual details are hard to determine but judging by the mailing list traffic, many people are either using qmail or want to know more.

¹This section has been summarised from the qmail distribution files

Qmail security

Segmented architecture. Each stage of the message processing is handled by a different program. Each program runs under a different user ID. The qmail users don't even trust each other!

The only setuid program is `qmail-queue` and it runs as the user *qmailq*.

The only program run by *root* is the mail delivery agent `qmail-lspawn`.

`qmail-lspawn` **ALWAYS** changes its effective user id to the recipient **BEFORE** running any user specified program.

`qmail` **NEVER** delivers to a user whose UID is zero!

`qmail` will defer delivery if either the user's home directory or `.qmail` file is group and/or world writable.

Qmail security

Parsing is cut down to a bare minimum. This avoids (or at the very least minimises) the risk of introducing a security hole with a configuration error.

The standard C library is avoided – particularly *stdio*.

"Keep It Simple". qmail has only one simple forwarding mechanism that handles forwarding, aliasing and mailing lists, instead of a separate mechanism for each. By default, qmail offers a single delivery mode instead of a selection.

Size comparisons

Number and size of *.c and *.h files¹

	lines	words	chars	files	;
qmail-1.03	16617	44780	395243	279	10213
postfix-19990601 ²	67978	239859	1806850	461	15483
sendmail-8.9.3	56829	184625	1267727	55	18085
smail-3.2	62331	246140	1701112	151	19408
exim-3.01	75079	305688	2329556	130	23019
zmailer-2.2e10	57595	205524	1423624	227	24005

qmail has the smallest code base of the major MTA products. It also has the second largest number of files. The obvious assumption that can be made is that qmail adheres to the *"Keep It Simple"* principle.

¹No attempt was made to strip out comments

²Postfix source files contain embedded man pages

Maildir format

Maildirs are essentially incorruptible storage areas for mail messages. They avoid the potential corruption problems of *mbox* and *mh* formats by removing the need for any file locking.

Maildir format stores each message in a separate file in a given directory:

./tmp/ – the delivery agent creates a file called **./tmp/time.pid.hostname** where *time* is the number of seconds since midnight January 1 1970 GMT. The incoming mail message is stored in this file. If the file already exists, the delivery agent waits 2 seconds and tries again.

./new/ – successfully delivered messages are moved to **./new/time.pid.hostname**. The modification time of the file is the delivery date.

./cur/ – messages read by a mail reader are moved to **./cur/time.pid.hostname**.

Aliasing and .qmail files

Users control all addresses of the form *user–anything*.

Addresses which do not map to user names are handled by the special *alias* user.

Arbitrary addresses can be assigned to specific users using the *qmail–users* mechanism.

Delivery instructions are handled by *.qmail–ext* files where *ext* is an arbitrary extension.

If my user name is *psamuel*, I can create a *~/.qmail–jokes* file so that mail sent to *psamuel–jokes* will be handled by that file.

qmail provides a number of useful environment variables for use in *.qmail* files.

Aliasing and .qmail files

.qmail files can contain any combination of addresses and Unix programs. Each line is a separate delivery instruction.

Exit codes of Unix commands govern further processing of the .qmail file.

- 0 successful delivery
- 99 successful delivery, ignore all further delivery instructions
- 100 permanent delivery failure (hard error)
- 111 transient delivery failure, try again later (soft error)

Example .qmail file¹

¹This page is intentionally left blank to illustrate the fact that a .qmail file is not mandatory.

Example `.qmail-ext` file

A zero byte `.qmail` file instructs `qmail-local` to deliver the message to the user's default mailbox.

```
-rw-r--r-- 1 psamuel  0 Oct 29 18:26 .qmail-ext
```

Example .qmail file

```
# This file is not empty but does nothing.  
# Therefore the message will be successfully  
# delivered to nowhere. This is the equivalent  
# of delivering the message to /dev/null.
```

Example .qmail-jokes file

```
# Save msgs from the jokes list in a separate mbox.  
# Incoming mail will be addressed to psamuel-jokes.  
/home/psamuel/mail/JOKES
```

Example .qmail file

```
# My vacation .qmail file

# Completely ignore the message if the sender is
# ddts@x.com. 99 says that the message was delivered
# successfully but do not attempt further delivery
# instructions in the .qmail file. 0 says delivery
# was a success and continue processing the file.
| [ "$SENDER" = "ddts@x.com" ] && exit 99 || exit 0

# Run other msgs thru vacation. Use qmail-vacation to
# avoid problems with preline & other vacation progs.
| /usr/local/bin/vacation -j psamuel

# Send a copy to my ISP account. The & is only
# necessary if the address does not begin with
# an alphanumeric character.
&peter@isp.com.au

# Save a local copy - most important, otherwise
# there will be no local delivery. Also save a copy
# to a maildir so that I can quickly scan individual
# messages when I return. The trailing slash
# indicates a maildir instead of an mbox.
/home/psamuel/Mailbox
/home/psamuel/Maildir/
```


Mandatory qmail control file

qmail requires a single control file for its operation:

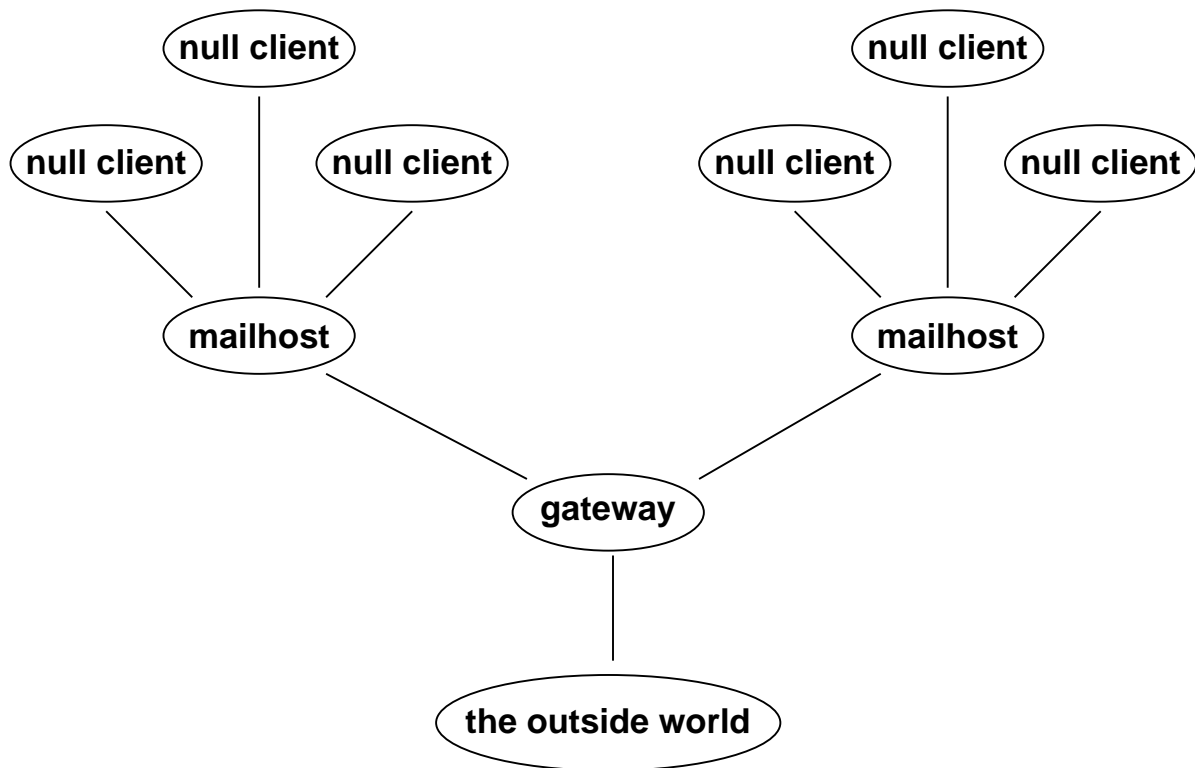
```
/var/qmail/control/me
```

This file contains the fully qualified host name of the current host. If this file is missing, the major qmail programs, `qmail-smtpd`, `qmail-send` and `qmail-remote`, will refuse to run.

Optional qmail control files

control file	default value	used by
badmailfrom	(none)	qmail-smtpd
bouncefrom	MAILER-DAEMON	qmail-send
bouncehost	me	qmail-send
concurrencylocal	10	qmail-send
concurrencyremote	20	qmail-send
defaultdomain	me	qmail-inject
defaulthost	me	qmail-inject
databytes	0	qmail-smtpd
doublebouncehost	me	qmail-send
doublebounceto	postmaster	qmail-send
envnoathost	me	qmail-send
helohost	me	qmail-remote
idhost	me	qmail-inject
localiphost	me	qmail-smtpd
locals	me	qmail-send
morercpthosts	(none)	qmail-smtpd
percenthack	(none)	qmail-send
plusdomain	me	qmail-inject
qmqpservers	(none)	qmail-qmqpc
queuelifetime	604800	qmail-send
rcpthosts	(none)	qmail-smtpd
smtpgreeting	me	qmail-smtpd
smtproutes	(none)	qmail-remote
timeoutconnect	60	qmail-remote
timeoutremote	1200	qmail-remote
timeoutsmtpd	1200	qmail-smtpd
virtualdomains	(none)	qmail-send

Example mail network



Configuring a null client

A null client is a machine which does **NO** local mail delivery.

ALL outgoing mail is sent to a single mailhost.

`/var/qmail/control/locals` – an empty file

`/var/qmail/control/smtproutes`

```
:mailhost.devel.domain.com
```

If you can't resolve host names you can use the IP address instead.

`/var/qmail/control/smtproutes`

```
: [123.45.67.89]
```

Configuring a null client

If you are using qmail–1.03 or later you can eliminate **ALL** local mail queueing by using **QMQP** (Quick Mail Queueing Protocol) instead of **SMTP**.

On the client

`/var/qmail/bin/qmail-queue` – a symbolic link to
`/var/qmail/bin/qmail-qmqpc`

`/var/qmail/control/locals` – an empty file

`/var/qmail/control/qmqpservers`

`123.45.67.89`

On the server

`/etc/inetd.conf` – all on one line

```
qmqp stream tcp nowait qmaild /pkgs/bin/tcpd
    /var/qmail/bin/tcp-env
    /var/qmail/bin/qmail-qmqpd
```

`/etc/services`

```
qmqp      628/tcp      mail
```

Configuring a mailhost

A mailhost is a machine that will perform all the local deliveries for a site.

It accepts mail from null clients and from external sources.

It sends **ALL** outgoing mail to a single mail gateway.

`/var/qmail/control/locals`

```
mailhost.devel.domain.com
devel.domain.com
```

`/var/qmail/control/smtproutes`

```
:gateway.domain.com
```

`/etc/inetd.conf` – all on one line

```
smtp stream tcp nowait qmaild /pkgs/bin/tcpd
    /var/qmail/bin/tcp-env
    /var/qmail/bin/qmail-smtpd
```

Configuring a gateway

A gateway is a machine that sends incoming mail to the relevant internal mailhost.

It accepts mail from mail hosts and from external sources.

It sends **ALL** outgoing mail to the relevant MX host.

`/var/qmail/control/locals`

```
gateway.domain.com
domain.com
```

`/var/qmail/control/smtproutes`

```
devel.domain.com:mailhost.devel.domain.com
sales.domain.com:mailhost.sales.domain.com
```

`/etc/inetd.conf` – all on one line

```
smtp stream tcp nowait qmaild /pkgs/bin/tcpd
    /var/qmail/bin/tcp-env
    /var/qmail/bin/qmail-smtpd
```

Host masquerading

"How do I set up host masquerading?"

`/var/qmail/control/defaultdomain`

```
devel.domain.com
```

Unqualified `From:` addresses will now have `devel.domain.com` appended.

Users can also modify their `From:` headers by using environment variables.

```
export QMAILHOST=some.domain
export QMAILNAME="Peter Samuel"
export QMAILUSER=Peter.Samuel
export QMAILINJECT=f
```

This becomes:

```
From: Peter Samuel <Peter.Samuel@some.domain>
```


Virtual domains

`/var/qmail/control/virtualdomains`

```
cardassia.empire:garok
ferengi.alliance:quark
klinton.empire:worf
starfleet.fed:kirk
```

Mail for *user@klinton.empire* will be rewritten as *worf-user@klinton.empire* and delivered locally to the user *worf* according to the instructions in `~worf/.qmail-user` or `~worf/.qmail-default`.

Handling SPAM

SPAM is another name for Unsolicited Commercial Email or UCE. Qmail has a number of mechanisms for limiting the amount of SPAM received.

The default configuration does not support the "*percent hack*" address convention. An address of the form

user%domain1@domain2

will **NOT** be forwarded to *domain1*. The "*percent hack*" can be enabled for given domains using a control file.

Qmail can be configured to prevent mail relaying by specifying valid incoming domains in `/var/qmail/control/rcpthosts`. This can be overridden by conditionally setting the **\$RELAYCLIENT** environment variable for each invocation of `qmail-smtpd` using `tcpd` or `tcpserver`.

Mail from individual users or complete domains can be banned by specifying the address or domain in `/var/qmail/control/badmailfrom`.

Handling SPAM

Specific IP address connection control can be achieved using `tcp_wrappers` (<ftp://ftp.win.tue.nl/pub/security>) or `tcpserver`, part of Dan's `ucspi-tcp` package (<ftp://koobera.math.uic.edu/www/ucspi-tcp.html>).

Dan has released `rblsmtpd` which blocks spam according to the *Real Time Blacklist*. See <ftp://koobera.math.uic.edu/www/rblsmtpd.html> for details on `rblsmtpd`. See <http://maps.vix.com/rbl> for more details on the *Real Time Blacklist*.

There are a number of anti-spam patches for `qmail-smtpd` available from <http://www.qmail.org>

If SPAM control is a serious issue, you may be better off using a different **SMTP** daemon such as `smtpd` from <http://www.obtuse.com/smtpd.html>.

For other SPAM solutions, see the offerings at <http://spam.abuse.net/spam/>.

Disadvantages of using qmail

Qmail is an internet mailer. It will only talk **SMTP** to other MTAs. (It can be configured to use a more efficient protocol when talking to other qmail systems).

It will **ONLY** handle addresses which are in the form of *user@domain*. UUCP style addresses such as *domain!user* are definitely **NOT** supported. However transport through UUCP is easy to set up for both incoming and outgoing messages.

It makes every effort to conform to the existing standards and RFCs. Non conforming systems may have difficulty in communicating with qmail-smtpd. Some patches are available to alleviate this problem. See **<http://www.qmail.org>**.

Header re-writing is minimal. However inserting your own rewrite program is easy.

Disadvantages of using qmail

The author is resistant to change unless it can be shown that the change is absolutely necessary. He is known as being quite arrogant and dogmatic. Unfortunately (or fortunately depending on your point of view) he's usually right. 😊

Qmail requires a completely different mind set than sendmail. It does take some time to begin to think in a qmail fashion – especially if you are used to thinking in a sendmail fashion.

Distributing modified versions of qmail – including ports – require the author's explicit permission. Dan wants to make certain that distributions do not unintentionally compromise performance, operation and security.

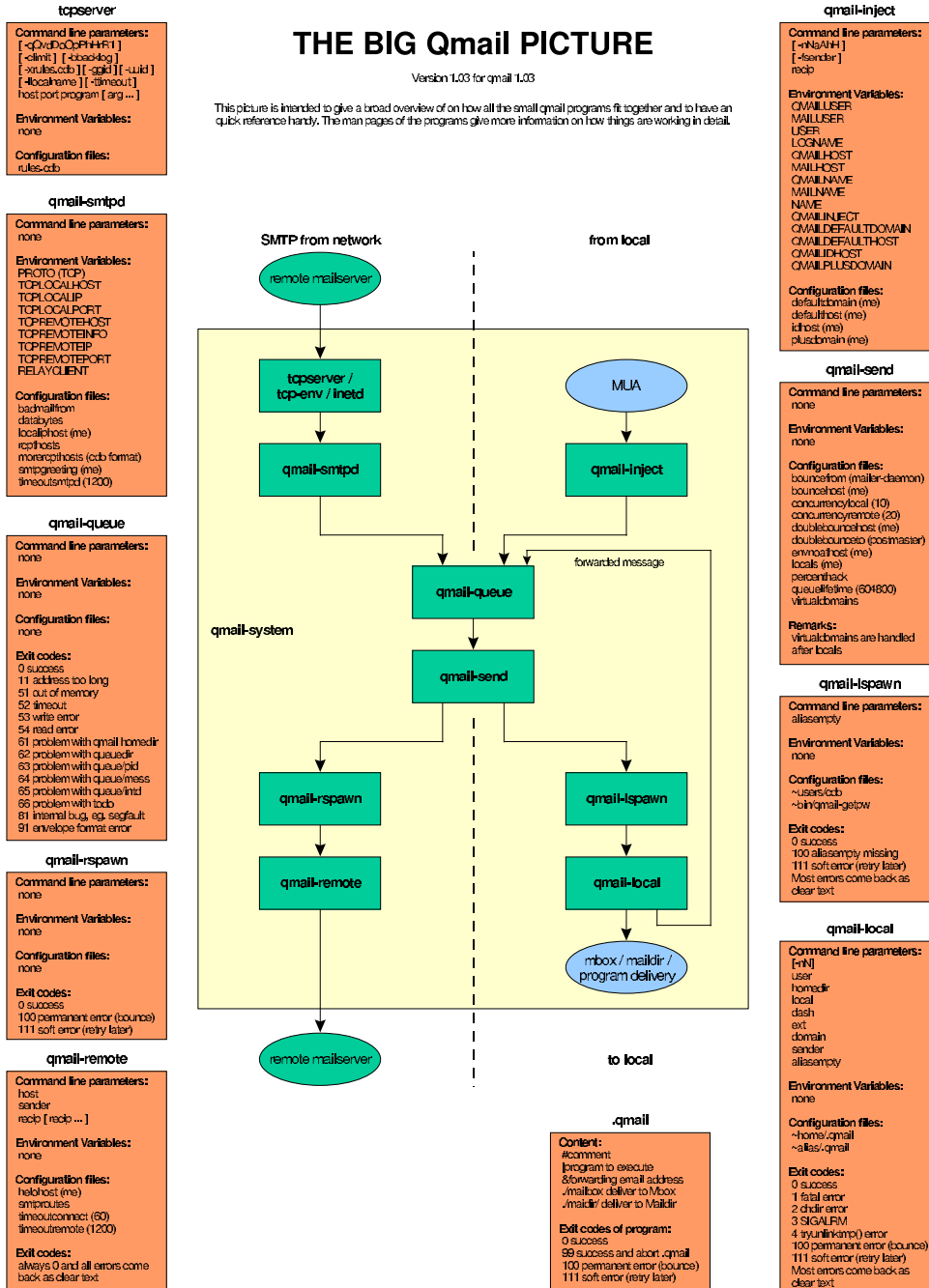
Precompiled binary versions of qmail may be distributed provided the package conforms to the guidelines set down by the author. See **<ftp://koobera.math.uic.edu/www/qmail.html>** for more details.

The Big Qmail Picture

THE BIG Qmail PICTURE

Version 1.03 for qmail 1.03

This picture is intended to give a broad overview of on how all the email qmail programs fit together and to have an quick reference handy. The man pages of the programs give more information on how things are working in detail.



topserver

Command line parameters:
 [-qVdDQqPHHfF1]
 [-climit] [-cbacklog]
 [-xrules.cdb] [-cgid] [-uid]
 [-localname] [-timeout]
 host:port:program [arg...]

Environment Variables:
 none

Configuration files:
 rules.cdb

qmail-smtpd

Command line parameters:
 none

Environment Variables:
 PROTO (TOP)
 TQPLLOCALHOST
 TQPLLOCALIP
 TQPLLOCALPORT
 TQPREMOTEPHOST
 TQPREMOTEPINFO
 TQPREMOTEP
 TQPREMOTEPORF
 RELAYCLIENT

Configuration files:
 badmailfrom
 databytes
 localhost (me)
 recfhosts
 morecpthosts (cdb format)
 smtpgreasing (me)
 timeoutsmtpd (1200)

qmail-queue

Command line parameters:
 none

Environment Variables:
 none

Configuration files:
 none

Exit codes:
 0 success
 11 address too long
 51 out of memory
 52 timeout
 53 write error
 54 read error
 61 problem with qmail homedir
 62 problem with queue/cdir
 63 problem with queue/pid
 64 problem with queue/mess
 65 problem with queue/limit
 66 problem with tocb
 81 internal bug, e.g. segfault
 91 envelope format error

qmail-rspawn

Command line parameters:
 none

Environment Variables:
 none

Configuration files:
 none

Exit codes:
 0 success
 100 permanent error (bounce)
 111 soft error (retry later)

qmail-remote

Command line parameters:
 host:
 sender:
 recb [recb ...]

Environment Variables:
 none

Configuration files:
 heliohost (me)
 smtpconnect
 timeoutconnect (60)
 timeoutremote (1200)

Exit codes:
 always 0 and all errors come
 back as clear text

qmail-inject

Command line parameters:
 [-NBAH1]
 [-sender]
 recb

Environment Variables:
 QMAILUSER
 MAILUSER
 USER
 LOGNAME
 QMAILHOST
 MAILHOST
 QMAILNAME
 MAILNAME
 NAME
 QMAILINJECT
 QMAILDEFAULTDOMAIN
 QMAILDEFAULTHOST
 QMAILIDHOST
 QMAILPLUSDOMAIN

Configuration files:
 defaultbmain (me)
 defaulthost (me)
 idhost (me)
 plusdomain (me)

qmail-send

Command line parameters:
 none

Environment Variables:
 none

Configuration files:
 bouncefrom (mailer-demon)
 bouncehost (me)
 concurrencylocal (10)
 concurrencyremote (20)
 dblocalbounce (me)
 dblocalbounce (postmaster)
 ennohost (me)
 locals (me)
 percentback
 queuelifetime (50*800)
 virtualdomains

Remarks:
 virtualdomains are handled
 after locals

qmail-lspawn

Command line parameters:
 aliasempty

Environment Variables:
 none

Configuration files:
 ~users/cdb
 ~bin/qmail-gstpw

Exit codes:
 0 success
 100 aliasempty missing
 111 soft error (retry later)
 Most errors come back as
 clear text

qmail-local

Command line parameters:
 [-N1]
 user:
 homedir:
 local:
 dash:
 ext:
 domain:
 sender:
 aliasempty

Environment Variables:
 none

Configuration files:
 ~home/qmail
 ~alias/qmail

Exit codes:
 0 success
 1 fatal error
 2 chdir error
 3 SIGALRM
 4 syunlink(m) error
 100 permanent error (bounce)
 111 soft error (retry later)
 Most errors come back as
 clear text

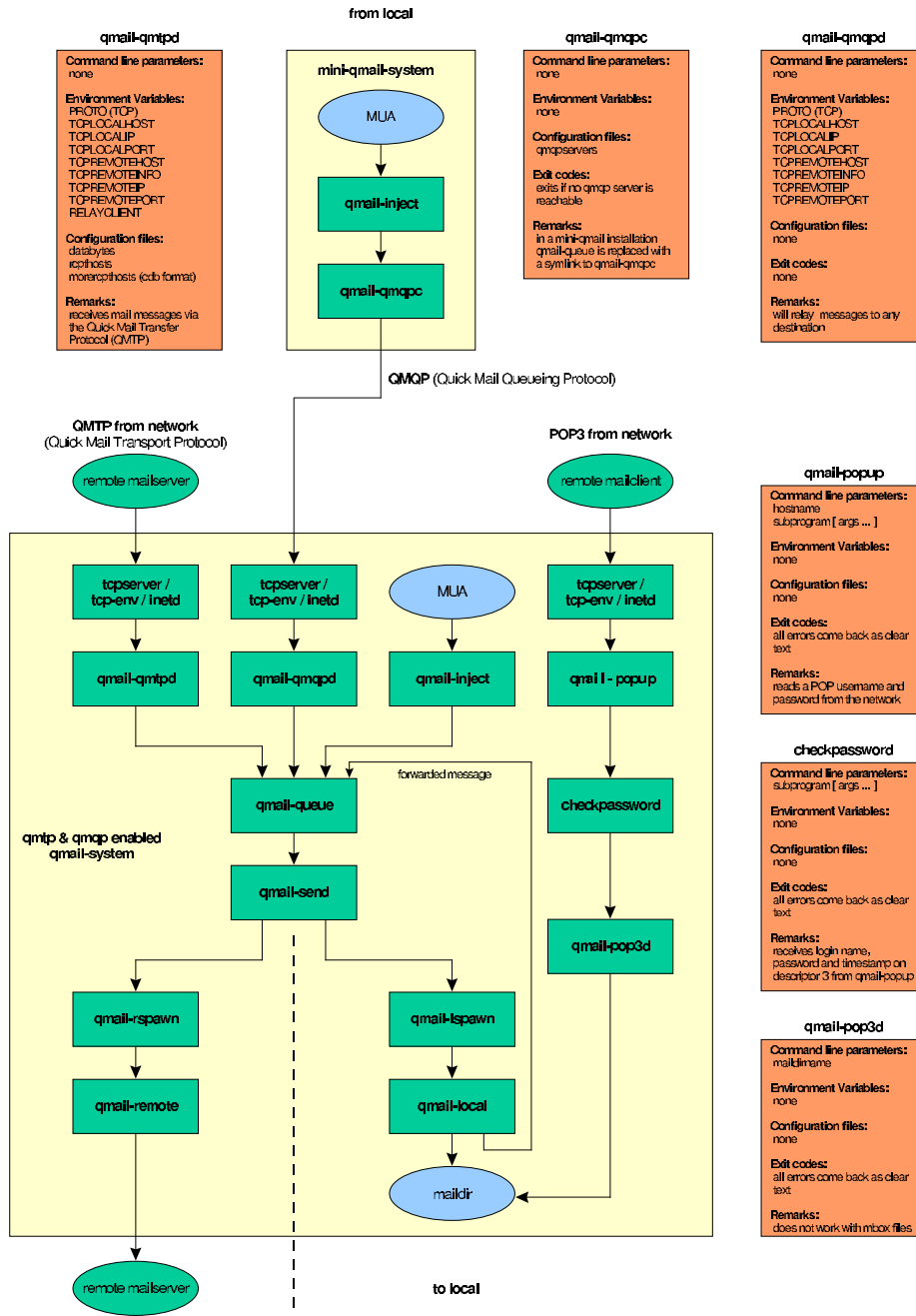
.qmail

Content:
 #comment:
 program to execute
 &forwarding email address
 ~mailbox deliver to Mbox:
 ~maildir deliver to Maildir

Exit codes of program:
 0 success
 99 success and abort .qmail
 100 permanent error (bounce)
 111 soft error (retry later)

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The Big Qmail Picture



R1586814 © 1998 by Andre Oppermann, ock@nrg4u.com, http://www.nrg4u.com. Free for personal use. Not free for commercial redistribution (eg. Magazines). Contact author for permission.

The original version of this slide is missing the qmail-popup box. It has been fixed in this version.

The Big Qmail Picture

dot-qmail programs

<p>bouncesaying</p> <p>Description: bounce each incoming message (according to the exit value of [program])</p> <p>Command line parameters: in .qmail: bouncesaying error [program [arg ...]]</p> <p>Environment Variables: none</p> <p>Configuration files: none</p> <p>Exit codes of program: 0 bounce and say error 111 soft error (retry later) all other errors are ignored and the rest of .qmail will be processed as usual</p>	<p>condredirect</p> <p>Description: redirect message to another address according to the exit value of program</p> <p>Command line parameters: in .qmail: condredirect newaddress program [arg ...]</p> <p>Environment Variables: none</p> <p>Configuration files: none</p> <p>Exit codes of program: 0 forward to newaddress 111 soft error (retry later) all other errors are ignored and the rest of .qmail will be processed as usual</p>	<p>except</p> <p>Description: reverse the exit code of a program</p> <p>Command line parameters: in .qmail: except program [arg ...]</p> <p>Environment Variables: none</p> <p>Configuration files: none</p> <p>Exit codes of program: 0 except exits 100 111 soft error (retry later) all other errors are ignored and the rest of .qmail will be processed as usual</p>	<p>forward</p> <p>Description: forward message to one or more addresses</p> <p>Command line parameters: in .qmail: forward address ...</p> <p>Environment Variables: none</p> <p>Configuration files: none</p> <p>Exit codes of program: none</p>
<p>preline</p> <p>Description: prepend UUCP-style lines</p> <p>Command line parameters: in .qmail: preline command [-d] (no Delivered-To line) [-f] (no From_ line) [-r] (no Return-Path line)</p> <p>Environment Variables: none</p> <p>Configuration files: none</p> <p>Exit codes of program: none</p> <p>Remarks: is useful for procmail and ELM's filter</p>	<p>qbiff</p> <p>Description: announce new message the moment it arrives</p> <p>Command line parameters: in .qmail: qbiff</p> <p>Environment Variables: none</p> <p>Configuration files: none</p> <p>Exit codes: none</p> <p>Remarks: writes a message to your screen whenever a new message is delivered</p>	<p>qlist</p> <p>Description: handle mailing list subscription requests</p> <p>Command line parameters: in .qmail:hist-request: qlist read man page for details</p> <p>Environment Variables: none</p> <p>Configuration files: none</p> <p>Exit codes: none</p> <p>Remarks: read man page for details</p>	<p>qreceipt</p> <p>Description: respond to delivery notice requests</p> <p>Command line parameters: in .qmail: qreceipt youraddress</p> <p>Environment Variables: none</p> <p>Configuration files: none</p> <p>Exit codes: none</p> <p>Remarks: sends a success notice back to the envelope sender</p>

userland programs

<p>maildirmake</p> <p>Description: creates a maildir structure</p> <p>Command line parameters: directory</p> <p>Environment Variables: none</p> <p>Configuration files: none</p> <p>Exit codes: none</p>	<p>maildirwatch</p> <p>Description: watch for new messages in a maildir</p> <p>Command line parameters: you have to set the environment</p> <p>Environment Variables: MAILDIR</p> <p>Configuration files: none</p> <p>Exit codes: none</p> <p>Remarks: prints a new mail summary twice per minute</p>	<p>maildir2mbox</p> <p>Description: moves messages from maildir to mbox format</p> <p>Command line parameters: you have to set the environment</p> <p>Environment Variables: MAILDIR MAIL MAILTMP</p> <p>Configuration files: none</p> <p>Exit codes: none</p> <p>Remarks: you should run only one maildir2mbox at a time</p>	<p>mailsubj</p> <p>Description: send a mail message with a subject line</p> <p>Command line parameters: subject recip ...</p> <p>Environment Variables: none</p> <p>Configuration files: none</p> <p>Exit codes: none</p> <p>Remarks: reads the body of the message from its standard input</p>
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The Big Qmail Picture

queue management

qmail-qstat	qmail-qread	qmail-topfo	qmail-topok
<p>Description: summarize status of mail queue</p> <p>Command line parameters: none</p> <p>Environment Variables: none</p> <p>Configuration files: none</p> <p>Exit codes: complains if there is a problem</p> <p>Remarks: must be run either as root or with uid qmail</p>	<p>Description: list outgoing messages and recipients</p> <p>Command line parameters: none</p> <p>Environment Variables: none</p> <p>Configuration files: none</p> <p>Exit codes: complains if there is a problem</p> <p>Remarks: must be run either as root or with uid qmail and gid qmail</p>	<p>Description: prints qmail-remote's current list of timeouts</p> <p>Command line parameters: none</p> <p>Environment Variables: none</p> <p>Configuration files: none</p> <p>Exit codes: complains if there is a problem</p> <p>Remarks: must be run either as root or with uid qmail and gid qmail</p>	<p>Description: erases qmail-remote's current list of timeouts</p> <p>Command line parameters: none</p> <p>Environment Variables: none</p> <p>Configuration files: none</p> <p>Exit codes: complains if there is a problem</p> <p>Remarks: must be run either as root or with uid qmail and gid qmail</p>
<p>Hint: to reschedule every message in the queue for immediate delivery, do a "kill -ALRM <i>pid</i>" on the qmail-send <i>pid</i></p>			

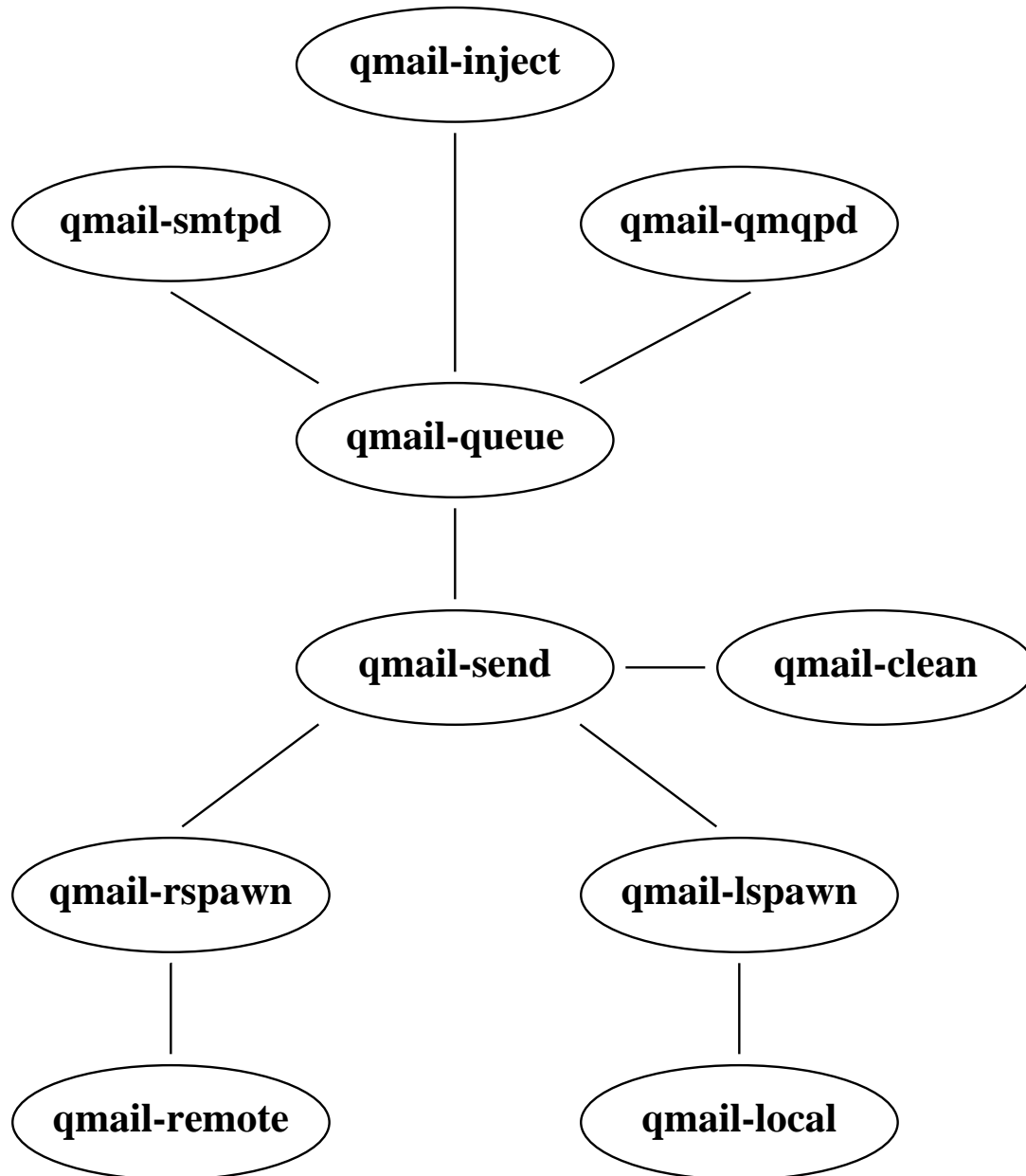
user and system management

qmail-pw2u	qmail-newu	qmail-newmrh	qmail-showctl
<p>Description: build address assignments from a passwd file</p> <p>Command line parameters: [-v h L U C] [-cchar]</p> <p>Environment Variables: none</p> <p>Configuration files: ~users/include ~users/exclude ~users/mailnames ~users/subusers ~users/append</p> <p>Exit codes: complains if there is a problem</p> <p>Remarks: generates ~users/assign</p>	<p>Description: prepare address assignments for qmail-ispawn</p> <p>Command line parameters: none</p> <p>Environment Variables: none</p> <p>Configuration files: ~users/assign</p> <p>Exit codes: complains if there is a problem with ~users/assign qmail-newu</p> <p>Remarks: generates ~users/cdb</p>	<p>Description: prepare moreepochstos for qmail-smtpd</p> <p>Command line parameters: none</p> <p>Environment Variables: none</p> <p>Configuration files: ~control/moreepochstos</p> <p>Exit codes: complains if there is a problem with control/moreepochstos qmail-newmrh complains</p> <p>Remarks: generates ~control/moreepochstos.cdb</p>	<p>Description: analyze the qmail config files</p> <p>Command line parameters: none</p> <p>Environment Variables: none</p> <p>Configuration files: all</p> <p>Exit codes: complains if there is a problem</p> <p>Remarks: explains the current qmail configuration</p>

other qmail daemons

qmail-start	qmail-clean	splogger
<p>Description: turn on mail delivery</p> <p>Command line parameters: default:delivery logger [args ...]</p> <p>Environment Variables: none</p> <p>Configuration files: none</p> <p>Exit codes: does not print anything, even on failure</p> <p>Remarks: make sure to clean up the environment before starting qmail</p>	<p>Description: clean up the queue directory</p> <p>Command line parameters: none</p> <p>Environment Variables: none</p> <p>Configuration files: none</p> <p>Exit codes: none</p> <p>Remarks: can only be started by qmail-start</p>	<p>Description: reads a series of messages and feeds them to syslog</p> <p>Command line parameters: [tag [facility]]</p> <p>Environment Variables: none</p> <p>Configuration files: none</p> <p>Exit codes: complains if there is a problem</p> <p>Remarks: converts unprintable characters to question marks</p>

How qmail works



How qmail works

Incoming mail arrives via either an **SMTP** connection to `qmail-smtpd` or a **QMQP** connection to `qmail-qmqpd` or via indirect queue injection from `qmail-inject`.

`qmail-smtpd`, `qmail-qmqpd` or `qmail-inject` calls `qmail-queue` to place the message in the queue.

`qmail-queue` splits the message into three files, the message itself and two copies of the envelope details. It then signals `qmail-send` to begin delivery.

If the message is for a local recipient, `qmail-send` tells `qmail-lspawn` to deliver the message. `qmail-lspawn` calls `qmail-local` to deliver the message. `qmail-local` handles alias expansion and, if necessary, calls `qmail-queue` to place a new message in the queue. `qmail-local` finally delivers the message to the user's home directory.

If the message is for a remote recipient, `qmail-send` tells `qmail-rspawn` to deliver the message. `qmail-rspawn` calls `qmail-remote` to deliver the message to a remote MTA.

Message pre-processing

qmail-queue processes incoming messages as follows:

/var/qmail/queue/pid/tempfile

Temporary file with unique name based on process id and system time.

/var/qmail/queue/mess/0..22/nnnnn

Hard link to */var/qmail/queue/pid/tempfile*.
Filename is the same as its inode.
Contains message headers and body.
/var/qmail/queue/pid/tempfile is removed.

/var/qmail/queue/intd/nnnnn

Message envelope in creation.

/var/qmail/queue/todo/nnnnn

Hard link to */var/qmail/queue/intd/nnnnn*.
Contains completed message envelope.
/var/qmail/queue/intd/nnnnn is removed.

/var/qmail/queue/lock/trigger

Named pipe for communication with qmail-send.

The message is now completely pre-processed.

Message processing

qmail–send processes queued messages as follows:

/var/qmail/queue/info/0..22/nnnnn

Envelope `From:` address. Created from */var/qmail/queue/todo/nnnnn*.

/var/qmail/queue/local/0..22/nnnnn

Envelope `To:` address if recipient is local. Created from */var/qmail/queue/todo/nnnnn*. qmail–lspawn is notified to deliver the message locally. When all local deliveries have been performed, qmail–send deletes the file.

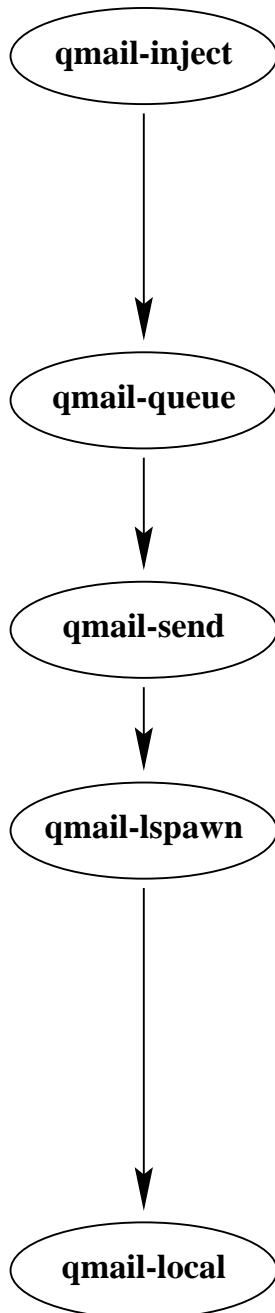
/var/qmail/queue/remote/0..22/nnnnn

Envelope `To:` address if recipient is remote. Created from */var/qmail/queue/todo/nnnnn*. qmail–rspawn is notified to deliver the message remotely. When all remote deliveries have been performed, qmail–send deletes the file.

/var/qmail/queue/bounce/nnnnn

If a delivery has a permanent failure, this file is created and/or appended to. When all deliveries are finished a bounce message created from this file and */var/qmail/queue/mess/0..22/nnnnn* is injected into the queue.

Local to local delivery



Original message:

To: fred
Hi.

Fill in the complete envelope and header:

**(envelope) from joe@heaven.af.mil \
to fred@heaven.af.mil
From: joe@heaven.af.mil
To: fred@heaven.af.mil**

Hi.

**Store message safely on disk.
Trigger qmail-send.**

**Look at envelope recipient, fred@heaven.af.mil.
Is heaven.af.mil in locals? Yes.
Deliver locally to fred@heaven.af.mil.**

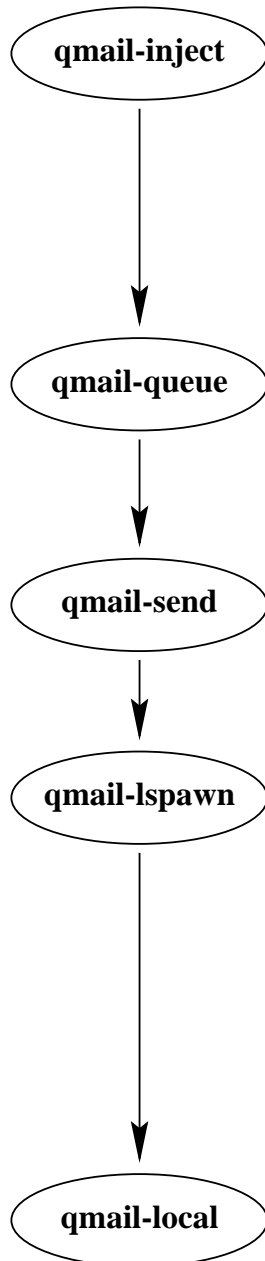
qmail-lspawn ./Mailbox

**Look at mailbox name, fred.
Is fred listed in qmail-users? No.
Is there a fred account? Yes.
Is fred's uid nonzero? Yes.
Is ~fred visible to the qmailp user? Yes.
Is ~fred owned by fred? Yes.
Give control of the message to fred.
Run qmail-local.**

**qmail-local fred ~fred fred '' '' heaven.af.mil \
joe@heaven.af.mil ./Mailbox**

**Does ~fred/.qmail exist? No.
Write message to ./Mailbox in mbox format.**

Local to local extension delivery



Original message:

To: fred-sos
Hi.

Fill in the complete envelope and header:

(envelope) from joe@heaven.af.mil \
to fred-sos@heaven.af.mil
From: joe@heaven.af.mil
To: fred-sos@heaven.af.mil

Hi.

**Store message safely on disk.
Trigger qmail-send.**

**Look at envelope recipient,
fred-sos@heaven.af.mil.
Is heaven.af.mil in locals? Yes.
Deliver locally to fred-sos@heaven.af.mil.**

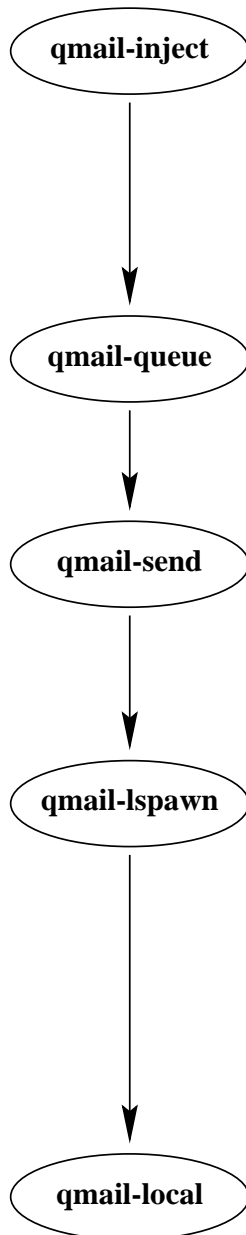
qmail-lspawn ./Mailbox

**Look at mailbox name, fred-sos.
Is fred-sos listed in qmail-users? No.
Is there a fred-sos account? No.
Is there a fred account? Yes.
Is fred's uid nonzero? Yes.
Is ~fred visible to the qmailp user? Yes.
Is ~fred owned by fred? Yes.
Give control of the message to fred.
Run qmail-local.**

**qmail-local fred ~fred fred-sos - sos heaven.af.mil \
joe@heaven.af.mil ./Mailbox**

**Does ~fred/.qmail-sos exist? Yes. "/.Extramail".
Write message to ./Extramail in mbox format.**

Local to virtual delivery



Original message:

To: dude@tommy.gov
Hi.

Fill in the complete envelope and header:

**(envelope) from joe@heaven.af.mil \
 to dude@tommy.gov**
From: joe@heaven.af.mil
To: dude@tommy.gov

Hi.

**Store message safely on disk.
 Trigger qmail-send.**

**Look at envelope recipient, dude@tommy.gov.
 Is tommy.gov in locals? No.
 Is dude@tommy.gov in virtualdomains? No.
 Is tommy.gov in virtualdomains? Yes:
 "tommy.gov:fred"
 Deliver locally to fred-dude@tommy.gov.**

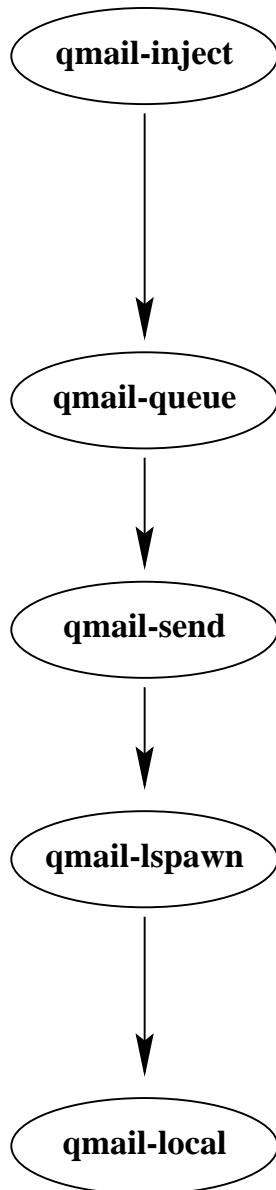
qmail-lspawn ./Mailbox

**Look at mailbox name, fred-dude.
 Is fred-dude listed in qmail-users? No.
 Is there a fred-dude account? No.
 Is there a fred account? Yes.
 Is fred's uid nonzero? Yes.
 Is ~fred visible to the qmailp user? Yes.
 Is ~fred owned by fred? Yes.
 Give control of the message to fred.
 Run qmail-local.**

**qmail-local fred ~fred fred-dude - dude tommy.gov \
 joe@heaven.af.mil ./Mailbox**

**Does ~fred/.qmail-dude exist? No.
 Does ~fred/.qmail-default exist? Yes: "./Mail.tommy".
 Write message to ./Mail.tommy in mbox format.**

Local to local alias delivery



Original message:

To: help
Hi.

Fill in the complete envelope and header:

**(envelope) from joe@heaven.af.mil \
 to help@heaven.af.mil
 From: joe@heaven.af.mil
 To: help@heaven.af.mil**

Hi.

**Store message safely on disk.
 Trigger qmail-send.**

**Look at envelope recipient, help@heaven.af.mil.
 Is heaven.af.mil in locals? Yes.
 Deliver locally to help@heaven.af.mil.**

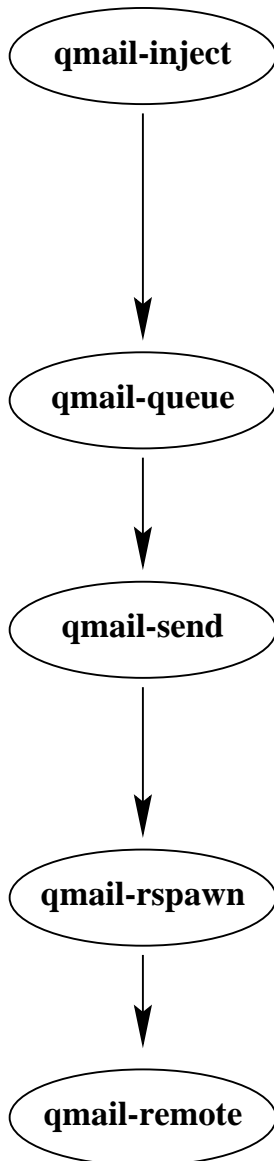
qmail-lspawn ./Mailbox

**Look at mailbox name, help.
 Is help listed in qmail-users? No.
 Is there a help account? No.
 Give control of the message to alias.
 Run qmail-local.**

**qmail-local alias ~alias help - help heaven.af.mil \
 joe@heaven.af.mil ./Mailbox**

**Does ~alias/.qmail-help exist? Yes: "john".
 Forward message to john.
 (delivery is now a local to local delivery)**

Local to remote delivery



Original message:

To: bill@irs.gov

Hi.

Fill in the complete envelope and header:

**(envelope) from joe@heaven.af.mil \
to bill@irs.gov**

From: joe@heaven.af.mil

To: bill@irs.gov

Hi.

**Store message safely on disk.
Trigger qmail-send.**

**Look at envelope recipient, bill@irs.gov.
Is irs.gov in locals? No.
Is bill@irs.gov in virtualdomains? No.
Is irs.gov in virtualdomains? No.
Is .gov in virtualdomains? No.
Deliver remotely to bill@irs.gov.**

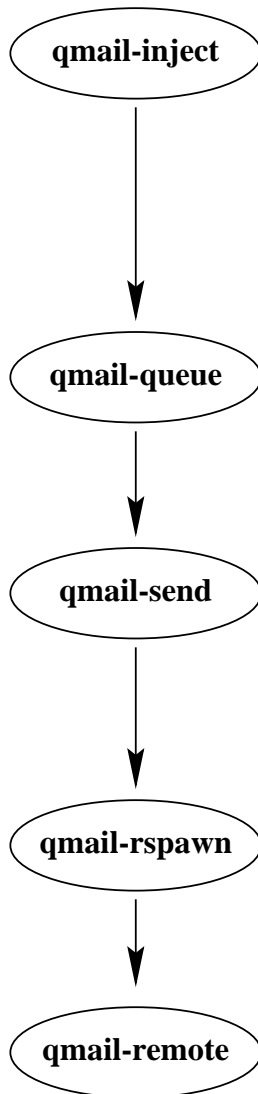
Run qmail-remote.

**Look at host name, irs.gov.
Is irs.gov listed in smtproutes? No.
Look up DNS MX/A for irs.gov and
connect to it by SMTP.**

MAIL FROM: <joe@heaven.af.mil>

RCPT TO: <bill@irs.gov>

Null client delivery



Original message:

To: bill@irs.gov
Hi.

Fill in the complete envelope and header:

**(envelope) from joe@heaven.af.mil \
 to bill@irs.gov**
From: joe@heaven.af.mil
To: bill@irs.gov

Hi.

**Store message safely on disk.
 Trigger qmail-send.**

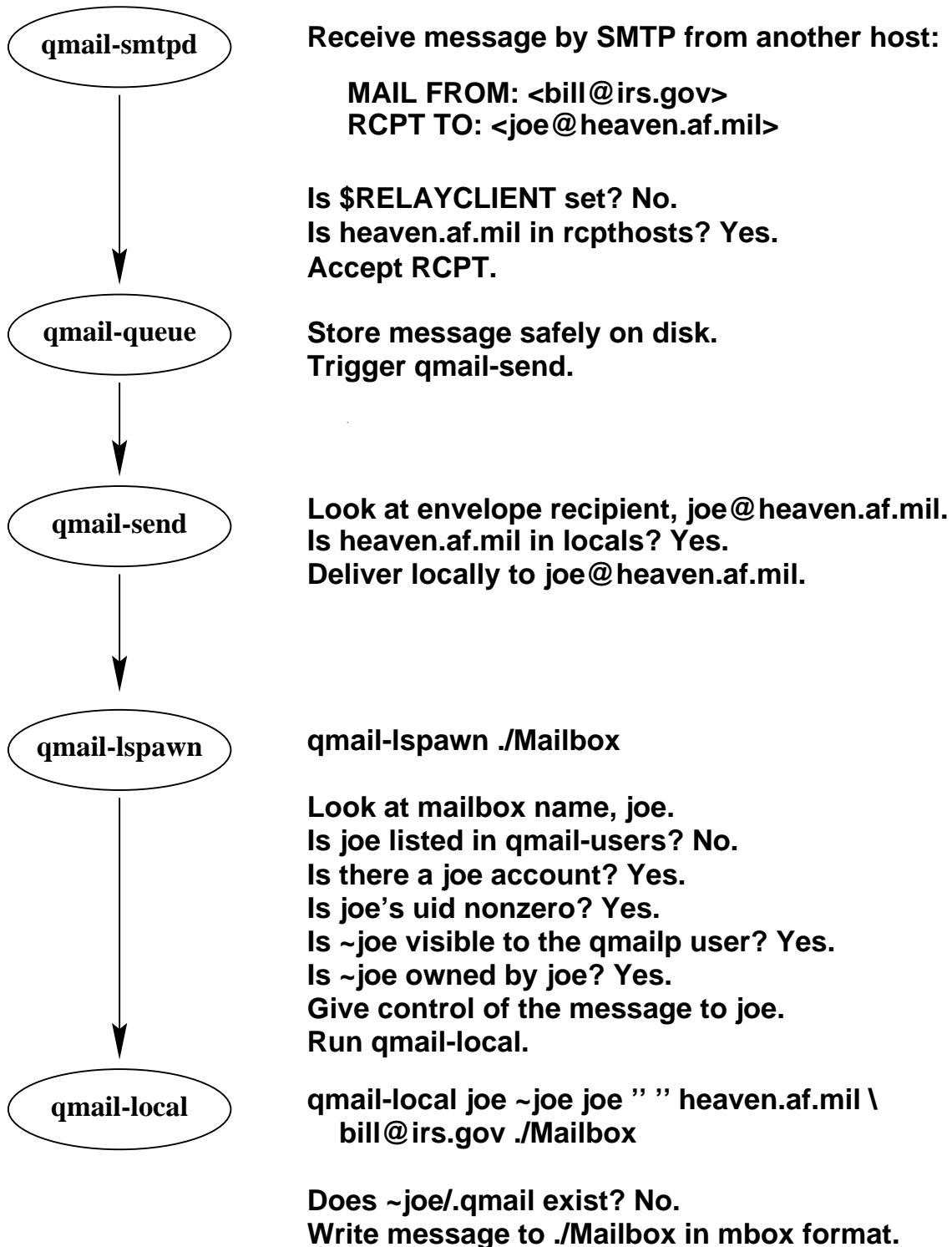
**Look at envelope recipient, bill@irs.gov.
 Is irs.gov in locals? No.
 Is bill@irs.gov in virtualdomains? No.
 Is irs.gov in virtualdomains? No.
 Is .gov in virtualdomains? No.
 Deliver remotely to bill@irs.gov.**

Run qmail-remote.

**Look at host name, irs.gov.
 Is irs.gov listed in smtproutes? Yes:
 "bigbang.af.mil".
 Look up DNS A for bigbang.af.mil and
 connect to it by SMTP.**

**MAIL FROM: <joe@heaven.af.mil>
 RCPT TO: <bill@irs.gov>**

Remote to local delivery



Unauthorised relaying

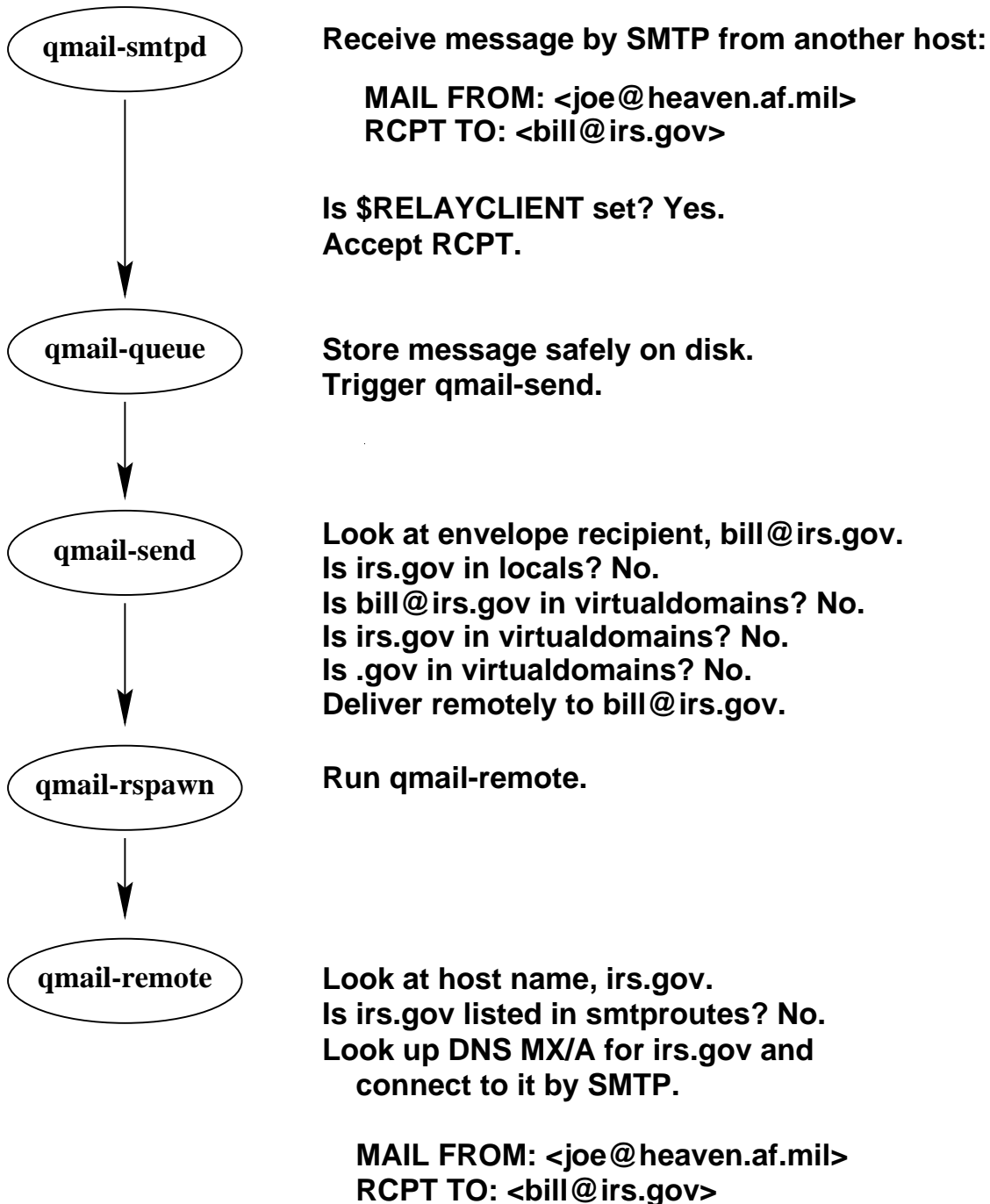
qmail-smtpd

Receive message by SMTP from another host:

MAIL FROM: <spammer@aol.com>
RCPT TO: <bill@irs.gov>

Is \$RELAYCLIENT set? No.
Is irs.gov in rcpthosts? No.
Reject RCPT.

Authorised relaying



Independent message retry schedule

Instead of repeatedly retrying every deferred message, each message is given its own independent retry schedule. Qmail uses a quadratic retry schedule for each unsuccessfully delivered message. Older messages are retried less often. Local messages are retried more often than remote messages.

Local messages:

$$\textit{time in queue} = 100 * \textit{delivery attempt}^2$$

$$\textit{delay till next retry} = 200 * \textit{delivery attempt} + 100$$

Remote messages:

$$\textit{time in queue} = 400 * \textit{delivery attempt}^2$$

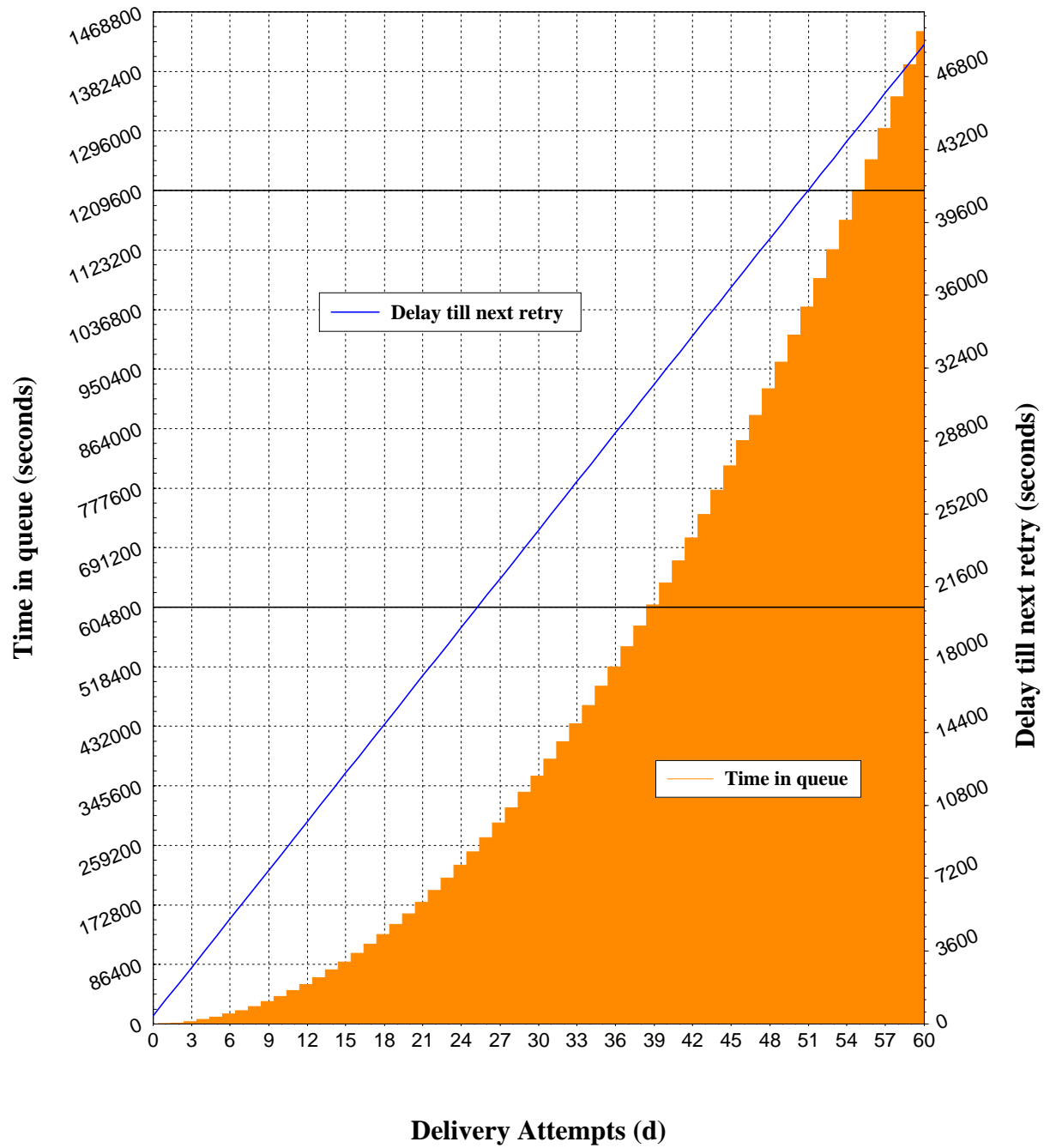
$$\textit{delay till next retry} = 800 * \textit{delivery attempt} + 400$$

Delivery d_0 is the first delivery attempt.

Independent message retry schedule

Quadratic Retry Schedule for qmail-send (remote)

(time in queue = $400 * d^2$) (delay time = $800 * d + 400$)



Remote host retry strategy

If a remote host does not respond to two connection attempts (separated by at least two minutes with no intervening successful connections), qmail automatically leaves the host alone for an hour. At the end of the hour it *slow-starts*, allowing one connection through to see whether the host is up.

The IP addresses of these unresponsive hosts are stored in `/var/qmail/queue/lock/tcpto`. The contents of this binary file can be examined using `/var/qmail/bin/qmail-tcpto`. The file can be reset using `/var/qmail/bin/qmail-tcpok`.

Starting qmail

The qmail distribution provides a number of startup examples in `/var/qmail/boot/*`. The basic mechanism is

```
env - PATH="/var/qmail/bin:$PATH" \  
    qmail-start [ aliasempty [ logger arg ... ] ]
```

The *aliasempty* argument is given to `qmail-lspawn`. It can be a simple mbox filename such as `./Mailbox` or a maildir directory name such as `./Maildir`.¹

The *aliasempty* argument may also be a different delivery program such as `/bin/mail` or `procmail` for example.

qmail's activity records are sent through the program specified by the *logger* argument – typically qmail's `splogger`.

The start up environment is eventually passed to `qmail-local` so you may need to sanitise the environment before starting qmail.

You may also wish to place limits on qmail's resource usage using appropriate `ulimit(1)` settings.

¹The trailing slash is **vital**. It signifies that the delivery destination is a maildir directory rather than an mbox file called Maildir.

Migrating from sendmail

By default, qmail will deliver to each user's home directory. If you wish to preserve your `/var/spool/mail/user` mail boxes, instruct qmail to deliver mail using a different MDA:

```
qmail-start \  
  '|preline -f /bin/mail -r \  
  "${SENDER:-MAILER-DAEMON}" -d $USER' \  
  splogger qmail
```

Examples of different MDA configurations are available in `/var/qmail/boot/`.

/etc/aliases compatibility

If you don't want to move away from your existing */etc/aliases* file you can use the *fastforward* package.

Create a hash table of alias definitions by running

```
newaliases1
```

If you have `:include` references, create hash tables for each of these include files by running

```
newinclude /path/to/include/file
```

Enable the alias database(s) by creating `~alias/.qmail-default` which contains

```
| fastforward -d /etc/aliases.cdb
```

fastforward will automatically read the contents of any `:include` references made in */etc/aliases* provided you have run the *newinclude* command.

fastforward can also be used to maintain separate alias databases for each supported virtual domain.

¹This is the *fastforward* version of *newaliases* and is not to be confused with the traditional *sendmail* version.

.forward compatibility

If you don't want to move away from your existing .forward files you can use the dot-forward package.

Start qmail by specifying .forward compatibility

```
qmail-start '| dot-forward .forward1
./Mailbox' splogger qmail
```

If a user has a .forward file, qmail will obey the instructions in that file and no further delivery will take place. If the .forward file does not exist, qmail will deliver to the user's default mail box – specified above as ./Mailbox or follow instructions in the user's .qmail file if it exists.

If you don't wish to provide .forward compatibility to all users, individual users can take advantage of dot-forward by specifying dot-forward delivery in their own .qmail files.

```
| dot-forward .forward
./Mailbox
```

¹The newline here is **vital**. The dot-forward delivery instruction is separate from the ./Mailbox delivery instruction.

Using tcpserver

Tcpserver is part of Dan Bernstein's ucspi-tcp package. It is a replacement for inetd and, optionally, tcp_wrappers. It is available from **<ftp://koobera.math.uic.edu/www/ucspi-tcp.html>**.

Tcpserver is the preferred mechanism for starting qmail network daemons (and any other **TCP** daemons that might normally be started from inetd).

```
tcpserver [options] host port program [args]
```

Example: Run tcpserver in verbose mode, as user *qmail*,¹ as group *nofiles*,² allow up to 100 simultaneous connections, allow all interfaces to listen for incoming **SMTP** connections:

```
tcpserver -v -u 7791 -g 2108 -c 100 \  
0 smtp /var/qmail/bin/qmail-smtpd 2>&1 \  
| /var/qmail/bin/splogger smtpd 3 &
```

¹You **must** use the UID number rather than a name.

²You **must** use the GID number rather than a name.

Using tcpserver

Tcpserver can be configured to allow or deny access on an IP basis in a similar fashion to `tcp_wrappers`.

Create a rules file, one file for each service under the control of tcpserver. `/etc/smtp.tcp` for example.

```
149.135.128.:allow,RELAYCLIENT=""
127.:allow,RELAYCLIENT=""
149.135.13.:deny
peter@149.135.13.17:allow,RELAYCLIENT=""
:allow,DATABYTES="1048576"
```

Create the rules database

```
tcprules /etc/smtp.cdb /etc/smtp.tmp \
< /etc/smtp.tcp
```

Example: Run `tcpserver` in verbose mode, as user *qmaild*, as group *nofiles*, allow up to 100 simultaneous connections, allow all interfaces to listen for incoming **SMTP** connections based on the rules in `/etc/smtp.cdb`.

```
tcpserver -v -u 7790 -g 2108 \
-x /etc/smtp.cdb -c 100 0 smtp \
/var/qmail/bin/qmail-smtpd 2>&1 \
| /var/qmail/bin/splogger smtpd 3 &
```

Address assignment

Qmail's alias mechanism does not apply if the user exists. User names can be overridden using the `qmail-users` mechanism.

The file `/var/qmail/users/assign` contains details on who should receive mail for each given user name:

```
=local:user:uid:gid:homedir:dash:ext:
+loc:user:uid:gid:homedir:dash:pre:
```

Consider the following example:

```
=ftp:alias:29990:29998:/var/qmail/alias:-:ftp:
+ftp-:alias:29990:29998:/var/qmail/alias:-ftp-::
+ftp:peter:2052:100:/home/peter:-:ftp:
```

Mail addressed to `ftp@domain` will be handled by the `alias` user according to the instructions in `~alias/.qmail-ftp`.

Mail addressed to `ftp-something@domain` will be handled by the `alias` user according to the instructions in `~alias/.qmail-ftp-something`.

Mail addressed to `ftpstuff@domain` will be handed by `peter` according to the instructions in `~peter/.qmail-ftpstuff`.

Address assignment

qmail-pw2u can be used to build an assign file based on a V7 format password file.

```
/var/qmail/bin/qmail-pw2u < /etc/passwd \  
> /var/qmail/users/assign
```

/var/qmail/users/assign must not contain NULL characters. It must also end with a single dot on a line by itself

```
...  
=ftp:alias:29990:29998:/var/qmail/alias:-:ftp:  
+ftp-:alias:29990:29998:/var/qmail/alias:-ftp-::  
+ftp:peter:2052:100:/home/peter:-:ftp:  
.
```

qmail-newu **must** be run to create /var/qmail/users/cdb which is used by qmail-lspawn.

Mailing list management

Majordomo version 1.9x needs some modification to work with qmail. Version 2.x should support qmail "*out of the box*".

<http://www.eyrie.org/~eagle/faqs/mjqmail.html> is an excellent FAQ on how to modify majordomo. It contains pointers to a number of patches and auxiliary programs that allow you to continue using majordomo with qmail.

The basic steps involve

- Apply patches to majordomo
- Eliminate majordomo's wrapper program
- Create `~majordomo/.qmail-list` files
- Change majordomo config files to use *list-owner* instead of *owner-list*

Ezmlm – a qmail mailing list manager

Ezmlm is specifically tailored for qmail. Features include:

- secure and simple subscribe/unsubscribe mechanism
- automatic message archiving
- open or closed lists
- smart bounce handling using qmail's Variable Envelope Return Path (VERP) to reliably determine the recipient address and message number for every incoming bounce message
- automatic unsubscription after 10 days of bounces
- any user can create an ezmlm list
- customisations available through .qmail files

Creating an ezmlm list

To create a *psamuel-jokes* list

```
ezmlm-make ~/JOKES ~/.qmail-jokes \  
psamuel-jokes my.domain.com
```

Subscribe/unsubscribe requests are sent to

psamuel-jokes-subscribe@my.domain.com
psamuel-jokes-unsubscribe@my.domain.com

Postings are sent to

psamuel-jokes@my.domain.com

List help is sent to

psamuel-jokes-help@my.domain.com

The list owner can be contacted at

psamuel-jokes-owner@my.domain.com

Users send retrieval requests for message 12345 to

psamuel-jokes-get.12345@my.domain.com

Customising an ezmlm list

Disable message archiving

```
mv ~/JOKES/archived ~/JOKES/notarchived
```

Prevent public subscription

```
mv ~/JOKES/public ~/JOKES/notpublic
```

Force a Reply-To: list header

```
echo "Reply-To: psamuel-jokes@my.domain.com" \  
>> ~/JOKES/headeradd
```

Allow closed user group subscription

```
touch ~/JOKES/public
```

and then edit `~/.qmail-jokes-default` and insert

```
|domaincheck listname domain1 domain2 ...
```

`Domaincheck` is an executable of your own design that examines **\$SENDER** and exits 0 if the sender's domain is in one of the listed valid domains. If the sender is not from one of these domains, `domaincheck` prints an appropriate message to `stdout` which will appear in the bounce message. `Domaincheck` then exits 100 which informs `qmail` that no further processing is to take place.

Customising an ezmlm list

Further possible customisations include:

- modify `~/JOKES/headerremove` to exclude specific headers
- modifying administrative text messages by editing `~/JOKES/text/*`
- adding list specific footer messages by modifying `~/.qmail-jokes` (all on one line):

```
| cat - /home/psamuel/JOKES/text/footer1 |
    /pks/bin/ezmlm-send '/home/psamuel/JOKES'
```

- modifying `Subject:` headers and adding a footer message by modifying `~/.qmail-jokes` (all on one line):

```
| subject-prefix2 JOKES |
    cat - /home/psamuel/JOKES/text/footer |
    /pks/bin/ezmlm-send '/home/psamuel/JOKES'
```

- just about anything you can think of to do in a `.qmail` file

¹footer is a text file of your own making

²subject-prefix is a program of your own design that modifies the `Subject:` header of the message

Tips and Troubleshooting

- Did you read **ALL** the man pages and the FAQ?
- Did you search **<http://www.qmail.org>** ?
- Did you examine the qmail logs?
- If mail is not being delivered, but a burst of deliveries is seen every time you start qmail–send, check your trigger file. Its permissions are quite specific:

```
prw--w--w- 1 qmails qmail 0 Apr 13 14:26
/var/qmail/queue/lock/trigger
```

- If mail is not being delivered to some users, check the permissions on the user's home directories, mailboxes, Maildirs and .qmail files. The qmail log file should mention permission problems. Some programs may hold a lock on the mailbox file, this prevents local delivery.
- You can set up multiple qmail–smtpd programs and switch between them by setting **\$PATH** in your tcprules. (Requires tcpserver).

Tips and Troubleshooting

- If you need to move the qmail queue (or it has been trashed), use `queue-fix` to repair broken inodes, permissions etc. <http://www.netmeridian.com/e-huss/queue-fix.tar.gz>
- Use `qmail-lint` to check your qmail control files. <http://www.glasswings.com.au/qmail/qmail-lint-0.53>
- Use `fixcr` to ensure CRLF end of line chars are enforced. Start `qmail-smtpd` from `tcpserver`:

```
tcpserver -v -u 7790 -g 2108 \
  -x /etc/smtp.cdb -c 100 \
  0 smtp sh -c 'fixcr \
  | /var/qmail/bin/qmail-smtpd' 2>&1 \
  | /var/qmail/bin/splogger smtpd 3 &
```

- Hide your machine identity using `tcprules`.

```
149.135.128.11:allow,RELAYCLIENT="",
  TCPREMOTEHOST="mail.tansu.com.au",
  TCPREMOTEIP="192.168.0.1"
:allow
```

This will affect the `Received:` header used by `qmail-queue`, `qmail-qmqpd` and `qmail-qmtpd`.

Tips and Troubleshooting

- If you're having trouble delivering messages to *user@aol.com*, typically error messages of the form `CNAME lookup failed temporarily`, you'll need to patch `dns.c` from `qmail` and/or `ucspi-tcp`. AOL has increased their DNS records beyond 512 bytes. **<http://www.ckdhr.com/ckd/qmail-103.patch>**

A simpler patch can also be applied

```

--- dns.c.orig
+++ dns.c
@@ -24,24 @@
-static union { HEADER hdr; unsigned char
        buf[PACKETSZ]; } response;
---
+static union { HEADER hdr; unsigned char
        buf[1<<15]; } response;

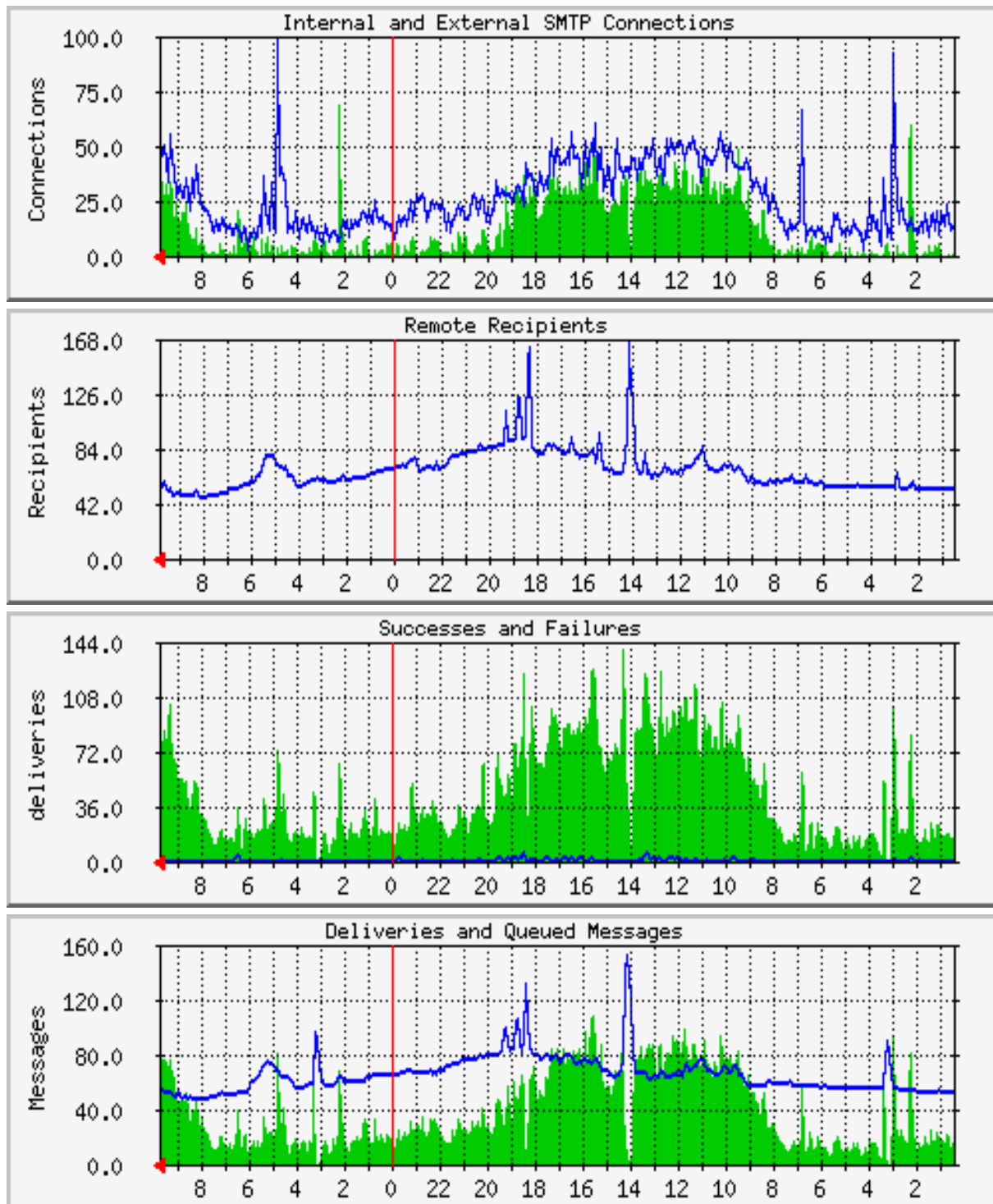
```

- Postfix comes with some good performance loading tools, `smtp-source` and `smtp-sink`. You can use these to test **SMTP** daemons and MTA systems under various load conditions.
- For systems handling enormous amounts of mail, increase the number of queue directories by editing `conf-split` before compiling. The default value is 23.

Tips and Troubleshooting

- Avoid `syslogd`. On some operating systems it can inhibit performance with its use of the `sync(2)` call. Use `accustamp` and `cyclog` from Dan's `daemontools` package instead. <ftp://koobera.math.uic.edu/www/daemontools.html>
- Place `/var/qmail` in its own file system. If possible, place it on a separate disk and/or controller and take full advantage of available RAID style tools to improve I/O performance.
- Disable **IDENTD** lookups by running `tcpserver` with the `-R` option.
- Run `qmail-start`, `tcpserver` etc from `supervise` to ensure they auto restart when necessary. `supervise` is part of the `daemontools` package.

Performance Analysis¹



¹Real data from a corporate mail gateway. Gathered by MRTG after analysing qmail and tcpserver logs.

Performance Analysis

- The system handles more **SMTP** connections on its external network interface than its internal network interface.
- Traffic profiles seem to follow core business hours on both interfaces.
- The number of items in the queue remains around 50. This indicates that remote sites are either busy or under powered.
- Just after 2am yesterday, a large number of **SMTP** connections arrived on the internal interface. Around 3am on the same day, an even larger number of **SMTP** connections arrived on the external interface. This lead to a corresponding increase in deliveries at these times.
- The large increase in queued messages, and the corresponding drop in deliveries at 2pm yesterday, indicates all the possible qmail–remote processes were busy with large messages. A similar situation arose at around 6:30pm yesterday and again at around 3am this morning.

Availability and competing products

qmail – version 1.03, (June 1998)

<http://www.qmail.org>

<ftp://koobera.math.uic.edu/www/qmail.html>

sendmail – version 8.9.3, (February 1999)

<http://www.sendmail.org>

exim – version 3.01, (May 1999)

<http://www.exim.org>

smail – version 3.2, (July 1996; beta 106, April 1999)

<ftp://ftp.uu.net/networking/mail/smail>

zmailer – version 2.2e10, (March 1996)

<ftp://ftp.cs.toronto.edu/pub/zmailer>

Postfix – (June 1 1999)

<http://www.postfix.org>

Ancillary software

qmail is distributed with a number of ancillary programs.

qmail-qstat – show the number of queued and pre-processed messages in the queue.

qmail-qread – shows the sender and recipient details and delivery status of all pre-processed messages.

qmail-pop3d – a **POP3** daemon that supports maildir formats. Requires a checkpassword program.

sendmail – wrapper allowing local MUA programs to be used unchanged. They can still compose mail and deliver it via `/usr/lib/sendmail -t`. Calls qmail-inject.

Ancillary software

datemail – similar interface to the sendmail wrapper. Sets `Date:` header in localtime instead of GMT for those MUAs that do not set the header. Calls `qmail-inject`.

preline – inserts a **UUCP** style `From user` header before calling an external program. Preline insists on sending the entire message to `stdout`. It can be upset by downstream programs, such as some vacation programs, that close `stdin` before preline has finished with `stdout`.

forward – forwards mail messages to the specified list of addresses. List can be constructed "*on the fly*".

And many more.

Additional software

Dan Bernstein, and others, have written a number of other packages that can be used with qmail. Dan's software is available from **<ftp://koobera.math.uic.edu/www/software.html>**.

qmailanalog – analyses log files and generates mail statistics.

ezmlm – mailing list manager specifically for qmail. Supports automatic subscription, archiving and retrieval of messages.

checkpassword – required by qmail-pop3d. Originally written by Russ Nelson.

fastforward – sendmail like alias clone for sites that don't wish to move away from /etc/aliases files.

dot-forward – sendmail like .forward clone for sites that don't wish to move away from .forward files.

Additional software

`serialmail` – allows batch processing of mail transport over slow/intermittent serial links.

`rblsmtpd` – provides support for excluding mail from sites listed in the *Real Time Blacklist*. It can be used with any SMTP daemon. See <http://maps.vix.com/rbl> for more information on the *Real Time Blacklist*.

`VmailMgr` – A Virtual mail manager designed to manage multiple domains of mail addresses and mailboxes on a single host. See <http://www.qcc.sk.ca/~bguenter/distrib/vmailmgr> for more details.

`qmail-vacation` – a vacation package designed to work with qmail. See <ftp://ftp.eserv.com.au/pub/tools/qmail/>.

`eliminate-dups` – eliminates duplicate messages arriving in your mailbox. See <ftp://ftp.eserv.com.au/pub/tools/qmail/>.

Additional software

There are a host of other third party packages available from the qmail web site – **<http://www.qmail.org>**.

Extensions to ezmlm.

Patches to provide maildir support for MUAs.

Alternative checkpassword programs.

Smart startup/shutdown wrappers.

HTML versions of the manual pages.

qmail patches for better SPAM blocking etc.

Qmail book

John Levine and Russell Nelson are writing a book, to be published in September 1999 by O'Reilly & Associates.

Commercial Support

Several organisations are willing to provide commercial support for qmail.

Mira Networking. (Australia) Support is available over the Internet and Mira accepts Visa/MC/Amex/Diners.

<http://www.mira.net/qmail.html>

Crynwr Software. (USA) Support is available on-site, by 800 number, or over the Internet. Crynwr accepts Visa/MC/Amex/purchase orders.

<http://www.crynwr.com/qmail.html>

Inter7 Internet Technologies, Inc. (USA) Support is available on-site, by 800 number or over the internet. Inter7 accepts purchase orders.

<http://www.inter7.com/qmail>

Commercial Support

tummy.com ltd. (USA) provides commercial support for qmail. Available by email, telephone or on site. Accepts Discover, Visa, MC, Amex and purchase orders.

<http://www.tummy.com>

Quist Consulting (Canada) Provides commercial support for qmail.

<http://www.quist.on.ca>

Gormand Pty Ltd (Australia) Provides commercial support for qmail.

<http://www.gormand.com.au>

eServ. Pty Ltd (Australia) Provides commercial support for qmail.

<http://www.eserv.com.au>

The future

Zero administration for null clients. Replace **SMTP** with **QMQP** for communication between null clients and central mail host. A full implementation of **QMQP** ships with qmail version 1.03. Dan plans to release a mini qmail package with **QMQP** support enabled by default.

Faster installation. Provide precompiled packages for popular operating systems.

Split log analysis. Improvements to qmailanalog. The next version will be designed to run periodically, keeping crucial information in a table on disk. qmailanalog-0.70 has some of these features now.

[Speed] Wide-area QMTP support. Use **QMTP** between qmail hosts to cut down on **SMTP** latency. Requires encoding the **QMTP** availability in the hosts MX record. See RFCMXPS and RFCQMTP in the qmail distribution for more details.

The future

[Speed] Asynchronous compressed journaling. Reduce qmail's disk I/O by feeding new mail through a separate journaling process that saves messages in compressed form; qmail-send will rebuild the queue from the compressed journal when it starts.

[Speed] Local-host DNS lookups. A future version of qmail will support an alternate, much smaller **DNS** library that talks to a nameserver on the same host.

Dynamic subscription agents. Why should users have to deal with dozens of different mailing list subscription mechanisms? The new dynasub package will accept subscription requests from local users and negotiate subscriptions with remote mailing lists. It will automatically set up a local sublist for each remote list, to speed delivery and protect user privacy.

Don't ask when qmail-2.0 will be released! Take the *zen* approach and let it happen. 😊

URLography

Source Code

<ftp://koobera.math.uic.edu/www/qmail.html>

<ftp://moni.msci.memphis.edu/pub/qmail/>

– qmail RPMS

<http://www.qmail.org/>

– more RPM references

Help

<http://www.qmail.org/>

<ftp://koobera.math.uic.edu/www/qmail/faq.html>

<http://Web.InfoAve.Net/~dsill/lwq.html>

<http://qmail-docs.surfdirect.com.au/>

<http://www.flounder.net/qmail/qmail-howto.html>

<http://www.tibus.net/pgregg/projects/>

<http://savage.iut-blagnac.fr/projets/doc/qmail/v0.4/>

<http://www.palomine.net/qmail/relaying.html>

<http://www.eyrie.org/~eagle/faqs/mjqmail.html>

– qmail with majordomo FAQ

<http://www.i2k.net/~dougvw/mailqueue.html>

Qmail Mailing List Archives

<http://www.archive.ornl.gov:8000/>

– searchable

<http://www.egroups.com/list/djb-qmail?refstop=1>

<http://msgs.securepoint.com/qmail/>

URLography

Other Mailing List Details

<ftp://koobera.math.uic.edu/www/lists.html>
qmail-subscribe@list.cr.yp.to
cdb-subscribe@list.cr.yp.to
ezmlm-subscribe@list.cr.yp.to
password-subscribe@list.cr.yp.to
qmailannounce-subscribe@list.cr.yp.to
serialmail-subscribe@list.cr.yp.to

Ancillary software

<ftp://koobera.math.uic.edu/www/software.html>
<ftp://koobera.math.uic.edu/www/checkpwd.html>
<ftp://koobera.math.uic.edu/www/dot-forward.html>
<ftp://koobera.math.uic.edu/www/ezmlm.html>
<ftp://koobera.math.uic.edu/www/fastforward.html>
<ftp://koobera.math.uic.edu/www/mess822.html>
<ftp://koobera.math.uic.edu/www/qmailanalog.html>
<ftp://koobera.math.uic.edu/www/rblsmtpd.html>
<ftp://koobera.math.uic.edu/www/serialmail.html>
<ftp://koobera.math.uic.edu/www/ucspi-tcp.html>

URLography

Third Party Ancillary Software

<http://www.qmail.org/>

– loads of references

<http://www.ezmlm.org/>

– ezmlm with loads of extras

<http://www.tibus.net/pgregg/projects/>

– another checkpassword program

<ftp://ftp.eserv.com.au/pub/tools/qmail/eliminate-dups-1.2.tar.gz>

<ftp://ftp.eserv.com.au/pub/tools/qmail/qmail-vacation-1.3.tar.gz>

<http://www.netmeridian.com/e-huss/queue-fix.tar.gz>

<http://www.glasswings.com.au/qmail/qmail-lint-0.53>

<http://www.qcc.sk.ca/~bguenter/distrib/vmailmgr>

– multiple virtual domain manager

<http://www.nrg4u.com/>

– qmail with **LDAP** support, *Big Picture* home page

<http://http://www.inter7.com/qmailadmin/>

<http://www.obtuse.com/smtpd.html>

– alternate **SMTP** daemon

<http://www.io.com/~mick/soft/qmhandle.html>

<http://www.qmail.org/qmLogsort>

<ftp://ftp.win.tue.nl/pub/security/>

– home of tcp_wrappers

<http://ee-staff.ethz.ch/~oetiker/webtools/mrtg/mrtg.html>

URLography

Anti SPAM

<http://maps.vix.com/rbl/>

<http://www.orbs.org/>

<http://www.obtuse.com/smtpd.html>

<http://spam.abuse.net/spam/>

Other MTAs

<http://www.exim.org/>

<http://www.postfix.org/>

<http://www.sendmail.org/>

<ftp://ftp.uu.net/networking/mail/smail/>

<ftp://ftp.cs.toronto.edu/pub/zmailer/>

Commercial Support

<http://www.mira.net/qmail.html>

<http://www.crynwr.com/qmail.html>

<http://www.inter7.com/qmail/>

<http://www.tummy.com/>

<http://www.quist.on.ca/>

<http://www.gormand.com.au/>

<http://www.eserv.com.au/>

URLography

Patches

<http://www.qmail.org/>

– loads of references

<http://www.ckdhr.com/ckd/qmail-103.patch>

– one implementation of the AOL dns.c patch

Web Based Mail Interfaces¹

<http://mikael.mnf.nu/webmail/>

<http://netwinsite.com/dmailweb/>

<http://thunder.dorm.duke.edu/zeus/index.html>

<http://web.horde.org/imp/>

<http://web.nwe.ufl.edu/+AH4-northrup/hypermail.html>

<http://webmail.woanders.de/>

<http://www.atdot.org/>

<http://www.emumail.com/>

<http://www.endymion.com/>

<http://www.inter7.com/sqwebmail/>

<http://www.landfield.com/hypermail/>

<http://www.lugs.ch/LUGS+AF8-Members/norbert.kuemin/wmf.html>

<http://www.mailspinner.com/>

<http://www.netwinsite.com/>

<http://www.webmin.com/webmin/>

<http://www.woanders.de/~wastl/webmail/>

¹These may or may not work with qmail.

That's All Folks