

Documentation on Integrated Mailing Solution Using qmail

Document version: 1.5

(Covers the current versions of qmail, vpopmail, and ezmlm)

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1. qmail Basics

qmail is an MTA (mail transfer Agent) for Unix flavors. It uses SMTP and supports ESMTP also. qmail is a secure, reliable, efficient, simple message light weight transfer agent. It is meant as a replacement for the entire sendmail-binmail system on typical Internet-connected UNIX hosts.

Qmail software is written by D. J. Bernstein.

1.1. Why qmail? - Comparison of qmail with other MTAs

I am just giving the comparison of qmail with sendmail which is being widely used as MTA for the past few decades.

Qmail is a light weight product, and unlike many other MTAs you don't have to run qmail as root. This is one of the best security features of qmail.

Qmail is a much smaller than sendmail, and it lacks many of the features that most mail servers have today. It has no native support for RBL, which sendmail does have. Also, unlike sendmail, Qmail can't reject E-mail addressed to a mailbox that doesn't exist. Qmail will accept the E-mail message, and then it will generate a "no such user" bounce internally. But these are the standard features of qmail, a large number of add-ons or patches are available, and by applying these add-ons or patches you can make the qmail more powerful than any other MTA.

Qmail's security features are widely discussed and documented. Sendmail has been hacked, revised, and patched for years. Security vulnerabilities of sendmail is an established fact and well documented also.

One of the nice features of Qmail is that it supports an alternate mail storage format, that's directory-based, instead of one huge file containing all your messages. If you do a lot of POP3 serving, you can save a lot of CPU cycles and disk activity with Qmail. Unfortunately, Pine does not natively support this storage format. But, again, there are patches for that out there.

Qmail has a problem if you are sending mails to multiple users of the same domain, qmail will connect multiple times unlike sendmail. This may lead to the wastage of bandwidth.

1.2. Features of qmail

Secure: Security is an absolute requirement in today's world. Mail delivery is utmost critical for users; it should be up 24 hours a day 7 days a week, so it must be completely secure. The person who has written qmail was sick of the security holes in sendmail and other MTAs.

Reliable: qmail's straight-paper-path philosophy guarantees that a message, once accepted into the system, will never be lost. Qmail also supports maildir, a new, super-reliable user mailbox format. Maildirs, unlike mbox files and mh folders, won't be corrupted if the system crashes during delivery. Even better, not only can a user safely read his mail over NFS, but any number of NFS clients can deliver mail to him at the same time.

Efficient: On a Pentium under BSD/OS, qmail can easily sustain 200000 local messages per day---that's separate messages injected and delivered to mailboxes in a real test! Although remote deliveries are inherently limited by the slowness of DNS and SMTP, qmail overlaps 20 simultaneous deliveries by default, so it zooms quickly through mailing lists

Simple: qmail is vastly smaller than any other Internet MTA. Some reasons why: (1) Other MTAs have separate forwarding, aliasing, and mailing list mechanisms. qmail has one simple forwarding mechanism that lets users handle their own mailing lists. (2) Other MTAs offer a spectrum of delivery modes, from fast+unsafe to slow+queued. qmail-send is instantly triggered by new items in the queue, so the qmail system has just one delivery mode: fast+queued. (3) Other MTAs include, in effect, a specialized version of inetd that watches the load average. qmail's design inherently limits the machine load, so qmail-smtpd can safely run from your system's inetd.

Replacement for sendmail: qmail supports host and user masquerading, full host hiding, virtual domains, null clients, list-owner rewriting, relay control, double-bounce recording, arbitrary RFC 822 address lists, cross-host mailing list loop detection, per-recipient checkpointing, downed host backoffs, independent message retry schedules, etc. In short, it's up to speed on modern MTA features. qmail also includes a drop-in ``sendmail'' wrapper so that it will be used transparently by your current UAs.

Main features of qmail:

Setup:

- ❖ automatic adaptation to your UNIX variant---no configuration needed
- ❖ AIX, BSD/OS, FreeBSD, HP/UX, Irix, Linux, OSF/1, SunOS, Solaris, and more
- ❖ automatic per-host configuration (config, config-fast)
- ❖ quick installation---no big list of decisions to make

Security:

- ❖ clear separation between addresses, files, and programs
- ❖ minimization of setuid code (qmail-queue)
- ❖ minimization of root code (qmail-start, qmail-lspawn)
- ❖ five-way trust partitioning---security in depth
- ❖ optional logging of one-way hashes, entire contents, etc. (QUEUE_EXTRA)

Message construction (qmail-inject):

- ❖ RFC 822, RFC 1123
- ❖ full support for address groups
- ❖ automatic conversion of old-style address lists to RFC 822 format
- ❖ sendmail hook for compatibility with current user agents
- ❖ header line length limited only by memory
- ❖ host masquerading (control/defaulthost)
- ❖ user masquerading (\$MAILUSER, \$MAILHOST)
- ❖ automatic Mail-Followup-To creation (\$QMAILMFTFILE)

SMTP service (qmail-smtpd):

- ❖ RFC 821, RFC 1123, RFC 1651, RFC 1652, RFC 1854
- ❖ 8-bit clean
- ❖ 931/1413/ident/TAP callback (tcp-env)
- ❖ relay control---stop unauthorized relaying by outsiders (control/rcptheosts)
- ❖ no interference between relay control and forwarding
- ❖ tcpd hook---reject SMTP connections from known abusers
- ❖ automatic recognition of local IP addresses
- ❖ per-buffer timeouts
- ❖ hop counting

Queue management (qmail-send):

- ❖ instant handling of messages added to queue
- ❖ parallelism limit (control/concurrencyremote, control/concurrencylocal)
- ❖ split queue directory---no slowdown when queue gets big
- ❖ quadratic retry schedule---old messages tried less often
- ❖ independent message retry schedules
- ❖ automatic safe queueing---no loss of mail if system crashes
- ❖ automatic per-recipient checkpointing
- ❖ automatic queue cleanups (qmail-clean)
- ❖ queue viewing (qmail-qread)
- ❖ detailed delivery statistics (qmailanalog, available separately)

Bounces (qmail-send):

- ❖ QSBMF bounce messages---both machine-readable and human-readable
- ❖ HCMSSC support---language-independent RFC 1893 error codes
- ❖ double bounces sent to postmaster

Routing by domain (qmail-send):

- ❖ any number of names for local host (control/locals)
- ❖ any number of virtual domains (control/virtualdomains)
- ❖ domain wildcards (control/virtualdomains)
- ❖ configurable percent hack support (control/percenthack)
- ❖ UUCP hook

SMTP delivery (qmail-remote):

- ❖ RFC 821, RFC 974, RFC 1123
- ❖ 8-bit clean
- ❖ automatic downed host backoffs
- ❖ artificial routing---smarthost, localnet, mailertable (control/smtproutes)
- ❖ per-buffer timeouts
- ❖ passive SMTP queue---perfect for SLIP/PPP (serialmail, available separately)

Forwarding and mailing lists (qmail-local):

- ❖ address wildcards (.qmail-default, .qmail-foo-default, etc.)
- ❖ sendmail .forward compatibility (dot-forward, available separately)
- ❖ fast forwarding databases (fastforward, available separately)
- ❖ sendmail /etc/aliases compatibility (fastforward/newaliases)
- ❖ mailing list owners---automatically divert bounces and vacation messages
- ❖ VERPs---automatic recipient identification for mailing list bounces
- ❖ Delivered-To---automatic loop prevention, even across hosts
- ❖ automatic mailing list management (ezmlm, available separately)

Local delivery (qmail-local):

- ❖ user-controlled address hierarchy---fred controls fred-anything
- ❖ mbox delivery
- ❖ reliable NFS delivery (maildir)
- ❖ user-controlled program delivery: procmail etc. (qmail-command)
- ❖ optional new-mail notification (qbiff)
- ❖ optional NRUDT return receipts (qreceipt)
- ❖ conditional filtering (condredirect, bouncesaying)

POP3 service (qmail-popup, qmail-pop3d):

- ❖ RFC 1939
- ❖ UIDL support
- ❖ TOP support
- ❖ APOP hook
- ❖ modular password checking (checkpassword, available separately)

1.2. The Big qmail picture

See the big mail picture in the next page. The big qmail picture is prepared by Andre Oppermann*. The big qmail picture will help you understand how various components in the system work to make the qmail a powerful MTA. The Big qmail picture is reproduced here with the permission of the author.

* Andre Oppermann can be contacted at opi@nrg4u.com

THE BIG Qmail PICTURE

Version 1.03 for qmail 1.03

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

tcpserver

Command line parameters:
 [-gvidOoPpHhRr1]
 [-climit] [-4backlog]
 [-rules.cdb] [-ggid] [-uid]
 [-localname] [-timeout]
 host port program [arg ...]

Environment Variables:
 none

Configuration files:
 rules.cdb

qmail-smtpd

Command line parameters:
 none

Environment Variables:
 PROTO (TCP)
 TCPLOCALHOST
 TCPLOCALIP
 TCPLOCALPORT
 TCPREMOTEHOST
 TCPREMOTEINFO
 TCPREMOTEIP
 TCPREMOTEPORT
 RELAYCLIENT

Configuration files:
 badmailfrom
 databytes
 localiphost (me)
 rcpthosts
 morecpthosts (cdb format)
 smtpgreeting (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 queueadir
 63 problem with queue/pid
 64 problem with queue/mess
 65 problem with queue/intd
 66 problem with todo
 81 internal bug, eg. 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
 recip [recip ...]

Environment Variables:
 none

Configuration files:
 helohost (me)
 smtproutes
 timeoutconnected (60)
 timeoutremote (1200)

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

qmail-inject

Command line parameters:
 [-rNnAHH]
 [-sender]
 recip

Environment Variables:
 QMAILUSER
 MAILUSER
 USER
 LOGNAME
 QMAILHOST
 MAILHOST
 QMAILNAME
 MAILNAME
 NAME
 QMAILINJECT
 QMAILDEFALLTDOMAIN
 QMAILDEFALLTHOST
 QMAILDHOST
 QMAILPLUSDHOMAIN

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

qmail-send

Command line parameters:
 none

Environment Variables:
 none

Configuration files:
 bouncefrom (mailer-daemon)
 bouncehost (me)
 concurrency/local (10)
 concurrency/remote (20)
 doublebouncehost (me)
 doublebouncefrom (postmaster)
 envnothost (me)
 locals (me)
 percenthack
 queuelifetime (604800)
 virtualdomains

Remarks:
 virtualdomains are handled after locals

qmail-lspawn

Command line parameters:
 allasempty

Environment Variables:
 none

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

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

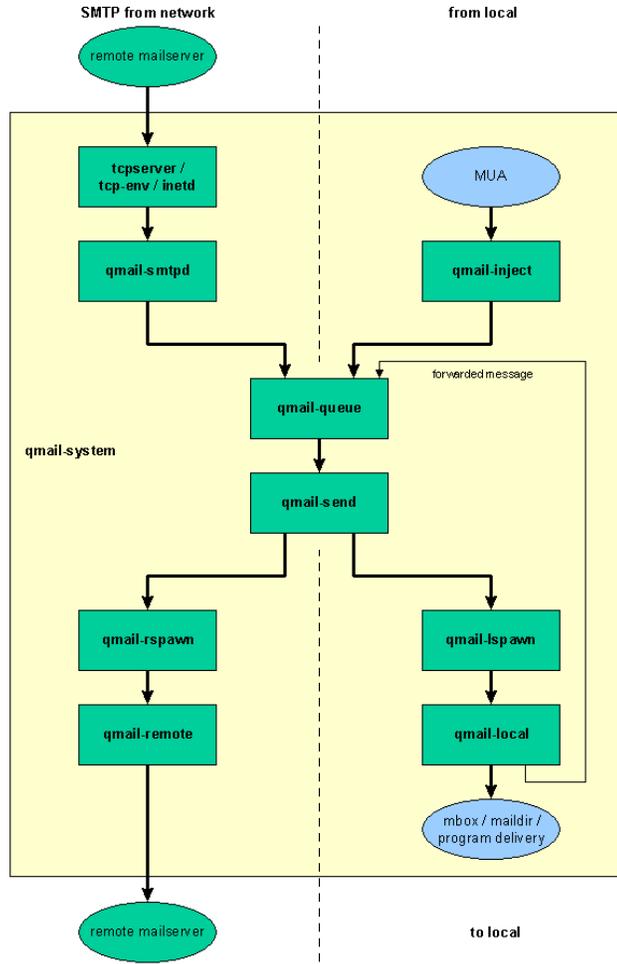
qmail-local

Command line parameters:
 [-rN]
 user
 homedir
 local
 dash
 exit
 domain
 sender
 allasempty

Environment Variables:
 none

Configuration files:
 ~home/qmail
 ~alias/qmail

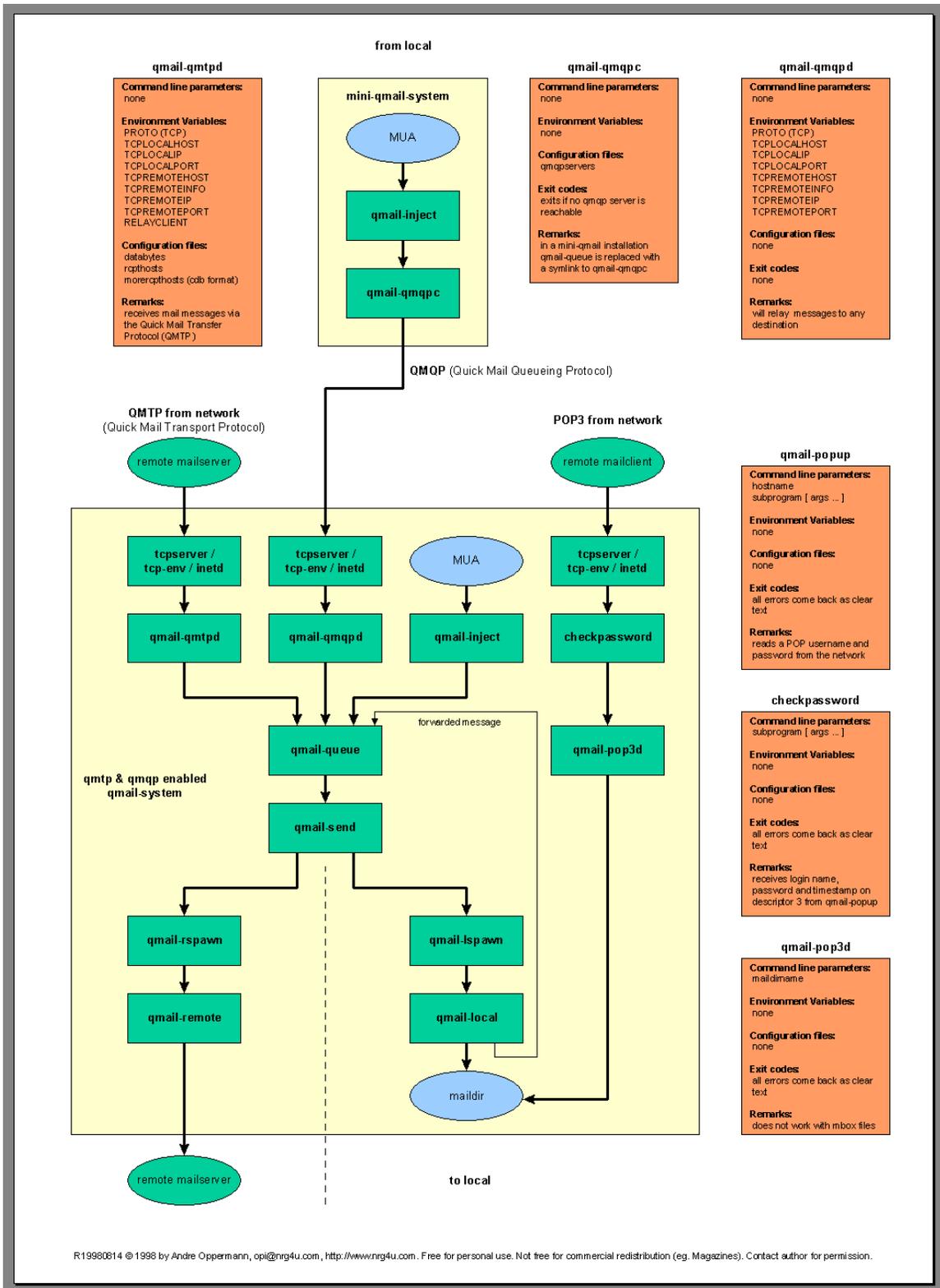
Exit codes:
 0 success
 1 fatal error
 2 chair error
 3 SIGALRM
 4 tryunlinktmp() error
 100 permanent error (bounce)
 111 soft error (retry later)
 Most errors come back as clear text



.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)



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 newmessage 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-list-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 newmessages 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 newmail 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>
--	--	--	--

queue management

qmail-qsstat	qmail-qread	qmail-tcpto	qmail-tcpok
<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 gid 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>

Hint: to reschedule every message in the queue for immediate delivery, do a "kill-ALRM *pid*" on the qmail-send pid

user and system management

qmail-pw2u	qmail-newu	qmail-newmth	qmail-showctl
<p>Description: build address assignments from a passwd file</p> <p>Command line parameters: [-bHhUc] [-ochar]</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-lspawn</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 moretcpthosts for qmail-smtpd</p> <p>Command line parameters: none</p> <p>Environment Variables: none</p> <p>Configuration files: ~control/moretcpthosts</p> <p>Exit codes: complains if there is a problem with control/moretcpthosts qmail-newmth complains</p> <p>Remarks: generates ~control/moretcpthosts.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>

qmail installation

This document is for the qmail-1.0.3 version

1.3. qmail license

qmail is distributed under GNU GPL license.

Visit this web site for details about GNU GPL : <http://www.gnu.org/copyleft/gpl.html>

You are free to distribute the original version of qmail, but if you want to distribute modified versions of qmail (including ports, no matter how minor the changes are) you'll have to get the approval of the author, *D.J.Bernstein.

Exception: You are permitted to distribute a precompiled var-qmail package if (1) installing the package produces exactly the same /var/qmail hierarchy as a user would obtain by downloading, compiling, and installing qmail-1.03.tar.gz, fastforward-0.51.tar.gz, and dot-forward-0.71.tar.gz; (2) the package behaves correctly, i.e., the same way as normal qmail+fastforward+dot-forward installations on all other systems; and (3) the package's creator warrants that he has made a good-faith attempt to ensure that the package behaves correctly. It is not acceptable to have qmail working differently on different machines; any variation is a bug. If there's something about a system (compiler, libraries, kernel, hardware, whatever) that changes qmail's behavior, then that platform is not supported, and you are not permitted to distribute binaries.

1.4. How to get the latest software?

You need to download the following packages to start off.

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

oversize DNS packet patch for qmail (<http://www.ckdhr.com/ckd/qmail-103.patch>)

ucspi-tcp (<ftp://koobera.math.uic.edu/www/ucspi-tcp.html>)

daemontools (<ftp://koobera.math.uic.edu/www/daemontools.html>)

rblsmtpd (<ftp://koobera.math.uic.edu/www/rblsmtpd.html>)

fastforward (<ftp://koobera.math.uic.edu/www/fastforward.html>)

dot-forward (<ftp://koobera.math.uic.edu/www/dot-forward.html>)

1.5. qmail installation

You can start the qmail installation if you have all the software packages mentioned under 2.2 ready with you.

Change to root

* D.J.Bernstein is Assistant Professor in the Department of Mathematics, Statistics, and Computer Science at the University of Illinois at Chicago. You can contact him at : djb@cr.yp.to, but please note that Mr. Bernstein does not want to receive mails regarding qmail support, he will suggest to send such queries to qmail mailing list.

```
$su
$Password:
```

1.5.1. qmail –1.03 installation

```
root:/usr/local/src# gzip -d qmail-1.03.tar.gz
root:/usr/local/src# tar xvf qmail-1.03.tar
```

Then you need to change to the qmail-1.03 folder.

```
root:/usr/local/src# cd qmail-1.03
```

You can read the INSTALL files at this point

```
root:/usr/local/src/qmail-1.03# more INSTALL
root:/usr/local/src/qmail-1.03# more INSTALL.alias
root:/usr/local/src/qmail-1.03# more INSTALL.mbox
```

After you return, apply the oversize DNS packet patch. This patch is necessary because some providers (such as AOL) have decided to ignore the RFC's, and return UDP DNS responses that are greater than 512 bytes. qmail's DNS resolver library is strictly RFC compliant, and does not accept non-RFC-compliant replies. This patch enables qmail to correctly process illegal DNS replies.

To apply the patch, do the following (in the qmail source dir)

```
root:/usr/local/src/qmail-1.03# patch -p1 < /path/to/qmail-103.patch
```

Create a qmail directory now

```
# mkdir /var/qmail
```

The following groups and users have to be created for qmail

(Note : Debian Linux users can skip this part, since the users are already created for you by the package)

```
# groupadd nofiles
# useradd -g nofiles -d /var/qmail/alias -s /bin/false alias
# useradd -g nofiles -d /var/qmail -s /bin/false qmaild
# useradd -g nofiles -d /var/qmail -s /bin/false qmailf
# useradd -g nofiles -d /var/qmail -s /bin/false qmailp
# groupadd qmail
# useradd -g qmail -d /var/qmail -s /bin/false qmailq
# useradd -g qmail -d /var/qmail -s /bin/false qmailr
# useradd -g qmail -d /var/qmail -s /bin/false qmails
```



Important: you are going to be in trouble if you are not creating these users / groups since qmail will simply fail to work.

Start a script, this will create a log for you.

```
root:/usr/local/src/qmail-1.03#script /var/qmail/qmail_installscrip
```

Now you can compile the package:

```
root:/usr/local/src/qmail-1.03# make setup check
```

1.5.2. rblsmtpd installation

```
root:/usr/local/src# gzip -d rblsmtpd-0.70.tar.gz
root:/usr/local/src# tar xvf rblsmtpd-0.70.tar
root:/usr/local/src# cd rblsmtpd-0.70
root:/usr/local/src/rblsmtpd-0.70# make setup check
```



Note: If you are using *gcc* as your c compiler, you may have to edit *compile* and *load* files and replace *cc* with *gcc* at any of these installation stages. Please keep this in mind.

Install *ucspi-tcp*, and *daemontools* are also to be installed as explained above. This will produce binaries in */usr/local/bin*. Edit *.profile* file and add */usr/local/bin* in the path.

You can stop scripting by typing *exit*, and the log can be used for reference.

Checklist

You have now the following packages installed on your system:

- Qmail
- Rblsmtpd
- Ucsapi
- Daemontools

A brief description of packages other than qmail is given below, those who are not interested can skip this portion and go to configuration part.

Rblsmtpd

rblsmtpd is a generic tool to block mail from RBL-listed sites. It works with any SMTP server that can run under *tcpserver*; in particular, any version of *qmail* or *sendmail*. Turning it on is easy: simply insert *rblsmtpd* in front of the real SMTP server in your *tcpserver* invocation.

rblsmtpd supports anti-RBL lists for sites that want to skip RBL lookups for preauthorized hosts. It also optionally pays attention to temporary RBL lookup errors.

The MAPS RBL (Mail Abuse Prevention System - Raltime Blackhole List) is a system for creating intentional network outages ("blackholes") for the purpose of limiting the transport of known-to-be-unwanted mass e-mail. See <http://maps.vix.com/rbl/> for more information about the RBL.

The features of rblsmtpd have been incorporated into ucspi-tcp 0.86; there will be no more rblsmtpd releases.

Tcpserver

tcpsrv and tcpclient are easy-to-use command-line tools for building TCP client-server applications.

tcpsrv waits for incoming connections and, for each connection, runs a program of your choice. Your program receives environment variables showing the local and remote host names, IP addresses, and port numbers.

tcpsrv offers a concurrency limit to protect you from running out of processes and memory. *When you are handling 40 (by default) simultaneous connections, tcpsrv smoothly defers acceptance of new connections.*

tcpsrv also provides TCP access control features, similar to tcp-wrappers/tcpd's hosts.allow *but much faster*. Its access control rules are compiled into a hashed format with cdb, so it can easily deal with thousands of different hosts.

This package includes a recordio tool that monitors all the input and output of a server.

tcpclient makes a TCP connection and runs a program of your choice. It sets up the same environment variables as tcpsrv.

This package includes several sample clients built on top of tcpclient: who@, date@, finger@, http@, tcpcat, and mconnect.

tcpsrv and tcpclient conform to UCSPI, the UNIX Client-Server Program Interface, using the TCP protocol. UCSPI tools are available for several different networks.

It is recommended to run your qmail as well as vpopmail under tcpsrv, even though it is possible to run the same under inetd.

Daemontools

Daemontools is written by the author of qmail D. J. Bernstein.

Here is the description about various components of daemontools:

supervise monitors a service. It starts the service and restarts the service if it dies. The companion svc program stops, pauses, or restarts the service on sysadmin request. The svstat program prints a one-line status report.

cyclog writes a log to disk. It automatically synchronizes the log every 100KB (by default) to guarantee data integrity after a crash. It automatically rotates the log to keep it below 1MB (by default). If the disk fills up, cyclog pauses and then tries again, without losing any data.

accustamp puts a precise timestamp on each line of input. The timestamp is a numeric TAI timestamp with microsecond precision. The companion tailocal program converts TAI timestamps to local time.

usually watches a log for lines that do not match specified patterns, copying those lines to stderr. The companion errorsto program redirects stderr to a file.

setuser runs a program under a user's uid and gid. Unlike su, setuser does not gain privileges; it does not check passwords, and it cannot be run except by root.

2. Configuration of qmail

3.1. How to configure qmail?

After qmail compiles, we will want to configure it.

There are three ways to do this:

A) The easiest way to do this is:

```
root:/usr/local/src/qmail-1.03# ./config
```

The config script tries to do a reverse DNS lookup on all local IP addresses. If this doesn't work, then you've got some dirty work to do. Read INSTALL.ctl. As long as all of your local IP's are in your DNS, then you shouldn't have any problems. Otherwise you can do the following:

B) root:/usr/local/src/qmail-1.03# ./config-fast your_fully_qualified_host_name

This will create the necessary files in order to run qmail.

C) Third way is bit difficult, editing the control files manually (/var/qmail/control), but the names of these files are self explanatory. Just have a look!!

There are two important files, these are

me -- (It contains your local host name. Including domain)

rcp hosts -- (All of the hosts that qmail will receive mail for. All of your local domains must be in this file.)

You can run qmail in many ways, but the way I am going to explain is one of the safest.

Create the following files:

1. #mkdir -p /var/qmail/start
vi /var/qmail/start/qmail-deliver
#!/bin/sh
Using stdout for logging
Using control/defaultdelivery from qmail-local to deliver messages by default
exec env - PATH="/var/qmail/bin:\$PATH" qmail-start "cat
/var/qmail/control/defaultdelivery" splogger mail 2 > /dev/console 2>&1 &
2. chmod +x /var/qmail/start/qmail-deliver
3. #vi /var/qmail/control/defaultdelivery
./Maildir

(This is the default delivery method, in our example it is Maildir, your default delivery method could be different)

```
4. # vi /var/qmail/start/qmail-smtp
    #!/bin/sh
    # Using cyclog for logging
    # This script will start qmail smtp daemon
    exec env - PATH="/var/qmail/bin:$PATH" tcpserver -x /etc/tcp.smtp.cdb -u
    <your_qmaild_user_id> -g <your_qmail_group_id> 0 smtp /var/qmail/bin/qmail-
    smtpd & setuser qmaill cyclog -s5000000 -n5 /var/log/qmail/qmail-smtpd &
```

Note: From the word exec, entire thing should be in single line

```
5. chmod +x /var/qmail/start/qmail-smtp
```

3.2. Spam Control



It is very important that our mail server should not be spam friendly, otherwise we need to take the server off the internet.

Create a file /etc/tcp.smtp

```
#vi /etc/tcp.smtp
127.0.0.1:allow,RELAYCLIENT=""
202.144.:allow,RELAYCLIENT=""
```

Note: Here we are allowing the local host as well as all hosts in the 202.144 network to use our mail server as the smtp relay server. You will have to replace 202.144 with your network.

```
#tcprules /etc/tcp.smtp.cdb /etc/tcp.smtp.tmp < /etc/tcp.smtp
#chmod 644 /etc/tcp.smtp*
```

3.3 Start qmail

```
# cd /var/qmail/start
#./ qmail-smtp
#./ qmail-deliver
```

Qmail smtp server should be running now.

How to check?

If you do a

```
#ps -ef |grep qmail (for SYS V) or
```

```
#ps -aux |grep qmail (for BSD)
```

You should get some thing like this:

```
qmails 815 1 0 14:30:35 pts/0 0:00 qmail-send
qmaild 812 1 0 14:30:29 pts/0 0:00 tcpserver -x /etc/tcp.smtp.cdb -u 44421 -g
44420 0 smtp /var/qmail/bin/qmail-sm
root 818 815 0 14:30:35 pts/0 0:00 qmail-lspawn ./Maildir
qmaill 817 815 0 14:30:35 pts/0 0:00 splogger mail 2
qmailr 819 815 0 14:30:35 pts/0 0:00 qmail-rspawn
qmailq 820 815 0 14:30:35 pts/0 0:00 qmail-clean
qmailr 821 819 0 14:30:35 pts/0 0:00 qmail-remote
```

And if you do a telnet to local host to port 25, the smtp server will respond

```
#telnet localhost 25
Trying 127.0.0.1...
Connected to localhost.
Escape character is '^]'.
220 foobar.com ESMTP
```

If you are getting this reply, everything should be OK, just enter *quit* and press ENTER key.

4. Architecture of qmail

4.1. Modular system architecture

Internet MTA's perform a variety of tasks. Earlier designs like Sendmail and smail are monolithic. In other words, they have one large, complex program that "switches hats": it puts on one hat to be an SMTP server, another to be an SMTP client, another to inject messages locally, another to manage the queue, etc.

qmail is modular. Each of these functions is performed by a separate program. As a result, the programs are much smaller, simpler, and less likely to contain functional or security bugs. To further enhance security, qmail's modules run with different privileges, and they don't "trust" each other: they don't assume the other modules always do only what they're supposed to do.

The core modules are:

Modules	Function
qmail-smtpd	accepts/rejects messages via SMTP
qmail-inject	injects messages locally
qmail-rspawn/qmail-remote	handles remote deliveries
qmail-lspawn/qmail-local	handles local deliveries
qmail-send	processes the queue
qmail-clean	cleans the queue

There's also a down side to the modular approach. Unlike a monolithic MTA, the interactions between modules are well-defined, and modules only exchange the minimum necessary information with each other. This is generally A Good Thing, but sometimes it makes it hard to do things. For example, the sendmail "-v" flag causes Sendmail to print a trace of its actions to standard output for debugging purposes. Since the one sendmail binary handles injection, queueing, alias processing, .forward file processing, and remote forwarding via SMTP, it is able to easily trace the entire delivery until the message is delivered.

The equivalent capability in qmail doesn't exist, and would require substantial code changes and additional complexity to implement the passing of the "debug" flag from module to module.

4.2. File structure

`/var/qmail` is the root of the qmail file structure. This can be changed when qmail is being built, but it's a good idea to leave it unchanged so other administrators know where to find things. If you really want to relocate some or all of the qmail tree, it's better to do that using symbolic links. See the Create directories subsection of the Installation section for details.

The top-level subdirectories are:

Directory	Contents
alias	.qmail files for system-wide aliases
bin	program binaries and scripts
boot	startup scripts
control	configuration files
doc	documentation (except man pages)
man	man pages
queue	the queue of unsent messages
users	the qmail-users database files

4.3. Queue structure

The file INTERNALS in the build directory discusses the details of queuing more thoroughly. This is a broader overview of structure of the queue.

Subdirectory	Contents
bounce	permanent delivery errors
info*	envelope sender addresses
intd	envelopes under construction by qmail-queue
local*	local envelope recipient addresses
lock	lock files
mess*	message files
pid	used by qmail-queue to acquire an i-node number
remote*	remote envelope sender addresses
todo	complete envelopes

Note: directories marked with an "*" contain a series of split subdirectories named "0", "1", ..., up to (conf-split-1), where conf-split is a compile-time configuration setting contained in the file conf-split in the build directory. It defaults to 23. The purpose of splitting these directories is to reduce the number of files in a single directory on very busy servers.

Files under the mess subdirectory are named after their i-node number. What this means is that you can't manually move them using standard UNIX utilities like mv, dump/restore, and tar. There are a couple user-contributed utilities on <http://www.qmail.org> that will rename queue files correctly.

Note: It is not safe to modify queue files while qmail is running. If you want to modify the queue, stop qmail first, play with the queue carefully, then restart qmail.

4.4. Pictures

There is a series of files in /var/qmail/doc with names starting with PIC. These are textual "pictures" of various situations that qmail handles. They show the flow of control through the various modules, and are very helpful for debugging and creating complex configurations.

Filename	Scenario
PIC.local2alias	locally-injected message delivered to a local alias
PIC.local2ext	locally-injected message delivered to an extension address
PIC.local2local	locally-injected message delivered to a local user
PIC.local2rem	locally-injected message delivered to a remote address
PIC.local2virt	locally-injected message delivered to an address on a local virtual domain
PIC.nullclient	a message injected on a null client
PIC.relaybad	a failed attempt to use the local host as a relay
PIC.relaygood	a successful attempt to use the local host as a relay
PIC.rem2local	a message received via SMTP for a local user

These files are also available on-line from:

- o <http://www.qmail.org/man/index.html>

If you want real pictures of qmail, check out Andre Opperman's "big qmail picture" at <http://www.nrg4u.com/>, which is reproduced in this guide.

5. Infrequently Asked Questions

From “*Life with qmail*”

These are questions that don't qualify as frequently asked, but which are important and not easy to answer.

5.1. How frequently does qmail try to send deferred messages?

Each message has its own retry schedule. The longer a message remains undeliverable, the less frequently qmail tries to send it. The retry schedule is not configurable. The following table shows the retry schedule for a message that's undeliverable to a remote recipient until it bounces. Local messages use a similar, but more frequent, schedule.

Delivery Attempt	Seconds	D-HH:MM:SS
1	0	0-00:00:00
2	400	0-00:06:40
3	1600	0-00:26:40
4	3600	0-01:00:00
5	6400	0-01:46:40
6	10000	0-02:46:40
7	14400	0-04:00:00
8	19600	0-05:26:40
9	25600	0-07:06:40
10	32400	0-09:00:00
11	40000	0-11:06:40
12	48400	0-13:26:40
13	57600	0-16:00:00
14	67600	0-18:46:40
15	78400	0-21:46:40
16	90000	1-01:00:00
17	102400	1-04:26:40
18	115600	1-08:06:40
19	129600	1-12:00:00
20	144400	1-16:06:40
21	160000	1-20:26:40
22	176400	2-01:00:00
23	193600	2-05:46:40
24	211600	2-10:46:40
25	230400	2-16:00:00
26	250000	2-21:26:40
27	270400	3-03:06:40
28	291600	3-09:00:00

29	313600	3-15:06:40
30	336400	3-21:26:40
31	360000	4-04:00:00
32	384400	4-10:46:40
33	409600	4-17:46:40
34	435600	5-01:00:00
35	462400	5-08:26:40
36	490000	5-16:06:40
37	518400	6-00:00:00
38	547600	6-08:06:40
39	577600	6-16:26:40
40	608400	7-01:00:00

5.2. Why can't I send mail to a large site with lots of MX's?

If you're getting:

```
deferral: CNAME_lookup_failed_temporarily._(#4.4.3)/
```

The problem might be that qmail can't handle large name server query responses. The fix is to install a patch. See Patches under Advanced Topics.

There's also a question as to why some people don't have trouble reaching such systems. Basically, depending on the timing and ordering of queries made to your local nameserver, the size of the response to an ANY query for "aol.com" may be larger than the 512 byte limit of a UDP packet, or it may not.

"May not" is likely to happen if the A and MX records time out, but the NS records don't. Since the .COM servers set a 2 day TTL on those, but AOL sets a 1 hour TTL on their records, this will often happen on less busy nameservers. Busier nameservers are more likely to have those records in their cache at any given time, frustrating an unpatched qmail's attempts to check for CNAMEs.

A better test is to send mail to nosuchuser@large-mx.ckdhr.com; if it clears your queue and winds up bouncing from ckdhr.com, your MTA can send mail to hosts with MX lists that exceed 512 bytes. (By using a single RRset, with a single TTL, that exceeds 512 bytes, the problem can be seen without depending on the timing and ordering of other queries.)

5.3. What is QUEUE_EXTRA?

QUEUE_EXTRA is a compile-time configuration variable that specifies an additional recipient that will be added to every delivery. This is used primarily for logging. E.g., the FAQ describes how to use QUEUE_EXTRA to keep copies of all incoming and outgoing messages.

To use QUEUE_EXTRA, edit extra.h specifying the additional recipient in the format "Trecipient\0", and the length of the QUEUE_EXTRA string in QUEUE_EXTRALEN (the "\0" counts as one character). For example:

```
#define QUEUE_EXTRA "Tlog\0"  
#define QUEUE_EXTRALEN 5
```

Shut down qmail if it's running. If you installed the qmail script from the Installation section, that can be done by:

```
/usr/local/sbin/qmail stop
```

If you don't have the qmail script, you should use your startup/shutdown script or send qmail-send a TERM signal.

Then rebuild qmail using:

```
make setup check
```

Populate ~alias/.qmail-log with whatever logging you want. E.g., to log Message-ID's:

```
| awk '/^$/ { exit } /^[mM][eE][sS][sS][aA][gG][eE]-/ { print }'
```

Finally, restart qmail.

6. Problems?

These frequently cause problem for qmail newbies.

6.1. qmail doesn't deliver mail to superusers.

To prevent the possibility of qmail-local running commands as a privileged user, qmail ignores all users whose UID is 0. This is documented in the qmail-getpw man page.

That doesn't mean qmail won't deliver to root, it just means that such a delivery will have to be handled by a non-privileged user. Typically, one creates an alias for root by populating `~alias/.qmail-root`.

6.2. qmail doesn't deliver mail to users who don't own their home directory.

Another security feature, and just good general practice. This is documented in the qmail-getpw man page.

6.3. qmail doesn't deliver mail to users whose usernames contain uppercase letters.

qmail converts the entire "local part"--everything left of the "@" in an address, to lowercase. The man page doesn't come out and say that, but the code does. The fact that it ignores users with uppercase characters is documented in the qmail-getpw man page.

6.4. qmail replaces dots (.) in extension addresses with colons (:).

Another security feature. The purpose is prevent extension addresses from backing up the file tree using "..". By replacing them with colons, qmail ensures that all .qmail files for a user are under their home directory. Documented in the qmail-local man page.

6.5. qmail converts uppercase characters in extension addresses to lowercase.

This is another result of the fact that qmail lowercases the entire local part of addresses. Documented in the qmail-local man page.

6.6. qmail doesn't use /etc/hosts.

qmail never uses `/etc/hosts` to determine the IP address associated with a host name. If you use names in control files, qmail must have access to a name server.

It is possible to run qmail on systems without access to a name server, though. Hosts in control files can be specified by IP address by enclosing them in square brackets ([]), e.g.:

[10.1.2.219]

Actually, the square brackets aren't always necessary--but it's a good idea to use them anyway.

6.7. qmail doesn't log SMTP activity.

For a number of reasons, qmail doesn't log SMTP connections, rejections, invalid commands, or valid commands. tcpserver can be used to log connections, and recordio can be used to log the entire SMTP dialogue. recordio is part of the ucspi-tcp package. The procedure is documented in the FAQ at <http://pobox.com/~djb/qmail/faq/servers.html#recordio>.

6.8. qmail doesn't generate deferral notices.

If Sendmail is unable to deliver a message within a few hours, typically four, it sends a deferral notice to the originator. These notices look like bounce messages, but don't indicate that the delivery has failed permanently, yet.

qmail doesn't send such warnings. An undeliverable message will only be returned to the originator after it spends queuelifetime in the queue.

6.9. qmail is slow if /var/qmail/queue/lock/trigger is gone/has the wrong permissions/is a regular file.

qmail-queue and qmail-send communicate via a named pipe called /var/qmail/queue/lock/trigger. If this pipe gets messed up, qmail-send doesn't notice new messages for a half hour or so.

The best way to ensure that it's set up right is to run "make check" from the source directory. If that's not possible, make sure it looks like:

```
# ls -l /var/qmail/queue/lock/trigger
prw--w--w- 1 qmails qmail      0 Jul 5 21:25 /var/qmail/queue/lock/trigger
```

Pay particular attention to the "p" at the beginning of the line (says it's a named pipe), the mode (especially world writable), and the owner/group.

7. Further reading

Check these web sites out

Qmail home page: <http://www.qmail.org>

Qmail FAQ: <http://gory.acsu.buffalo.edu/usg/Public/Qmail/FAQ.html>

Un-official FAQ: <http://www.ranney.com/%7Emjr/unoff-faq.html>

Life with qmail: <http://web.infoave.net/~dsill/lwq.txt>

Part B

Installation and Configuration of vpopmail

8.1 Introduction

Vpopmail is a POP-3 authentication module for qmail. It uses single UID authentication method, will not be using system accounts. Infact, a number of authentication modules are available for qmail, but the beauty of vpopmail is that it is very easy to manage, and you don't have edit the control files / other files manually, vpopmail does all those tasks for you.

The version widely used, and found to be stable is vpopmail-3.4.11-1.released, inter7.com, the people who developed vpopmail, have released the new version of vpopmail vpopmail-4.8.dev on June 27, 2000.

8.2 Get the software

You can download the software from <http://www.inter7.com>

This guide is mainly based on the vpopmail-3.4.11-1.released.

8.3 Before starting

Before starting the installation you need to decide whether you are going to install vpopmail with MySQL or not. If you are going to install MySQL, you need to install MySQL before installing vpopmail. See Appendix for the installation tips on MySQL or read the book “MySQL & mSQL” by Yarger, Reese and Tim King (ISBN: 81-7366-066-2 from O'Reilly)

8.4 Installation

```
#groupadd vchkpw
#useradd -g vchkpw -d /home/vpopmail -s /bin/false v popmail
#tar xvfz vpopmail-3.4.11-1.released.tar.gz
#cd vpopmail-3.4.11.released
```

Edit vmysql.h if you are going to install with MySQL, change host name, user, and password as per your MySQL configuraion

```
#!/configure --options-
```

```
#make
```

```
#make install-strip
```

8.4.1 Options

--enable-roaming-users=*n*|*y* Enable or disable open relay after pop authentication. Default is no

Setting this to yes means that the clients IP address is added to the list of IP's that are allowed to relay through the smtp server after they authenticate with pop. A cronjob program, clearopensmtp, clears out any IP's that were authenticated over 3 hours ago. This option requires you run the smtp server with tcpserver and the -x /etc/tcp.smtp.cdb option (or where ever you put your tcp.smtp.cdb file).

--enable-hardquota=*#*|*n* Set and Enable hard quota or n for no quota

Set's the default hard quota limit for each pop account. The default is 50 megs. Any incoming mail which would take the user over their hard quota limit is bounced with a message. This message can be customized.

If you wish to turn off quotas set this option to NOQUOTA, i.e. --enable-hardquota=NOQUOTA

--enable-default-domain=*name* Default domain name, default is null.

We recommend you run all your email as virtual domains. You can pick one domain to be the default. If you have just one domain set it with this option. The default domain name users can authenticate with just their user name, and don't need to use <user>%<virtualdomain>.

--enable-ip-alias-domains=*y*|*n* enable virtual domain lookup via reverse ip address lookup for virtual domains.

By default, every domain uses name based virtual domains. That is: users must supply their domain name in their pop name. i.e. <user>%<virtualdomain>. This can be overridden for one domain using the --enable-default-domain option.

Vpopmail also supports IP based virtual domains. If this option is turned on, and the user does not supply %<virtualdomain> then a reverse IP lookup is done on the server IP address that the client connected to. If the servers IP address resolves to a domain name, then vpopmail uses that name as the domain. For example:

IP w.x.y.z resolves to test.com. User sets their pop server ip to w.x.y.z and connects. Vpopmail gets the connection, checks the IP of the SERVER side of the connection. Does a reverse IP lookup and obtains test.com. User sends joe as their pop user name. Vpopmail uses test.com as the domain.

You can mix and match name and ip based virtual domains.

--enable-relay-clear-minutes=*360* expire time for roaming users after pop authentication.

If --enable-roaming-users=*y* is set then this option sets how long clearopensmtp should keep IP's in the list. The default is 3 hours.

8.4.2 Mysql options

--enable-mysql=n|y use mysql, default is no

Enable using mysql authentication.

NOTE: be sure to edit vmysql.h and set the mysql server name/ip, mysql user and mysql users password. This user must have the ability to create a database vpopmail and create tables within that database.

--enable-sqllincdir= Directory where sql include files are.

Set the directory where the mysql include files are. By default it is set to /usr/local/mysql.

--enable-sqllibdir=/usr/lib/mysql Directory where sql libs are.

Set the directory where the mysql libmysqlclient.a file is. By default it looks in /usr/lib/mysql

--enable-sqllibs=mysqlclient libraries for sql linking.

Set the library to link in. By default this is libmysqlclient.a.

--enable-large-site=n|y Default is no, tune for large numbers of users per domain

By default vpopmail puts all domain information in one table - vpopmail. This is the most efficient method for sites most sites. If you are running one site with a very large number of users, you may want to set this option to be yes. If set to yes, vpopmail will create a table for each virtual domain. The main difference is that the domain name is not stored in the database since the table contains the domains name. For sites with 500,000+ users it can save significant disk space. However, for sites with large numbers of virtual domains it can decrease mysql system performance.

8.4.3 Vpasswd/cdb options

--enable-ucspi-dir=dir Directory where the compiled ucspi package is.

Set the directory where the ucspi-tcp package is located. By default this is set to ../ucspi-tcp-0.84. Vpopmail uses headers in this directory and uses two .a files.

8.4.5 Logging options

--enable-logging=e|y|n Turn on (y) or off (n) logging to syslog or (e) only log errors

Set the level of logging. By default it only logs pop authentication errors. You can turn off all logging by setting it to no. And you can log all pop authentications by setting it to yes.

--enable-log-name=vpopmail set syslog name.

Over ride the default vpopmail syslog name.

8.4.6 User/group options

--enable-vpopuser=vpopmail user vchkpw was installed as.

If for some reason you want to install this package under a different user name, use this option.

--enable-vpopgroup=vchkpw group vchkpw was installed as.

If for some reason you want to install this package under a different group name, use this option.

--enable-admin-email=email-address e-mail of system administrator.

Override the default email administrator address.

8.4.7 Directory and file location options

--enable-tcpsrvr-file=/etc/tcp.smtp File where tcpsrvr -x relay information is stored.

Set the file name of your tcp.smtp file. By default the configure program looks in /etc and then in /etc/tcprules.d directories.

--enable-qmaildir=dir directory where qmail is installed.

If you installed qmail into a directory other than /var/qmail, use this option.

--enable-tcprules-prog=/usr/local/bin/tcprules where is your tcprules program.

If you installed the tcprules program into a directory other than /usr/local/bin, use this option.

--enable-apop-file=/etc/apop-secrets directory where apop secrets are stored.

Over ride the default location of the apop-secrets file.

8.4.8 Other options

--enable-apop=y|n Enable or disable apop authentication.

Disable apop by setting this option to no. The default is yes (pop and apop).

--enable-passwd=y|n Enable or disable /etc/passwd (or shadow) authentication.

Over ride the automatic configuration. By default the configuration program will automatically detect if you are using passwd and shadow passwords. By setting this option to no, you will disable all /etc/passwd authentication.

Example:

```
./configure --enable-passwd=y --enable-vpopuser=vpopmail
```

Bug fixing for Solaris users: If you are getting any errors while installing vpopmail on Sun Solaris, please do the following changes in your Makefile

edit the Makefile
find out the line

```
libvpopmail_a_DEPENDENCIES = cdb/*.o
```

and replace it to

```
libvpopmail_a_DEPENDENCIES = cdb/cdb_hash.o  
libvpopmail_a_DEPENDENCIES = cdb/cdb_unpack.o  
libvpopmail_a_DEPENDENCIES = cdb/cdb_seek.o  
libvpopmail_a_DEPENDENCIES = cdb/cdbmake_add.o  
libvpopmail_a_DEPENDENCIES = cdb/cdbmake_pack.o  
libvpopmail_a_DEPENDENCIES = cdb/cdbmake_hash.o
```

8.5 Qmail and Virtual domains

Qmail has an idea of email domains that are "local" and "virtual". Local domains are ones which primarily match against /etc/passwd. Virtual domains match against domains listed in the qmail control file "virtualdomains". Vpopmail makes use of the qmail **users/assign** file and **virtualdomains** file. The users/assign file gets compiled into a users/cdb file. It is a hashed database to speed searches for patterns. If a pattern is matched then qmail delivers the email to the directory defined in the file using the uid and gid which as also defined. Vpopmail makes use of this method to have qmail deliver all virtual domain email as the single uid/gid vpopmail/vchkw. It also uses it to direct delivery to a vpopmail/domains/<virtualdomain> directory.

Once qmail-local gets the information from the users/assign file it performs standard .qmail file processing in the directory. Normal .qmail-<user> files can be used for forwarding, aliases or invoking programs such as ezmlm. If no matches are found qmail-local looks for a .qmail-default file. This is the last stage in qmail-locals delivery mechansim. Vpopmail uses this file to invoke the vdelivermail program. This program takes two parameters, the first is not used (it is there for backward compatibility). The second parameter is the default delivery if a virtual domain user can not be found. Basicly, it can be a directory to deliver the email to, an email address to forward the email to or the string "bounce-no-mailbox" to bounce the mail back to the sender.

Once vdelivermail is started up, it uses the core vpopmail api calls to check for a virtual domain user. If the user exists, the email is delivered into their directory. If vpopmail was configured for hard quotas (default is yes with 50Meg quota), then the size of the users current email files in their Maildir/new and Maildir/cur directories are counted. If the user is over quota the email is bounced back to the user with a bounce message that can be customized. If the message is 1Kbytes or smaller the email will always be delivered. This is so system administration programs can always get a message through to the user.

8.6 Converting current user accounts

The vconvert program can convert email accounts from one format into another format. Conversion can be between /etc/passwd, vpasswd files, mysql (small version) and mysql (large version).

Most current vpopmail users would probably be interested in how to convert current domains into mysql domains. To make it simple to convert an entire machine to mysql, use the following command: vconvert -c -s This will go through all the domains in ~vpopmail/domains directory and read each vpasswd file and load the contents into the vpopmail.vpopmail mysql table. The vpasswd file is left untouched for safety. Vconvert can also be run against one or more domains at a time. This is done by running the command as so: vconvert \c \s domain1 domain2 ...

To convert all users (except root and system accounts) into a mysql domain run the following command: vconvert -e -s domain. This reads all /etc/passwd accounts and creates mysql entries using their passwords. The passwords can be in either /etc/passwd or /etc/shadow. These passwords should work under vchkpw authentication program.

8.7 Configuring the vpopmail or your POP-3 server

```
#cd /home/vpopmail/bin
```

To add a new virtual domain:

```
#!/vadddomain <mydomain> <postmaster password>
```

Example: #./vadddomain example.com secretpasswd

To add a user under one domain:

```
#!/vadduser <user%mydomain> <mypasswd>
```

To change password of a user:

```
#!/vpasswd <user%mydomain> <my_new_passwd>
```

To delete a user:

```
#!/vdeluser <user%mydomain>
```

To delete a domain:

```
#!/vdeldomain <mydomain>
```

To set disk quota of a user:

```
#!/vsetuserquota <user%mydomain> <quota_in_bits>
```

Note : enable-hardquota=y must be set during vpopmail configuration for this to have any effect. Default configuration sets hard quota on.

To send a bulletin to all the users:

```
#!/vpopbull vpopbull [-f filename ] [-e exclude email addresses file] [-v] [-n] [-c] [-h] [-s]  
[virtual domain ...]
```

[-f filename]

File containing the email message to be posted.

[-e exclude email addresses file]

File containing a list of email addresses to exclude from posting.

[-v]

Verbose mode. Prints out each email address it is sending to.

[-n]

Don't actually mail it. using -v and -n can be used to list out all virtual domain email accounts.

[-c]

Default, copy message to users directory.

[-h]

Make a hard link from email file to virtual users directory. Email file must be on the same physical device as the virtual users directories. This will save disk space.

[-s]

Make a soft link from the email file to the virtual users directory. This will save on disk space but will not remove the file when all users read it. If the original file is deleted, users will not be able to read the message.

[virtual domain ...]

List of domains to send the message to. If this is not supplied then the message is sent to all virtual domains.

8.8 Overall vpopmail directory structure

Vpopmail gets its own home directory. Under this directory there are the following:

bin - contains all the binaries

lib - contains the libvpopmail.a file

include - contains the C header files

users - for backward compatibility for people who mix /etc/passwd users with vpopmail users in one domain

domains - where all the virtual domains are kept.

8.9 Virtual domain user directory structure

Vpopmail uses an adaptive directory structure based on a state file ".dir-control" which is automatically managed by the core vpopmail api functions "vadduser" and "vdeluser". For sites with 100 users or less, all user directories are stored in the virtual domain directory. For sites that go above 100 users the adaptive directory structure goes into effect. The basic idea is to break up the user Maildir directories across multiple directories and sub directories so that there are never more than 100 user directories in a single directory.

The default directory setup allows for 62 directories in 3 levels and 100 user directories per directory. The total number of user directories is equal to $100 + (62 * 100) + (62 * 62 * 100) + (62 * 62 * 62 * 100) =$ over 24 million directories. This should be more than sufficient for any site and probably goes beyond the technology of directory structures.

If you are going to be storing large numbers of user directories, make sure you set your file system to have a higher than normal percentage of inodes.

Vpopmail will automatically create these directories and sub directories as needed and populate each directory with up to 100 user accounts. As soon as a directory reaches 100 users it will create the next directory or sub directory and store the new users directory there.

Currently there is no code for garbage collection of deleted user accounts or for re-organizing the directory layout.

8.10 Internationalization

There are two messages that get inserted into emails. These are both for bounced messages. The first is for no such user and the second is for user over quota. Site administrators can customize these messages by creating a .over-quota.msg and .no-user.msg file in a virtual domain directory or in the main virtual domain directory. If a .over-quota.msg file or .no-user.msg file are not found in the virtual domain directory, then they are checked for in the main virtual domain directory. If they are not found there, then the default compiled message is included in the bounce message.

8.11 dot-qmail processing

Every virtualdomain gets its own directory under ~vpopmail/domains. Qmail's user/assign file gets an entry for each domain that points qmail-local deliveries into this directory. Therefore, all normal .qmail file processing works in each virtual domain. .qmail files just need the user name extension to work, i.e. .qmail-joe for user joe. Ezmlm uses .qmail files for processing, so it will work under vpopmail. If no user matches a .qmail file then the .qmail-default file is processed. This file contains the vdelivermail program. This program reads the authentication database (mysql or vpasswd.cdb) and delivers the mail into the users directory. The last parameter of vdelivermail can be a maildir owned by vpopmail/vchkpw so that all default mail reception ends up there. Or it can have an email address, and all default mail is forwarded to this address. Last but not least, the last parameter to vdelivermail can be the text bounce-no-mailbox. This will bounce all non matching emails back to the sender.

8.12 Clear opnsmtplib

This has to be done if you have selected `--enable-roaming-users=y` while installing vpopmail.

Add these lines in your cronjob

```
#crontab -e
```

Add

```
40 * * * * /home/vpopmail/bin/clearopensmtplib 2>&1 > /dev/null
```

8.13 How to start the POP-3 server

Use the following script for starting pop-3 server

```
#!/bin/sh
# Using cyclog for logging
# This script will start qmail pop3 daemon
exec env - PATH="/var/qmail/bin:$PATH" tcpserver 0 pop-3 /var/qmail/bin/qmail-popup
domain /home/vpopmail/bin/vchkpw /var/qmail/bin/qmail-pop3d Maildir & setuser
qmaill cyclog -s5000000 -n5 /var/log/qmail/qmail-pop3d &
```

Replace *domain* with your domain name.

8.14 Configuring your POP-3 client

User name in the pop3 client should be in the “user%domain” format.

Eudora might require the following syntax user%virtual_domain_name@pophost

8.15 About Vpopmail 4.8.3 devel

This version is released on June 27th, 2000. Since this version is still in the development stage, better use only after proper evaluation.

Download the software from here: <http://www.vpopmail.cx/vpopmail-4.8.3.tar.gz>

Oracle module is added to this version, and you need to select this option by **--enable-oracle=y**

need to edit the voracle.h file and set your service, user and password. Also set the ORACLE_HOME. The clntsh and client8 shared object libraries will need to be in /usr/lib. You can copy them with the -p option "cp -p files /usr/lib"

You will also need to edit the makefile to point at the correct oracle dirs.

-L/usr/local/oracle/lib -I/usr/local/oracle/include/precomp/public

You'll need the precomp include files too.

Everything works the same as the mysql module except for:

1) It does not automatically create a database. You'll need to do that by hand. But database creation in oracle is so complicated that oracle installations always have a person do it.

2) It does not store the relay IP's in the database for roaming users. Instead it stores them in the open-smtp file, like the cdb authentication module does.

- memory leak in vauth_getpw in mysql module fixed
- added primary keys to the vpopmail tables for both large and small site layouts. Also restrict domain size to varchar 223
- changed the default to turn off HARDQUOTA

Section C

Trouble Shooting

9. Trouble shooting

1. How can I restrict smtp relaying?

Include this

```
127.0.0.:allow,RELAYCLIENT=""  
202.144.:allow,RELAYCLIENT=""
```

in a new /etc/tcp.smtp file (you must change 128. for any net direction you want allow relay)

Run next command

```
tcprules tcp.smtp.cdb tcp.smtp.tmp < /etc/tcp.smtp  
and HUP tcpserver if it is already running.
```

2. I have some programmes which talks only to sendmail. How can I use my qmail set-up to work in place of sendmail?

It is very easy. Qmail comes with a sendmail wrapper. Remove existing /usr/sbin/sendmail and just create a symbolic link to that sendmail wrapper.

```
#rm /usr/sbin/sendmail  
#ln -s /var/qmail/bin/sendmail /usr/sbin/sendmail
```

and start qmail-delivery, if it is not running already.

3. How disk quota works?

It is not qmail-local does the counting of mails, it delivers mails to vdelivermail, and it does the counting

4. What to do if the time taken to authenticate is more than what I expect?

Add -H -R to your tcpserver startup

-H Do not look up the remote host name.,

-R Do not attempt to obtain TCPREMOTEINFO from the remote host

5. I want to receive the mails for the system users too. How can I achieve this?

add a .qmail-local_user_name file in the /home/vpopmail/domains/your_domain (if you installed like this) with the same content of .qmail-default file,(This is a vdelivermail command), but changing the destiny directory for user's . Take a look of file permissions. Create a Maildir structure in ~user. Use **/var/qmail/bin/mailedirmake** for this purpose.

6. Can I use IMAP with vpopmail?

Yes, here is the procedure.

- 1.) Download the Courier-IMAP available at Inter 7's Courier-IMAP site. (<http://www.inter7.com>)
- 2.) Configure it (as a NON-root user) with the following option:
--enable-workarounds-for-imap-client-bugs
- 3.) Run make as a NON-root user.
- 4.) Run make check as a NON-root user. It will fail when it tries to check mail. This is normal because of the --enable-workarounds... option.
- 5.) Run make install-strip as root.
- 6.) You can follow the INSTALL's instructions on the startup file, but I just added a sym link to the imapd.rc file into /etc/rc.d/init.d:

```
cd /etc/rc.d/init.d
ln -s /usr/lib/courier-imap/libexec/imapd.rc imapd.rc
```

Then just create your necessary S and K links. Here's mine:

```
cd /etc/rc.d/rc3.d
ln -s ../init.d/imapd.rc S70imapd.rc (S70 is also that of qmail).
cd ../rc2.d
ln -s ../init.d/imapd.rc K70imapd.rc
```

- 7.) If you are only using IMAP for vpopmail accounts (read: NON-shell accounts) then you are all setup. It should have added the proper AUTHMODULES to your config file (/usr/lib/courier-imap/etc/imapd.config)

```
AUTHMODULES="authcram authuserdb authvchkpw authpam"
```

If you do plan to have it work for shell users AND vpopmail users, you need to re-order the AUTHMODULES so that it auths via "authpam" first:

```
AUTHMODULES="authpam authcram authuserdb authvchkpw"
```

- 8.) That's it. Reboot or run /etc/init.d/imapd.rc start to start it up. I reboot just to make sure things are fine after a reboot.

NOTE: when you setup your IMAP client to login to your virtual domain, DO NOT

use user%domain.com as with POP clients. Use user@domain.com. The % seems to cause problems and I could not get Eudora or IMP (see below) to auth with that format. When you check mail for a shell user, just put in the username for the login ID, NOT the username@domain.com, but just username.

7. There is a user [user@test.com](#), but if some one sends a mail to [user-something@test.com](#) that also getting delivered to user@test.com. 's mail box. Is this an error?

This is actually not an error, infact qmail is built in that way, and ezmlm uses this feature. You can re-write the vpopmail code if you do not want this feature.

in vdelivermail.c
in pop_user_exist function:

change these lines:

```
for(i=0;i<(MAX_SMALL_BUF-1)&&user[i]!=0&&user[i]!='';++i) {
    user2[i] = user[i];
}
user2[i] = 0;
pw_data = vauth_getpw(user2, host);
if ( pw_data == NULL && user[i] == '-' ) {
    pw_data = vauth_getpw(user, host);
}
```

To:

```
pw_data = vauth_getpw(user, host);
```

8. I just installed vpopmail with mysql option enabled. I succesfully compile and install it. But when i try to login i got vsql_get error. Why ?

You have forgotten to edit vmysql.h file. Go through the vpopmail installation procedure once again.

9. How can I re-write the address, some thing like [user1@test.com](#) should be re-written to [user2@test2.com](#)?

You can use a .qmail-user file that contains &user2@test2.com

qmail doesn't re-write headers

10. How to add a system user (to use /etc/passwd)?

```
Vadduser <user> <password>
```

Do not use domain name in this case.

11. Start-up script for all the qmail-processes

Here is one I am using:

```
#!/bin/sh

# Qmail Startup

# Source function library.
# for redhat or linux
. /etc/rc.d/init.d/functions

# for solaris
#killproc() {          # kill the named process(es)
#   pid=`/usr/bin/ps -e |
#       /usr/bin/grep $1 |
#       /usr/bin/sed -e 's/^ *//' -e 's/ .*//'\`
#   [ "$pid" != "" ] && kill $pid
#}

HOSTNAME=`hostname`

# See how we were called.
case "$1" in
  start)

    echo -n "Qmail Starting: "

    exec env - PATH="/var/qmail/bin:$PATH" /usr/local/bin/tcpserver -x
    /etc/tcp.smtp.cdb \
    -u 44671 -g 44669 -c 200 0 smtp /var/qmail/bin/qmail-smtpd &
    /usr/local/bin/setuser qmail \ multilog -s5000000 -n5 /var/log/qmail/qmail-
    smtpd &

    exec env - PATH="/var/qmail/bin:$PATH" qmail-start "`cat \
    /var/qmail/control/defaultdelivery`" splogger mail 2 > /dev/console 2>&1 &

    exec env - PATH="/var/qmail/bin:$PATH" /usr/local/bin/tcpserver 0 pop-3
    /var/qmail/bin/qmail-popup $HOSTNAME /home/vpopmail/bin/vchkpw
    /var/qmail/bin/qmail-pop3d Maildir & /usr/local/bin/setuser qmail cyclog -
    s5000000 -n5 /var/log/qmail/qmail-pop3d &

    ;;
  stop)
    echo -n "stopping qmail"
    killproc qmail-send
    killproc tcpserver
```

```

# for solaris
#   killproc qmail-se
#   killproc tcpserve
#   echo
#   ;;
restart)
    $0 stop
    $0 start
    ;;
status)
    status qmail
    ;;
*)
    echo "Usage: qmail {start|stop|restart|status}"
    exit 1
esac

exit 0

```

Note: Rplace the UID /GID as per your system configuration (UID /GID of qmaild user)

Note: *In certain cases you may need to run your server as a null client, in such cases do not use this script.*

12. Running vaddomain / vadduser as normal user?

Run vaddomain and vdeluser as root, vadduser and vdeluser can run as root or vpopmail, otherwise you may get could not get the file users/assign opened or some thing like that.

13. user names with dashes

Q: I'm converting an existing sendmail setup to qmail w/ vpop and a large number of the existing accounts contain dashes. My tests show that vpop will only deliver to an account containing a dash if I put a .qmail-user-name in the domain's directory. Is there another option? I'm trying to avoid cluttering up the directory with several hundred .qmail files.

A: Edit your **vdelivermail.c** file

replace these lines:

```

for(i=0;i<(MAX_SMALL_BUF-1)&&user[i]!=0&&user[i]!='-';++i) {
    user2[i] = user[i];
}
user2[i] = 0;
pw_data = vauth_getpw(user2, host);

if ( pw_data == NULL && user[i] == '-' ) {
    pw_data = vauth_getpw(user, host);
}

```

```
}
```

with:

```
pw_data = vauth_getpw(user, host);
```

14. How do I bounce all mail that doesn't match any pop users or .qmail files for a particular domain?

Edit the `~vpopmail/domains/virtual_domain/.qmail-default` file and change the last parameter to "bounce-no-mailbox" without the quotes.

For example:

```
# more .qmail-default  
| /home/vpopmail/bin/vdelivermail " bounce-no-mailbox
```

14. I am getting this error message in my mail log: Unable to switch to /home/vpopmail/domains/maa.sify.net: access denied. (# 4.3.0). What does it mean?

Permissions are wrong. `chown -R vpopmail:vchkpw /home/vpopmail` will solve the problem, similarly `chown -R alias:qmail /var/qmail/alias` (especially when you have ezmlm installed on your server)

15. Roaming users are allowed to use the smtp server as their relay server – SMTP authentication through POP3. How do I achieve this?

vpopmail can be configured to allow pop users IP's to be added to the list of IP's which are allowed to relay through the smtp server. This is done with the `--enable-roaming-users=y` option. With this option, users IP's who authenticate via pop are added to the list of IP's which can relay through the smtp server. The smtp server must be run with `tcpserver -x filename` option.

Each authenticated pop users IP is added with a time stamp. Every time `clearopenstmp` is run, this list is checked for time stamps which are older than the `--enable-relay-clear-minutes` option. The default is 360 minutes or 3 hours. Any IP with a time stamp older than this number are removed from the list.

`clearopenstmp` rebuilds the `tcp.smtp.cdb` file with the list of static IP's stored in `tcp.smtp` and the list of IP's in `open-smtp`.

You can put `tcp.smtp.cdb` file anywhere, but specify the location in the POP3 start-up script. You can run a `clearopenstmp` using cron job.

```
40 * * * * /home/vpopmail/bin/clearopenstmp 2>&1 > /dev/null
```

One thing to be noted here is the permissions of tcp.smtp.cdb file, if you are running pop3 server as vpopmail user, then this file also should be owned by vpopmail user, and if cronjob runs as root it will change the permissions. If you are running cron job for clearopensmtp as root, then you should have another line in the cronjob to change the permissions of the file back to vpopmail.

```
41 * * * * /bin/chown vpopmail.vchkw /home/vpopmail/etc/tcp.smtp.cdb
```

16. Courier-IMAP and vpopmail problem

The people who have worked on vpopmail-courier-IMAP have reported a strange problem, since courier-IMAP supports various types of authentication mechanisms, it first tries to authenticate auth module, and if it fails stops authenticating. A workaround has been provided for this, but implement only after proper verification.

Vpopmail part:

vmysql.c file should modify as follow:

In the function vauth_getpw_size, you will find two code with printf, change it as follows.

```
        if (mysql_query(&mysql,SqlBuf)) {
/*          printf("vsq_getpw: failed select\n");*/
          fprintf(stderr,"vsq_getpw: failed select\n");
          return(NULL);
        }

        if (!(res = mysql_store_result(&mysql))) {
/*          printf("vsq_getpw: store result failed\n");*/
          fprintf(stderr,"vsq_getpw: store result failed\n");
          return(NULL);
        }
}
```

Courier-imap part:

the chain.c file has to be changed.

Modify the function authchain

```
void authchain(int argc, char **argv, const char *buf)
{
    int     pipes[2];
    pid_t   p;
    int     l, n;
    char    **vec;
    char    *prog;

    vec=authcopyargv(argc, argv, &prog);
    close(3); /* <--- add this */
    if (!prog || open("/dev/null", O_RDONLY) != 3)  authexit(1);
}
```

17. Qmailadmin Installation problem

Error:

```
> make all-recursive
> make[1]: Entering directory `/tmp/qmailadmin-0.26h'
> make[2]: Entering directory `/tmp/qmailadmin-0.26h'
> gcc -I. -I/home/vpopmail/include -g -O2 -c qmailadmin.c
> gcc -I. -I/home/vpopmail/include -g -O2 -c alias.c
> gcc -I. -I/home/vpopmail/include -g -O2 -c autorespond.c
> gcc -I. -I/home/vpopmail/include -g -O2 -c forward.c
> gcc -I. -I/home/vpopmail/include -g -O2 -c mailinglist.c
> gcc -I. -I/home/vpopmail/include -g -O2 -c sysadmin.c
> gcc -I. -I/home/vpopmail/include -g -O2 -c user.c
> user.c:31: vpopmail_config.h: No such file or directory
> make[2]: *** [user.o] Error 1
> make[2]: Leaving directory `/tmp/qmailadmin-0.26h'
```

Work around

```
Copy /home/vpopmail/bin/config.h /home/vpopmail/bin/vpopmail_config.h
```

18. How can I disable the SMTP and run qmail as a null client?

See trouble shooting No. 2, and run only sendmail-deliver

18. If I send a mail to test-user@domain.com, the mails go to test@domain.com 's mail box even though the mail box for test-user@domain.com exists, how can I fix this?

This is a vdelivermail problem (or a feature I would say), and has already been fixed. See your vdelivermail.c file, it should contain some thing like this:

```
if ( (pw_data = vauth_getpw(user, host))!=NULL) {

for(i=0;i<(MAX_SMALL_BUF-1)&&user[i]!=0&&user[i]!='-';++i) {
        user2[i] = user[i];
    }
    user2[i] = 0;
    pw_data = vauth_getpw(user2, host);
}
```

19. The .qmail-firstname.lastname aliases I just set up for one of my domains don't seem to work. Is this a problem?

The file name should be .qmail-firstname:lastname for firstname.lastname@do.ma.in (colon instead of dot)!

20. How to set vacation message in a qmail-vpopmail set-up?

Download this file : <http://www.vpopmail.cx/vpop-vacation-0.3.tar.gz> and see the instructions to know how to use this.

10. How qmail actually works?

The most critical files are under `/var/qmail`. These are

`Control/assign`, `control/virtualdomains`

`Users/assign`, `users/poppasswd`

Qmail-send has to be restarted (HUP) after modifying these files.

Qmail will first check the `users/assign` to find out how to deliver the mails. Here is a sample entry in the **users/assign** file.

```
+maa.sify.net-:maa.sify.net:44669:44668:/home/vpopmail/domains/maa.sify.net-:::
```

`+maa.sify.net` – This indicates that all mails for the domain `maa.sify.net` should be delivered according to this entry. You can give entries for for specific users also in this file, it may look like this, `=maa.sify.net-naseer`

`44669:44668` – UID / GID of `vpopmail`

`:/home/vpopmail/domains/maa.sify.net` – Tells where to deliver the mails, ie the directory. Qmail will check the `.qmail` files in this directory to find out the exact delivery mechanism.

10.1 What does .qmail do?

Normally the **qmail-local** program delivers each incoming message to your system mailbox, `homedir/Mailbox`, where `homedir` is your home directory. It can instead write the mail to a different file or directory, forward it to another address, distribute it to a mailing list, or even execute programs, all under your control.

To change **qmail-local**'s behavior, set up a **.qmail** file in your home directory. **.qmail** contains one or more lines. Each line is a delivery instruction. **qmail-local** follows each instruction in turn. There are five types of delivery instructions:

- (1) comment;
- (2) program;
- (3) forward;
- (4) mbox;
- (5) maildir.

- (1) A comment line begins with a number sign: `#` this is a comment **qmail-local** ignores the line.

- (2) A program line begins with a vertical bar: `|preline /usr/ucb/vacation djb qmail-local` takes the rest of the line as a command to supply to **sh**
- (3) A forward line begins with an ampersand: `&me@new.job.com qmail-local` takes the rest of the line as a mail address; it uses **qmail-queue** to forward the message to that address. The address must contain a fully qualified domain name; it must not contain extra spaces, angle brackets, or comments: # the following examples are WRONG `&me@new` `&<me@new.job.com>` `& me@new.job.com` `&me@new.job.com` (New Address) If the address begins with a letter or number, you may leave out the ampersand: Note that **qmail-local** omits its new **Return-Path** line when forwarding messages.
- (4) An *mbx* line begins with a slash or dot, and does not end with a slash: `/home/djb/Mailbox.sos qmail-local` takes the entire line as a filename. It appends the mail message to that file, using **flock-** style file locking if possible. **qmail-local** stores the mail message in *mbx* format. **WARNING:** On many systems, anyone who can read a file can **flock** it, and thus hold up **qmail-local**'s delivery forever. Do not deliver mail to a publicly accessible file! If **qmail-local** is able to lock the file, but has trouble writing to it (because, for example, the disk is full), it will truncate the file back to its original length. However, it cannot prevent mailbox corruption if the system crashes during delivery.
- (5) A *maildir* line begins with a slash or dot, and ends with a slash: `/home/djb/Maildir/ qmail-local` takes the entire line as the name of a directory in *maildir* format. It reliably stores the incoming message in that directory.

If **.qmail** has the execute bit set, it must not contain any program lines, *mbx* lines, or *maildir* lines. If **qmail-local** sees any such lines, it will stop and indicate a temporary failure. If **.qmail** is completely empty (0 bytes long), or does not exist, **qmail-local** follows the *defaultdelivery* instructions set by your system administrator; normally *default-delivery* is **./Mailbox**, so **qmail-local** appends the mail message to **Mailbox** in *mbx* format. **.qmail** may contain extra spaces and tabs at the end of a line. Blank lines are allowed, but not for the first line of **.qmail**. If **.qmail** is world-writable or group-writable, **qmail-local** stops and indicates a temporary failure. 2 dot-qmail(5) dot-qmail(5)

10.1.1. Safe qmail editing

Incoming messages can arrive at any moment. If you want to safely edit your **.qmail** file, first set the sticky bit on your home directory: `chmod +t $HOME qmail-local` will temporarily defer delivery of any message to you if your home directory is sticky (or group-writable or other-writable, which should never happen). Make sure to `chmod -t $HOME` when you are done! It's a good idea to test your new **.qmail** file as follows: `qmail-local -n $USER ~ $USER " " " " ./Mailbox`

10.1.2. Extension Addresses

In the **qmail** system, you control all local addresses of the form *user-anything*, as well as the address *user* itself, where *user* is your account name. Delivery to *user-anything* is controlled by the file *home-dir/.qmail-anything*. (These rules may be changed by the system administrator; see **qmail-users(5)**.) The **alias** user controls all other addresses. Delivery to *local* is controlled by the file *homedir/.qmail-local*, where *homedir* is **alias**'s home directory. In the following description, **qmail-local** is handling a message addressed to *local@domain*, where *local* is controlled by **.qmail-ext**. Here is what it does. If **.qmail-ext** is completely empty, **qmail-local** follows the *defaultdelivery* instructions set by your system administrator. If **.qmail-ext** doesn't exist, **qmail-local** will try some default **.qmail** files. For example, if *ext* is **foo-bar**, **qmail-local** will try first **.qmail-foo-bar**, then **.qmail-foo-default**, and finally **.qmail-default**. If none of these exist, **qmail-local** will bounce the message. (Exception: for the basic *user* address, **qmail-local** treats a nonexistent **.qmail** the same as an empty **.qmail**.) **WARNING:** For security, **qmail-local** replaces any dots in *ext* with colons before checking **.qmail-ext**. For convenience, **qmail-local** converts any uppercase letters in *ext* to lowercase. When **qmail-local** forwards a message as instructed in **.qmail-ext** (or **.qmail-default**), it checks whether `3 dot-qmail(5) dot-qmail(5) .qmail-ext-owner` exists. If so, it uses *local-owner@domain* as the envelope sender for the forwarded message. Otherwise it retains the envelope sender of the original message. Exception: **qmail-local** always retains the original envelope sender if it is the empty address or `#@[]`, i.e., if this is a bounce message. **qmail-local** also supports **variable envelope return paths** (VERPs): if **.qmail-ext-owner** and **.qmail-ext-owner-default** both exist, it uses *local-owner-@domain-@[]* as the envelope sender. This will cause a recipient *recip@reciphost* to see an envelope sender of *local-owner-recip=reciphost@domain*.

10.1.3 Error handling

If a delivery instruction fails, **qmail-local** stops immediately and reports failure. **qmail-local** handles forwarding after all other instructions, so any error in another type of delivery will prevent all forwarding. If a program returns exit code 99, **qmail-local** ignores all succeeding lines in **.qmail**, but it still pays attention to previous forward lines. To set up independent instructions, where a temporary or permanent failure in one instruction does not affect the others, move each instruction into a separate **.qmail-ext** file, and set up a central **.qmail** file that forwards to all of the **.qmail-exts**. Note that **qmail-local** can handle any number of forward lines simultaneously.

11. Back up

It is necessary that your mail server should be properly backed up, here are some guide lines to choose a back-up process.

The following directories are to be backed up once, before going to production, and whenever you make major changes.

```
/var/qmail  
/home/vpopmail
```

You need to back up the following directories also if you have qmailadmin installed on your server.

```
/usr/local/share/qmailadmin  
/usr/local/apache/htdocs/images/qmailadmin/  
/usr/local/apache/cgi-bin/qmailadmin
```

Daily back-up is recommended for the following directories

```
/var/qmail/control  
/var/qmail/users  
/home/vpopmail/domains  
MySQL database
```

A back up script I am using is given below:

```
#!/bin/sh  
rm -rf /tmp/myhost-backup*  
mkdir -p /tmp/myhost-backup/var/qmail/control  
mkdir -p /tmp/myhost-backup/var/qmail/users  
mkdir -p /tmp/myhost-backup/home/vpopmail  
cd /var/qmail/control  
tar cvf - myhost-q-control | (cd /tmp/myhost-backup/var/qmail/control; tar xvBpf -)  
cd /var/qmail/users  
tar cvf - myhost-q-users | (cd /tmp/myhost-backup/var/qmail/users; tar xvBpf -)  
cd /home/vpopmail  
tar cvf - myhost-vpop | (cd /tmp/myhost-backup/home/vpopmail; tar xvBpf -)  
cd /tmp  
tar czvf myhost-backup.tar.gz myhost-backup  
chmod a+r myhost-backup.tar.gz
```

This script will create a myhost-backup.tar.gz file which can be backed up. It is advised to run this script using a cronjob.

12. Log rotation

Script for log rotation, can put this in the cronjob:

```
#!/bin/sh
LOGDIR=/var/log
LOG=maillog
if test -d $LOGDIR
then
    cd $LOGDIR
    if test -s $LOG
    then
        test -f $LOG.6 && mv $LOG.6 $LOG.7
        test -f $LOG.5 && mv $LOG.5 $LOG.6
        test -f $LOG.4 && mv $LOG.4 $LOG.5
        test -f $LOG.3 && mv $LOG.3 $LOG.4
        test -f $LOG.2 && mv $LOG.2 $LOG.3
        test -f $LOG.1 && mv $LOG.1 $LOG.2
        test -f $LOG.0 && mv $LOG.0 $LOG.1
        mv $LOG $LOG.0
        cp /dev/null $LOG
        chmod 644 $LOG
        sleep 40
    fi
fi
#
kill -HUP `cat /var/run/syslogd.pid`
```

Appendix-A - Installation of MySQL

Download mysql-3.22.32.tar.gz

- Uncompress/Untar using gnu-tar
- shell> configure
- shell> make
- shell> make install
- shell> scripts/mysql_install_db
- shell> /usr/local/bin/safe_mysql &
- Replace existing password for mysql :
Shell> mysqladmin -u root -p password <new password>
Password: <enter old password here>

Appendix – B – Log Analysis using qmailanalog

Get the latest qmailanalog package from <http://www.qmail.org> and install it. (Read the file INSTALL after un-compressing the qmailanalog package to know how to install)

If maillog is the log file created by qmail on your system, use the following command to create a temporary file which can be used for analysis.

Analysis:

1. To see the total number of bytes delivered to various domains:

```
# awk '{ $1=""; $2=""; $3=""; $4=""; $5=""; print }' maillog | /usr/local/qmailanalog/bin/matchup | /usr/local/qmailanalog/bin/zrhosts > log_zrhosts
```

The out put will be something like this:

Recipient hosts

One line per recipient host. Information on each line:

- * *sbytes* is the number of bytes successfully delivered to this host.
- * *mess* is the number of messages sent to this host (success plus failure).
- * *tries* is the number of delivery attempts (success, failure, deferral).
- * *xdelay* is the total xdelay incurred by this host.

```
sbytes mess tries xdelay host
256 1 1 12.85 123india.com
3726 4 4 162.43 aero.iitm.ernet.in
0 1 1 59.24 dl.ac.uk
6330 1 1 24.55 egroups.com
```

```
1314 1 1 106.11 fatboy.geog.unsw.edu.au
8377 4 4 74.31 inter7.com
1484 1 1 29.97 ircache.net
```

2. To see overall performance

```
# awk '{ $1=""; $2=""; $3=""; $4=""; $5=""; print }' maillog |
/usr/local/qmailanalog/bin/matchup | /usr/local/qmailanalog/bin/zoverall > log_zoverall
```

3. Other qmailanalog options

Zsenders, zrecipients, zrxdelay, zdeferrals, zsuids, zsuccesses, zfailures

Appendix-C-EZMLM: Installation and configuration

Step.1 Download and un-compress ezmlm-0.53.tar.gz and ezmlm-idx-0.316.tar.gz

Step.2 #cp /tmp/ezmlm-idx-0.316/* /tmp/ezmlm-0.53

Step 3. #cd /tmp/ezmlm-0.53

Step 4. #more INSTALL.idx

Step 5. #patch < idx.patch, #make clean, #make, #make man, #make setup

Step 6. Create a list

```
#mkdir /home/lists
#ezmlm-make /home/lists/test /var/qmail/alias/.qmail-test test
your_default_domain
#chown -R alias:qmail /home/lists
```

Test is the list name, and list id will be test@ your_default_domain (domain listed in /var/qmail/control/me file)

Refer the EZMLM manual for various ezmlm-make options.

Check the subscribe / un-subscribe: send mail to test-subscribe@ your_default_domain