Sendmail Version 6

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Basics

- Upgrade for sendmail version 5
- Not Son of Sendmail
- Doesn’t fundamentally change the deep structure

What Happened to SoS?

- Time problems
- Market problems
  - ⇒ Changes are important
  - ⇒ Vendors should adopt
- Largely inspired by upcoming sendmail book by Bryan Costales

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Overview of Difference

- RFC 1123 updates
- Some IDA features incorporated
- Eliminate some fixed sizes
- Incorporate new features
  - ⇒ ESMTP
  - ⇒ IDENT Protocol
- Eight bit clean
- POSIX changes
- NFS changes
- Fix DNS problems
- Network performance enhancements
- Generalize networking (OSI protocols)
- New config files

RFC 1123 Changes

- (Actually includes some old 822 changes)
- Better control over timeouts (individually settable) (1123 5.3.2)
- Send all error messages as From:<> (821 3.6; 1123 5.3.3)
- Never send errors to <> (1123 5.3.3)
- VRFY only verifies, EXPN expands
- Response to RCPT is fast (1123 5.2.7)
- Handle self domain literal (1123 5.2.17)
- Auto-quote as needed
- Log numeric IP addresses (1123 5.2.8)
- Add route-addr pruning (1123 section 5.3.3)

SMTP Service Extensions

- RFC 1425 — EHLO
- RFC 1427 — SIZE extension
- Limited support for RFC 1426 — BODY extension

IDA Enhancements

- Database maps (done differently)
- Multi-word class matching
- Separate header/envelope rewriting
- $&x for deferred macro evaluation
- Separate UUCP hostname ($k, $=k)
- Limit queue runs
  - ⇒ −qR for recipients, −qS for sender, −qI for id

Mapping Functions

- Extensible
- Several built-in classes
- Several formats supported
  - ⇒ NDBM
  - ⇒ Berkeley DB (hash and btree)
  - ⇒ NIS (YP)
  - ⇒ DNS
- Some pseudo-maps
  - ⇒ Dequote

Network and Queuing Performance Enhancements

- Connection caching
- MX piggybacking
- Quick response to SMTP RCPT command
- Better queuing function (including number of recipients)

Privacy/Identification Enhancements

- Postmaster Copy only gets header
- Privacy flags to control VRFY, etc.
  - ⇒ Control access to VRFY, EXPN
  - ⇒ Insist on HELO before MAIL
  - ⇒ Limit queue printing
- RFC 1413 (IDENT) support
  - ⇒ Call-back protocol
- X-Authentication-Warning: headers
  - ⇒ On ‘‘authwarning’’ privacy flag

Logging Enhancements

- Log levels rationalized

1	serious failures, security problems
2	lost communications, protocol failures
3	other serious failures
4	minor errors
5	message collection
6	VRFY/EXPN logging, creation of return-to-sender
7	delivery failures
8	delivery successes
9	delivery tempfails (queue ups)
10	database expansion
>64	debugging

- Log relays (incoming and outgoing)
- Log alias and forwarding

User Database

- Still in development
- Intended to unify mail and finger in a campus environment
- Ultimately to have Grapevine-style lists
- Distributed update using Kerberos authentication

Better Error Condition Handling

- Check for mismatched $*N* when reading config file
- Check for missing A= or P= arguments in mailer definitions
- Improved messages

Miscellaneous Enhancements (1)

- Propagate owner-*list* info to envelope
- D= mailer flag giving execution directory
- Forward search path
- Fallback MX
- Config files can delete an existing Return-Path: header
- Config files can add Comments: header
- Configurable warning message before final timeout
- Fix wierd case handling in aliases
- Configuration time setting of DNS resolver flags
- Queue ids are longer (unique per day)
- Better error printing
  - ⇒ More gentle printing of errno information
  - ⇒ Print pre-aliasing names in error messages

Miscellaneous Enhancements (2)

- /etc/sendmail.pid file
- Consider two users using the same program ‘‘different’’
- Dynamically allocate header buffer
- Mailstats program prints mailer names
- $@ on LHS means ‘‘match zero’’
- Many minor bug fixes (e.g., backslashes inside of quotes)
- Checkpoint queue after N deliveries
- −p command line flag to pass in protocol information
  - ⇒ e.g., −pUUCP:ucbvax
- −B command line flag to pass in body type
- Special hook for rewriting after aliasing (ruleset 5)
- Default clause in host canonification ($[... $: default $])
- Host canonification appends dot on successful lookup

New and Changed Options (1)

- b — minimum number of free blocks in queue directory
- C — set checkpoint interval
- E — default error message
- G — enable GECOS mapping (requires MATCHGECOS compile flag)
- h — maximum hop count (used to be compile flag)
- I — set resolver flags (vastly expanded)
- J — forward file search path
- k — connection cache size
- K — connection cache timeout

New and Changed Options (2)

- n — validate RHS of aliases during newaliases
- O — set daemon options (address family, etc.)
- p — set privacy flags
- R — don’t prune routes
- r — read timeouts (vastly expanded)
- T — set queue timeout (expanded)
- U — user database spec
- V — set fallback MX host
- y — recipient cost factor
- 8 — run 8-bit clean

New and Changed Macros

- $g — shared by envelope and header
- $k — UUCP node name
- $m — domain part of our full hostname
- $_ — RFC1413 provided sender address

New config file lines

- K*mapname mapclass arguments*
  - ⇒ Create a map with the given name of the given class
  - ⇒ Ex: Kmailertable hash /etc/mailertable.db -o
- V*versionlevel*
  - ⇒ Specifies configuration file level
  - ⇒ Sendmail can provide back compatibility to older config files
- L*loadaverage info*
  - ⇒ Extended load average hooks
  - ⇒ Provided by Christophe Wolfhugel
  - ⇒ Requires XLA compile flag

New Configuration Files

- Simplified because of near-total conversion to DNS syntax
- Example:

```
include(‘../m4/cf.m4’)
VERSIONID(‘@(#)vangogh.mc	6.3 (Berkeley) 3/8/93’)
DOMAIN(cs.exposed)dnl
OSTYPE(bsd4.4)dnl
MAILER(local)dnl
MAILER(smtp)dnl
define(‘MCI_CACHE_SIZE’, 5)
Cw okeeffe
```

Yet To Be Done

- Keyed lookup locking and auto-rebuild
- Extend UDB support for mailing lists
- 8 → 7 bit MIME conversion

Miscellany

- Alpha version currently available
  - ⇒ FTP.CS.Berkeley.EDU, directory ucb/sendmail
- Mailing list
  - ⇒ sendmail-r6-request@CS.Berkeley.EDU
- Much enhanced by multinational contributions
  - ⇒ Interest list includes U.S., Japan, Netherlands, Norway, Sweden, New Zealand, France, Germany, Russia, United Kingdom, Poland, Finland, Canada, Australia, Denmark