Implementing POP3 and IMAP4 Using Dovecot

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(Built on materials developed by Joel Jaeggli)

What is POP3

- POP3 stands for Post Office Protocol ver 3

- Described in RFC1913

- Runs on TCP Port 110 as a client server function

- Allows for a maildrop service (similar to the post box mail service) hence the name

- By design its limited in features to download and delete email from server

- Security was also limited to using APOP (md5 hash for authentication

- RFC 2449 proposed POP3 extensions which included SASL Mechanism, Expiry, Pipelining, etc.

- RFC 2595 describes using TLS with POP3 also known as POP3s and runs on port 995

What is IMAP4?

- Internet Message Access Protocol version 4

- Described in RFC 1730

- Runs on TCP Port 143 as client-server function

- More advanced in features compared to POP3

- IMAP4 stores mail on server and copies can be transferred to the client on request.

- By default only the message headers are sent to the client, the rest of the message is accessed on opening the email.

- Allows client to access and manipulate email residing on a server, creation of folders, filters, etc.

- RFC 1731 describes the IMAP Authentication Mechanisms

- RFC 2595 describes using TLS with IMAP4 running on TCP port 993

Mail Storage Formats

- Mailbox Format (Mbox)

- Defined in RFC 4155

- All messages in an Mbox mailbox are concatenated and stored as a plain text in a single file

- Mails are stored in RFC822 format with a blank space separating each message (2 spaces as each message has one space) and "From" determining start of next message.

- Mbox has a distinct disadvantage in cases of large mailbox (a single large file) requires more resources to read/open and can be slow depending on the servers load.

Maildir Storage Format
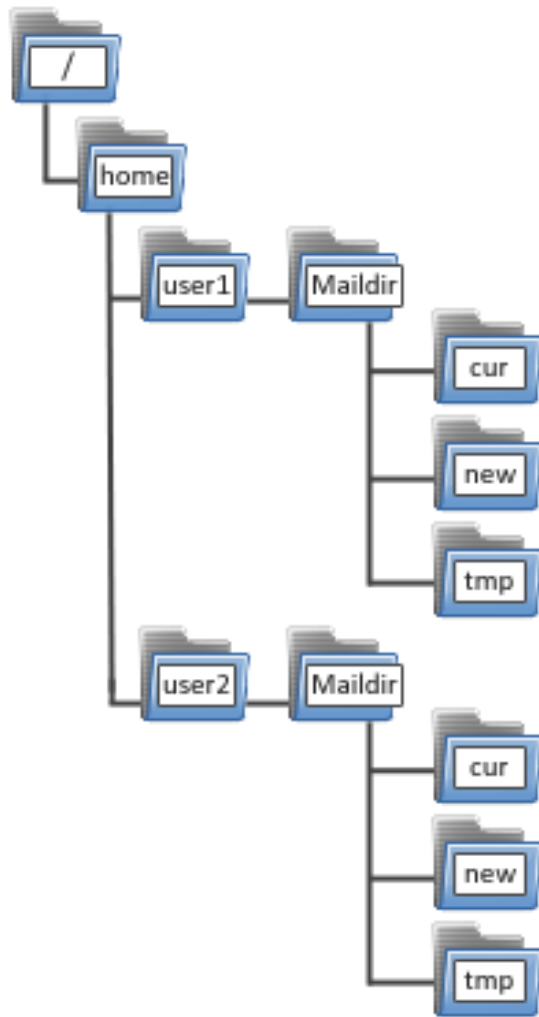
- Mail Directory Format (Maildir)

- Each message is stored in a separate file with a unique name and each folder in a directory

- Maildir++ provides extension to the Maildir specification providing support for subfolders and quotas.

- Maildir directory has 3 folders **temp**, **new** and **current**

How Maildir Works

- The mail delivery agent stores all new emails to the mailbox in the tmp directory with a unique filename. (unique = time + hostname+ random generated number)

- The MDA creates a hard link to the file in tmp/unique to new/unique

- The Mail User Agent will check for new emails in new folder and move them to current folder

- The MUA modifies the filename to add a colon (:), a '2' and various flags to represent message status i.e read, replied, forwarded, deleted, etc

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Why Dovecot?

- High-performance POP and IMAP server

- Developed byTimo Sirainen

- Unlike say UW IMAP it wasn't written in the 80s

- Transparently index's mailbox contents (Why is this important?)

- Supports both mbox and maildir formats

- Capable of operating in an environment with minimal locking. (Why is this important)

- Graceful around failures (index repair for example)

- Designed with Security in mind – support for Authentication Mechanism and SSL/TLS