

# Email as (real) files

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## Motivation

- Mail is complex
- Reading is easy
- We need structure
  - ...but that's already implemented



## Example mail

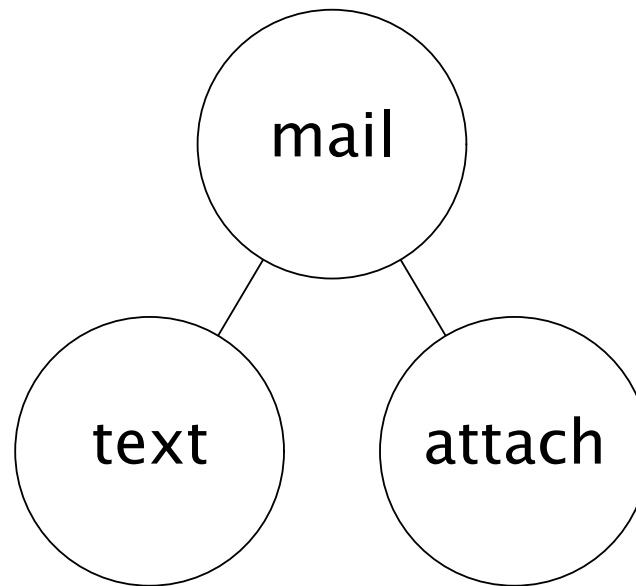
From: sheldom@lsub.org  
To: nemo@lsub.org  
Date: Sun Oct 11 22:58:19 CET 2009  
Subject: new episode

Hi, there's a new episode of mine  
right here.

!- episode.avi



**Idea: keep just that.**



# Implementation

- Who keeps this?
  - The file system
- Formats?
  - text: text
  - attachments: decoded files



## Software?

- Mail reader:
  - Acme, O/live, cat, ...
- Mail search
  - grep, looktags, ...
- Archive mails (same for spam, etc.):
  - mv 3456 a.3456



## Problems...

- Scaling
  - Directory per month.
- Replying ids, debugging
  - Raw file with headers
- Too many files to read
  - Use listings



# Mailbox format

msgs

200901

1

raw

text

attach.pdf...

2...

a.3... *(archived)*

s.4... *(spam)*

200901.1 *(cached listing)*

seq

digest

folder1... *(custom listing)*





## Virtual folders

- Group messages for the user
- Just a listing of mails
- Creation by cut&paste

200910/a.1870/text  
200910/a.1869/text

Pablo Lista  
Pedro Problems



## Some software needed

- Convert to Plan B format
  - mail2fs
- Generate indexes
  - mails (it's its own cache).
- Convenience
  - Acme reader(not needed in o/live)
  - Scripts



## Example guide

`Mails | Arch`

`X/text | Out/D`

`| Reply | Spam`

`> grep 9fans >9fans`

`| sort +2`



## Example

Remove spam

```
rm -r */s.*
```

Rename an attachment

```
mv 1.gif eagle.gif
```



## Example

Locate mails about mail2fs:

```
; looktags nemo msgs mail2fs  
/mail/box/nemo/msgs/200801/a.9955/text  
/mail/box/nemo/msgs/200801/a.9955/raw  
/mail/box/nemo/msgs/200801/a.9937/text  
/mail/box/nemo/msgs/200801/a.9937/raw  
/mail/box/nemo/msgs/200801/a.9937/1.mail2fs.c  
...
```



## Example

Plumb all attachments from Glenda

```
; for (f in `{mails | grep Glenda |  
    awk '{print $1}'}`^/* .pdf)  
    plumb $f
```



## Performance

time(1) of 25777 messages; 5 not archived.

- On file server:

0.01u 0.01s 0.97r mails

- From home, mounted:

0.00u 0.00s 66.18r mails

- From home, bind -b of month listings

0.00u 0.00s 14.46r mails



## The most important point

Mail text and attachments are **real** files.

They can be handled as such.

- We can do that with virtual files, but
  - No software is better software
  - Real files admit more operations

