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Administrivia

- (None.)

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Mail on UNIX Systems

- Full discussion beyond the scope of this course; we'll talk about some basics / things of interest to end users.
- No surprise — traditional approach involves several cooperating programs.

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Mail on UNIX Systems — Traditional Approach

- (Reasonably good ASCII-art picture [here](#).)
- MTA (“mail transport agent”) communicates with the outside world to send/receive mail, using SMTP (Simple Mail Transfer Protocol). Choice made by sysadmin. A traditional one is `sendmail`. Very powerful, but not easy to configure. Losing ground on desktop-oriented Linux distributions to alternatives such as `postfix`.
- MDA (“mail delivery agent”) delivers mail locally, often to “mail spool”. One choice is `procmail`, which allows various forms of filtering.
- MUA (“mail user agent”) is what users interact with directly. Many choices (more later).
- Mechanisms for running “batch” jobs (e.g., `cron`, to run programs daily/weekly/etc.) often mail output to owning user.

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Mail on UNIX (and Other) Systems — More-Current Approach

- MUA communicates directly with mail server (probably not local), using IMAP, POP3, etc. Mail stays on server. Examples include Thunderbird and Evolution. Requires that mail server be running something that provides IMAP/POP3/etc. access.
- Another alternative is Web-based mail client.
- Can co-exist with traditional approach.

Mail Delivery

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- Normally, mail gets delivered to the system “mail spool”. (For `@cs.trinity.edu` addresses, on Sol.)
- To forward mail elsewhere, create a text file `.forward` in your home directory. In it put the forwarding address(es). If one of them is `\username`, one copy goes to regular mail spool. Can also use this to put mail in a file.
- Can also use `procmail` to redirect/filter incoming mail.

Reading and Sending Mail

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- Lots of programs you can use to read mail (MUAs). Most allow reading from different sources:
 - System mail spool. (For us, that's on Sol, which might not accept regular logins.)
 - Another file (e.g., file in home directory).
 - Server that provides POP3 or IMAP access.
- MUAs also, of course, allow sending mail. Some have built-in support for outgoing mail, usually (?) via SMTP (“Simple Mail Transport Protocol”). Others turn over outbound mail to system MTA, e.g., `sendmail`. Not a concern on lab machines, but may be if using mail on your own machine.

Sending Mail from the Command Line

- Simplest / most primitive program for sending (and reading) mail is `mail`. Pretty reasonable for sending pre-composed text-only messages. Example:

```
echo "this is a test" | mail -s "test" bmassing@cs.trinity.edu
```

- What about attachments? `mail` doesn't really "do" MIME. Next slides ...

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Sending Mail from the Command Line with Attachments

- Use `mail` with an old-style mechanism for encoding files as plain text:
 - Encode files to attach with `shar`. Recipient pipes message body through `unshar`.
 - Encode files to attach with `uuencode`. Recipient pipes message body through `uudecode`.
- Use another text-mode MUA (e.g., `mutt` or `pine`) that's "scriptable" and understands MIME. Example:

```
echo "here is my file" | mutt -a somefile -s "my file" -- bmassing@cs.trinity.edu
```

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Filtering Mail with `procmail`

- `procmail` can be used for many kinds of “filtering” operations on mail. Selected messages can be saved (to files), forwarded, automatically replied to, or passed to other programs.
- On many UNIX systems, you make this happen via a `.forward` file. Other systems (such as Fedora Linux) use `procmail` as the MDA, so all that’s needed is to put a file `.procmailrc` in your home directory.
- Syntax for `.procmailrc` can be intimidating, but `man` pages for `procmail`, `procmailrc`, and `procmail` have examples that can help.
- One use of `procmail` is to run all incoming mail through a spam-filtering program, such as `spamassassin` (installed on Sol).

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Retrieving Mail with `fetchmail`

- `fetchmail` is designed to — fetch mail, and turn it over to local MTA for delivery. Can retrieve mail from different sources using different protocols (POP3, IMAP, etc.). Very flexible/configurable.
- Could use this on your own machine to retrieve mail from Sol (and/or other servers), or on lab machines to retrieve mail from other servers.
- (Historical/cultural aside: A widely-read essay related to open-source software, “The Cathedral and the Bazaar” by Eric Raymond, was based in part on his experiences with `fetchmail`.)

MUAs and Other Mail-Related Programs

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- Many text-based MUAs: I use `mutt`; Dr. Howland and Dr. Zhang used to use `pine` (Dr. Zhang may still); others include `mail` and `elm`. Many use user-specified external editor to compose mail. Can also “do” e-mail from within `emacs`.
- GUI-based MUAs include Thunderbird, Evolution, Mail (OS X).
- Also programs to provide Web access to mail — e.g., `squirrelmail` (installed on Sol, “CS Web Mail” on department home page).

Minute Essay

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- What programs have you used to read mail? What do you like/dislike about each?