Administrivia

- Reminder: Homework 6 was due Monday; Homework 7 due today. Accepted without penalty through Monday March 24 (after spring break.)
- Graded work coming soon, I hope, and a summary of grades so far by e-mail.

Slide 1

Mail on UNIX Systems

- Full discussion beyond the scope of this course; we'll talk about some basics / things of interest to end users.
- Two main categories of programs involved:
  - MTA ("mail transport agent") — program that delivers mail. Choice made by sysadmin. A well-known one is `sendmail`.
  - MUA ("mail user agent") — program users use to read mail, send mail, etc. Many choices. Some have ability to send mail directly; others turn over outgoing mail to another program (e.g., `sendmail`).

Slide 2

Mail Delivery

Slide 3

- 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` (more later) to redirect incoming mail.

Reading and Sending Mail

Slide 4

- 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 doesn't 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. Workarounds:
  - Encode files to attach with `shar`. Recipient pipes message body through `unshar`.
  - Encode files to attach with `uuencode`. Recipient pipes message body through `uudecode`.

- Other text-mode MUAs (e.g., `mutt` and `pine`) are also "scriptable" and understand MIME. Example:

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

Slide 5

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. On some Linux systems (including Fedora), it happens automatically if you have a file `.procmailrc` in your home directory.

- Syntax for `.procmailrc` can be intimidating, but `man` pages for `procmail`, `procmailrc`, and `procmailex` 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).

Slide 6

Retrieving Mail with `fetchmail`

Slide 7

- `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. (Probably won't work well to transfer mail from Sol to lab machine.)

- (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

Slide 8

- Many text-based MUAs: I use `mutt`; Dr. Howland used to use `pine` (and Dr. Zhang still does); others include `mail` and `elm`.

- 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).

What's Next

- We're about done with the major topics I wanted to talk about.

- So what's next?

  - More about topics already covered (e.g., responses to minute essay about `vim`).

  - Some miscellaneous useful commands (`gnuplot` in particular).

  - Some "putting it all together".

  - Something else? Requests welcome!

Slide 9

Minute Essay

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

- Of the topics we've talked about so far, what (if anything) do you want to hear more about? shell basics, shell scripts, text editors, makefiles, LaTeX? Anything else?

- (And best wishes for a good spring break!)

Slide 10