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Printer Management

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Printer Management

⌘ a complex subsystem

- ⌘ needs to be to take into account many different printers
 - ⌘ *different types and capabilities*
 - postscript/text/laser/chain, etc.
 - ⌘ capable of local printing or printing to a remote machine

⌘ as always, BSD and SysV differ

- ⌘ BSD style is relatively simpler
- ⌘ SysV is designed by committee
 - ⌘ *but may actually be better*
 - ⌘ *not particularly popular*
 - most systems also supply BSD-style printing experience for the users

Printing Structure

⌘ comprised of

- ⊞ user commands
 - ⊞ *lpr, lpq, lprm*
- ⊞ queues
 - ⊞ *defined in /etc/printcap*
- ⊞ spool directories
 - ⊞ */var/spool/lpd/**
- ⊞ server processes
 - ⊞ *lpd and filters*
- ⊞ administrative commands
 - ⊞ *lpc*

/etc/printcap

⌘ printer/queue capability definition file

- contains a queue definition and also specifies (some of) the properties of the associated printer (port/device)

- ✗ *very configurable but 'fiddly':*
 - br#9600 (baud rate to use to talk to device)
 - mx#10000 (max spoolable file size, 10000 blocks)
 - sd=/var/spool/ps (spool directory)

```
epson | EpsonStylus800 | 360x360:\
:sd=/var/spool/lpd/epson:\
:mx#10000:\
:sh:\
:br#9600:\
:lp=/dev/epson:\
:if=/var/spool/lpd/epson/filter:
```

- ⌘ printcap entry specifies a spool directory

- ⏏ typically under /var/spool/lpd
 - ⊗ *actually a separate dir. for each printer*
- ⏏ print jobs are typically copied into this directory
 - ⊗ *use lpr -s to link the file into the dir. instead*
- ⏏ should be sufficient space available for large jobs
 - ⊗ *otherwise they will be silently truncated*
 - ⊗ *if space is limited, use the mx option*

lpd

⌘ printing daemon

⌘ started from init

⌘ *see /etc/rc.d/init.d/lpd*

⌘ services the queues

⌘ *looks for cf* job info files, prints associated df* file*

- both created by lpr

⌘ *cf* files specify files to be printed or non-printing actions to be performed. Each such line begins with a key character and says what to do with the rest of the line:*

- J: string to be used for the job name on the burst page.
- C: string to be used for the classification line
- L: the line contains identification info from the passwordfile and causes the banner page to be printed
- T: string to be used as the title for pr
- H: name of the machine where lpr was invoked
- P: login name of the person who invoked lpr
- M: mail the specified user when the current print job completes
- etc.

⌘ also responsible for filter management

Filter Management

⌘ specified in `/etc/printcap`

⌘ af: accounting filter

⌘ *generate accounting info*

⌘ *run for each job*

⌘ if: input filter

⌘ *processes job data*

⌘ *run for each job*

⌘ of: output filter

⌘ *process the job data for the printer*

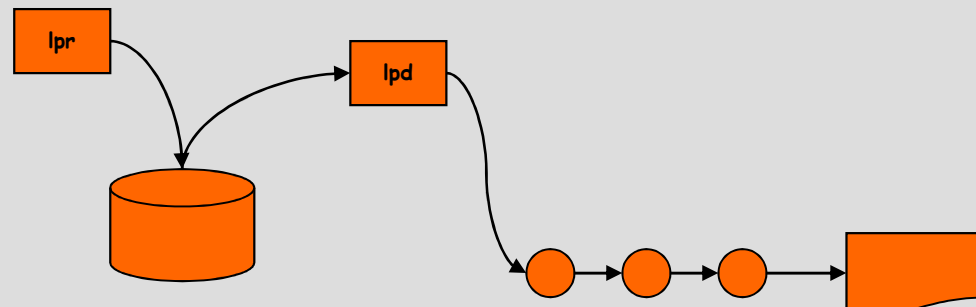
- *text-ps conversion, perhaps*

⌘ *run once only*

⌘ an administrator can write and install site-specific filters

⌘ *may be simple shell/perl scripts or complex applications*

⌘ filters may be chained



Accounting and Security

⌘ accounting

☒ pac

- ☒ *reads the printer/plotter accounting files, and prints out how much each user consumed in pages or feet and dollars*
- ☒ *charges may be specified in the printer's /etc/printcap entry or on command line*

```
# pac -Plp -p.05 | grep bob
REDHAT:bob          200.00      10      $ 10
eruption:bob        1.00        1      $ 0.05
```

⌘ security

☒ local

- ☒ *spool directory should be protected mode 755, owner root, group daemon (or lp)*

☒ remote

☒ /etc/hosts.lpd

- has a similar function to /etc/hosts.equiv, but for the printing subsystem only

☒ rs entry in /etc/printcap

- restricts remote printing users to those with a local account

lpc

⌘ printing control 'shell'; many commands restricted to root

⌘ enable, disable

⌘ *operate on the queue*

- a disabled queue won't accept any more jobs but those it has will complete

⌘ stop, start

⌘ *operate on the printer device*

- stop ensures that, after the current job completes, nothing will be started

⌘ abort, restart

⌘ *abort is an immediate version of stop*

⌘ *restart attempts to free a 'stuck' daemon*

⌘ up, down

⌘ *operate on both queue and device in one go*

⌘ status

⌘ clean

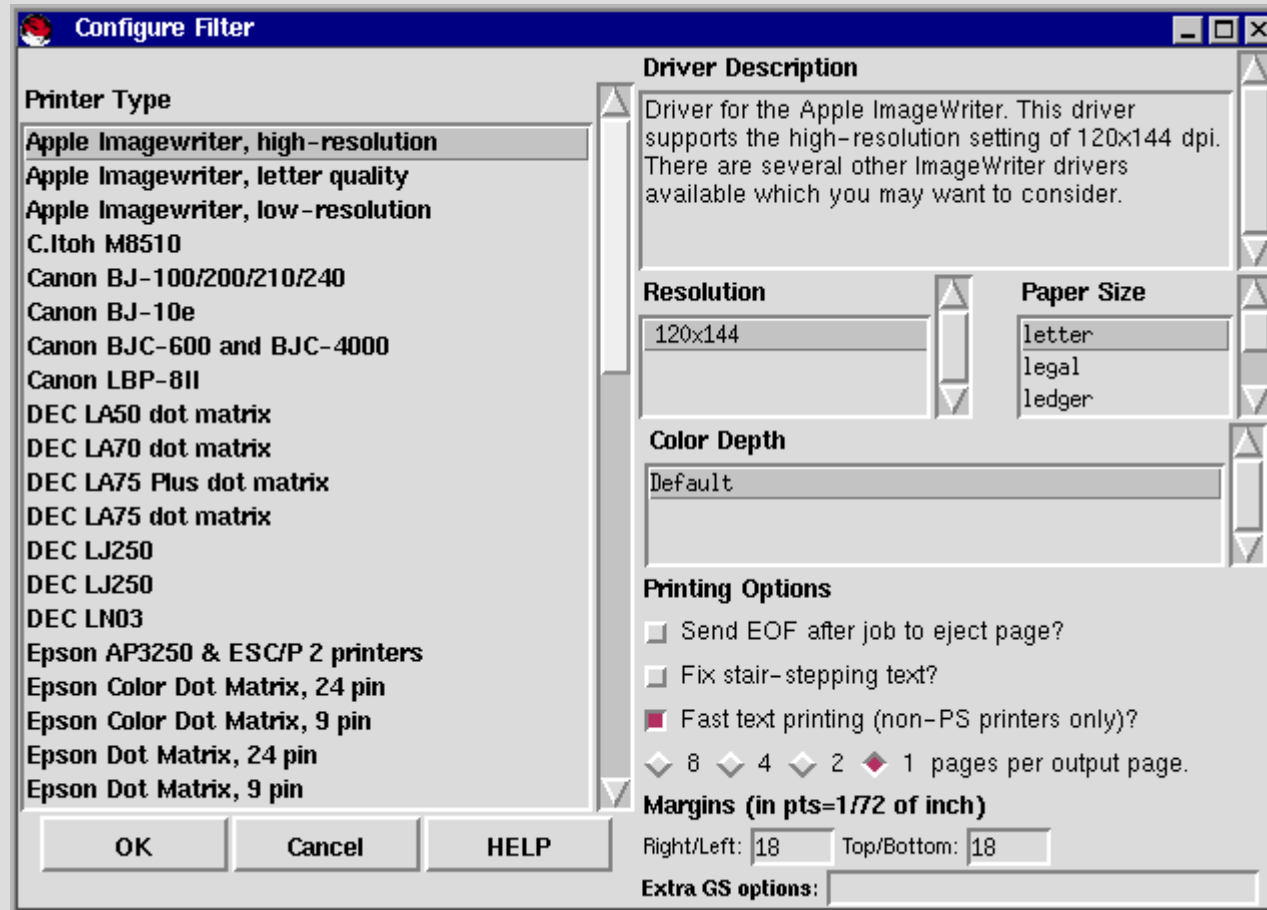
⌘ *"remove cruft files from a queue"*

⌘ topq

⌘ *move a job to the top of the queue*

⌘ (see p.554, Frisch)

RedHat's printtool



SysV Printing

⌘ a complete redesign

- ⌘ user commands
 - ⌘ *lp, cancel, lpstat*
- ⌘ daemon
 - ⌘ *lpsched*
- ⌘ administrative commands
 - ⌘ *lpadmin*
 - a key command, (see p.567, Frisch)
 - ⌘ *accept, reject, lpshut*
 - operate on the queue(s)
 - ⌘ *enable, disable*
 - operate on the device (c.f. *lpc...confused?!)*
 - ⌘ *lpmove*
 - ⌘ *lpusers*
- ⌘ doesn't use */etc/printcap*, may use terminfo database
- ⌘ introduces the idea of printer device classes
 - ⌘ *all laser printers, say*
 - can simply say "I need to go to a laser printer"
 - the subsystem will work out which one to use
- ⌘ printer interface program
 - ⌘ (see p.563, Frisch)