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Terminals

U ***n*** ***IX***

Terminals

⌘ a few aspects to examine

- ⌘ /dev entries
- ⌘ terminal line configuration
- ⌘ terminal characteristic configuration

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/dev Entries

⌘ various important files, all character special files

⌘ ttynn

⊗ *console virtual terminal devices*

⌘ ttySn (also cuann)

⊗ *direct connected serial terminals/modem lines*

⌘ tty[p-z]

⊗ *network pseudo terminals*

⊗ *each has two parts*

- master: /dev/ptyn; slave: /dev/ttyn

- "The pseudo-tty subsystem simulates a terminal connection, where the master side represents the terminal and the slave represents the user process's special device end point."

⌘ tty

⊗ *current controlling tty*

- tty command identifies the real device

⊗ *provides a way of ensuring that output can go the actual tty, regardless of I/O redirection*

⌘ console

⊗ *system console device*

- may be a specially identified window under X

```
# tty
/dev/ttyp0
# echo "hello to me." > `tty`
hello to me.
```

Terminal Line Configuration

- ⌘ at system startup, init starts getty processes

```
2:12345:respawn:/sbin/getty ttyS0 DT19200 vt100
```

- ⌘ getty is invoked to:

- ☐ open tty lines and set their modes
- ☐ print the login prompt, and get the user's name
- ☐ initiate a login process for the user

- ⌘ getty's configuration activities are specified in /etc/gettydefs

- ☐ specifies baud rate, line characteristics that should be established both after logout and before calling login, prompt string and characteristics negotiation procedure

```
# 19200 fixed baud Dumb Terminal entry
DT19200# B19200 CS8 CLOCAL # B19200 SANE -ISTRIP CLOCAL #@S login: #DT19200
```

- ☒ @S gives the system name

- ⌘ if /etc/inittab is changed, init must be told

```
# init q
```

Virtual Consoles

⌘ under linux, it is possible to start a number of 'virtual' consoles that share the real console

☒ a "poor man's windowing system"

☒ simply start a getty (via /etc/inittab) on the virtual console device

```
1:12345:respawn:/sbin/mingetty tty1
2:3:respawn:/sbin/getty ttyS0 DT19200 vt100
3:3:respawn:/sbin/mingetty tty2
4:3:respawn:/sbin/mingetty tty3
5:3:respawn:/sbin/mingetty tty4
6:3:respawn:/sbin/mingetty tty5
7:3:respawn:/sbin/mingetty tty6
```

☒ switch between the consoles with ctrl-alt-Fnn

☒ how many consoles can be supported depends on the overall capability of the machine

☒ (note that mingetty is a linux specific, console only version of getty)

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Monday, June 22, 2009

Unix

Unix

Terminal Capabilities

⌘ a system can have multiple terminal types attached to it

☑ each type can require a very different control strategy

⌘ Unix keeps a terminal capabilities database

☑ BSD and SysV differ in this

☒ *BSD: /etc/termcap*

- text file

```
vt61|vt-61|vt61.5|dec vt61:\
:co#80:li#24:\
:bl=^G:cd=\EJ:ce=\EK:cl=\EH\EJ:cm=\EY%+ %+ :cr=\r:\
:do=^J:kd=\EB:kl=\ED:kr=\EC:ku=\EA:le=^H:nd=\EC:\
:sf=\n:sr=\EI:ta=^I:up=\EA:
```

☒ *SysV: file hierarchy under /usr/share/terminfo/*

- binary 'compiled' files
 - compiled by tic
 - source has a different syntax

```
vt61|vt-61|vt61.5|dec vt61,
cols#80, lines#24,
bel=^G, clear=\EH\EJ, cr=^M, cub1=^H, cud1=^J, cuf1=\EC,
cup=\EY%p1%{32}%+%c%p2%{32}%+%c, cuu1=\EA, ed=\EJ,
el=\EK, ht=^I, ind=^J, kbs=^H, kcub1=\ED, kcud1=\EB, kcufl=\EC,
kcuu1=\EA, nel=^M^J, ri=\EI,
```

☑ both really have the same purpose and capability

☒ *captoinfo, infocmp translate between the two formats*

- terminfo reflects the design-by-committee approach of SysV

Controlling Login Access

⌘ `/etc/securetty`

- ⏏ used by login; the file contains the device names of tty lines (one per line, without leading `/dev/`) on which root is allowed to login

⌘ `/etc/nologin`

- ⏏ if this file exists, its contents are printed to the screen, and the login is terminated (unless the user is root)
 - ⊗ *typically used to prevent logins during shutdown/reboot*

⌘ `/etc/usertty`

- ⏏ specifies terminal, host and time restrictions for a specified user or for a specified group

⌘ `/etc/.hushlogin`, `$HOME/.hushlogin`

- ⏏ allows a quiet login (doesn't print `/etc/motd`, check mail, etc)

Other Stuff

⌘ /etc/motd

- displayed by login after a successful login but just before it executes the login shell

⌘ /etc/issue

- contains a message or system identification to be printed before the login prompt
- may also contain a number of escape sequences (these can also be used in /etc/gettydefs file alongside @S):
 - @B: current baud rate
 - @D: current date
 - @L: line to which getty is attached
 - @S: system node name
 - @T: current time, in HH:MM:SS (24-hour)
 - @U: number of currently signed-on users

...doesn't work for my RH5.2 system!

⌘ nohup

- runs the given COMMAND with hangup signals ignored, so that the command can continue running in the background after a user logs out

```
% nohup nice +5 my_long_comamnd &
```

- creates the file \$HOME/nohup.out to hold output