

10 Useful Command(ment)s



- Some commands & concepts that are useful in many unexpected situations
 - Not the only useful commands
 - Not even the most useful
 - Just some I like
 - Mixture of easy & advanced

Dave Gilbert / 2011

In – links hard & symbolic



- The Unix equivalent of gaffer tape
- Hard links `ln from to`
- Symbolic links `ln -s from to`
 - Can go across mounts
 - Can link to directories
- Don't always behave as expected
 - Editors
 - `cp`, backup programs
- Library tricks

Copy example with ln



- `mkdir a; cd a`
- `echo hello > x`
- `ln -s x y`
- `ln x z`
- `ls -l`

```
-rw-r--r-- 2 dg dg 6 2011-04-09 18:46 x
lrwxrwxrwx 1 dg dg 1 2011-04-09 18:46 y -> x
-rw-r--r-- 2 dg dg 6 2011-04-09 18:46 z
```

- `cp -a a b; ls -l b`

```
-rw-r--r-- 2 dg dg 6 2011-04-09 18:46 x
lrwxrwxrwx 1 dg dg 1 2011-04-09 18:46 y -> x
-rw-r--r-- 2 dg dg 6 2011-04-09 18:46 z
```

- `cp -r a c; ls -l c`

```
-rw-r--r-- 1 dg dg 6 2011-04-09 18:47 x
lrwxrwxrwx 1 dg dg 1 2011-04-09 18:47 y -> x
-rw-r--r-- 1 dg dg 6 2011-04-09 18:47 z
```

Wireshark (nee Ethereal)



- Network & USB debugging – grab packets & see what's really going on:

The screenshot shows the Wireshark interface with a packet capture of a Mount Service error. The packet list pane shows three packets:

No.	Time	Source	Destination	Protocol	Info
61	0.481034	192.168.66.33	192.168.66.25	MOUNT	V3 MNT Call (Reply In 62) /frob
62	0.481440	192.168.66.25	192.168.66.33	MOUNT	V3 MNT Reply (Call In 61) Error:ERR_ACCESS
63	3.120461	192.168.66.33	192.168.66.25	svnerav	24800 > 36452 [PSH. ACK] Seq=9 Ack=17 Win=22

The packet details pane for packet 62 shows the following structure:

- Frame 62: 70 bytes on wire (560 bits), 70 bytes captured (560 bits)
- Ethernet II, Src: Inventec_63:68:a6 (00:a0:d1:63:68:a6), Dst: AsrockIn_03:d1:c2 (00:25:22:03:d1:c2)
- Internet Protocol, Src: 192.168.66.25 (192.168.66.25), Dst: 192.168.66.33 (192.168.66.33)
- User Datagram Protocol, Src Port: 42988 (42988), Dst Port: 812 (812)
- Remote Procedure Call, Type:Reply, XID:0x779c9736
- Mount Service
 - [Program Version: 3]
 - [V3 Procedure: MNT (1)]
 - Status: ERR_ACCESS (13)

The packet bytes pane shows the raw data in hexadecimal and ASCII:

```
0000 00 25 22 03 d1 c2 00 a0 d1 63 68 a6 08 00 45 00  .%"..... .ch...E.
0010 00 38 00 00 40 00 40 11 35 2a c0 a8 42 19 c0 a8  .8..@.@. 5*..B...
0020 42 21 a7 ec 03 2c 00 24 40 21 77 9c 97 36 00 00  B!...,,$ @!w..6..
0030 00 01 00 00 00 00 00 00 00 00 00 00 00 00 00  .....
```

ImageMagick



- Old collection of image tools
- Handles almost any image format
- 'convert' is most useful
 - Convert formats – `convert blah.png blah.jpg`
 - Screen grab – `convert X: wireshark.png`
 - Simple enhancements – `convert -enhance in.jpg out.jpg`
 - Resize – `convert in.jpg -resize 400x300 out.jpg`
 - 100s of options!
 - Script resizes/conversions/etc on whole directories

ImageMagick . 2



- Not just convert
 - display – simple display program (outdated)
 - identify – tell you everything about an image file
 - composite – overlap images
 - And a few more
- Can deal with animated gifs, vector->bitmap conversion and lots more

dd your data



- Pretty raw copying of data with some conversion and size tricks
 - `dd if=infile of=outfile someflags`
 - `dd if=/dev/zero of=1megfile bs=1024k count=1`
 - `dd if=afile of=another bs=1024 count=10 skip=100`
 - Copy 10k from 100k in
 - `dd if=/dev/sda of=mbrcopy bs=512 count=1`
 - Simple disk wipes! Be careful with parameters if & of especially!

udisks



- A layer on top of kernel->udev->udisks for managing disks
- Can often be run by normal users
- Used by gnome etc to mount disks
- `udisks -mount /dev/whatever`
- `udisks -enumerate-device-files`
 - See device by path, id, uuid, etc
- `udisks -show-info /dev/sda`
 - Type of drive, vendor, model, whether SSD or not, last SMART data

apt-file, locate, apt-cache, dpkg -S



- Find the package a file is in:
 - `dpkg -S /bin/lis`
- Which package to install a file from:
 - `apt-file search tux.png`
 - `apt-file update`
- Where did I put that file:
 - `locate 10usefulcommandments`
 - Update in cron `~once/day`
- Which package to...
 - `apt-cache search electrical`

Itrace & strace



- See what a program is doing
 - Itrace for Library calls / strace for System calls

- Itrace /bin/ls

```
readdir(0x018e7c20)           = 0x018e8180
strlen("index.html")         = 10
malloc(11)                   = 0x018efe10
memcpy(0x018efe10, "index.html", 11) = 0x018efe10
```

- strace /bin/ls

```
open("/usr/lib/locale/locale-archive", O_RDONLY) = 3
fstat(3, {st_mode=S_IFREG|0644, st_size=2772576, ...}) = 0
```

- -p for attach to existing processes
- -f for follow forks (child processes)
- -T time spent in calls

procmail



- Filter a mail stream, add/remove headers, sort into folders, run through other things
 - Some mailers will run this for you if you just create a `.procmailrc`
- e.g. Put folders from a particular address in a particular folder:

```
:0:
```

```
* ^From.*dave@treblig.org
```

```
daves-mail
```

```
:0:
```

```
* ^X-Spam-Level: \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*
```

```
almost-certainly-spam
```

dmidecode



- Find information from BIOS about your machine
 - `sudo dmidecode`

Base Board Information

```
Manufacturer: ASRock
Product Name: P55M Pro
```

Memory Module Information

```
Socket Designation: DIMM0
Bank Connections: 0 1
Current Speed: Unknown
Type: DIMM SDRAM
Installed Size: 2048 MB (Double-bank Connection)
Enabled Size: 2048 MB (Double-bank Connection)
Error Status: OK
```

- Only as good as your BIOS + system vendor
- My laptop claims to be 91inch high with 18 power cords

chvt, /dev/vcs*



- chvt – equivalent of ctrl-alt-fn
 - Can be useful if keyboard has hung to remotely get out of X
- cat /dev/vcs1
 - Displays the text contents of a console
- Useful for seeing remotely what is on the console of a machine.