

Linux Nuts and Bolts

David Morgan

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At the command line

- Cursor control
 - type to insert
 - del/ctrl-d to delete
 - home/end for endpoints
- Filename completion – “ tab” after initial characters
- Command repetition
 - uparrow (like MS doskey)
 - history
 - fc
 - ctrl-r
- Clearing the screen – ctrl-L/clear

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At the command line

- Rescuing garbled screen (“reset”)
- Case sensitivity
- Un-fully-qualified commands
 - PATH
 - ./

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Linux plumbing

- standard input/standard output
- < says get input from file instead of keyboard
- > says send output to file instead of screen
- >> says send to file nondestructively
- <cmd1> | <cmd2> says use cmd1’s output as cmd2’s input

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Linux “environment”

- env prints environment variables
- echo \$VARNAME prints individual variable
- VARNAME=contents sets contents
- set prints all shell variables

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An editor: vi

- vi lovers home page
 - <http://www.thomer.com/thomer/vi/vi.html>
- 1-page cheat sheet
 - <http://dcfonline.sfu.ca/ying/linux/vi/vi-reference.pdf>
- Run vimtutor

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Top 10 Commands

- ls
- cd
- cp
- mv
- rm
- chmod
- cat
- more
- grep
- ps

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ls – list directory contents

- ls -l
- ls -F
- ls -a
- ls -t
- Like MS dir

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cd – change current directory

- cd
- cd <fully qualified directory name>
- cd <relative directory name>
- Use with pwd (print working directory)
- Like MS cd

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cp – copy files and directories

- cp -R
- cp -p
- explicit . to copy into current directory
- poor for comprehensive backup (try tar)
- Like MS copy

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mv –rename/move files

- Rename
 - mv Afile B
 - mv Xdir Y
- Move
 - mv Afile Xdir

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rm – remove files and directories

- rm -i
- rm -f
- rm -r
- Useful but dangerous: rm -rf *
- Like MS del

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cat – file content to std output

- `cat Afile Bfile > Cfile`
- `cat /etc/lilo.conf`
- `cat -n`
- `cat -A`

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more – file filter for viewing

- View files 1 screen at a time
- ‘Enter’ for another line
- ‘Spacebar’ for another screenful
- cf., `less`
- Like MS `more`, `/p` option of `dir`

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grep – print lines matching pattern

- `grep <target> <files>`
- `<command> | grep <target>`
- `grep -v`

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ps – report process status

- `ps`
- `ps ax`
- PID numbers

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chmod – change file permissions

- chmod u+r (u/g/o +/- r/w/x)
- chmod 777
- To enable script execution
- To restrict/extend access to others

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File system - permissions

-rwxr-x---

- **File type** (file, directory, device,...)
- Accesses granted to **file's associated User**
- Accesses granted to members of **file's Group**
- Accesses granted to all **Other users**

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One for good measure - ln – make links between files

- Hard links
 - ln
- Symbolic links
 - ln -s

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Last one, really - finding files

- locate
 - create a fileset snapshot database
 - cd /etc/cron.daily
 - updatedb
 - locate <targfile>
- find
 - find / -name <targfile> -print

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Command Documentation

- man ln
- man grep
- man cat
- et cetera
- To print out, capture as
 - man chmod | col -b > filetoprint

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Virtual Terminals

- alt-F1 thru alt-F6 select
- ctrl-alt-...while in X
- Multiple independent consoles

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File System

- formatting
- mounting
- sharing with DOS/Windows
- checking
- backing up

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File System - formatting

- Dos “format” = format tracks + place filesystem
 - Low-level format
 - High-level format
- Linux low-level for floppies only
 - fdformat /dev/fd0H1440
- High-level format
 - mkfs -t ext2 /dev/fd0H1440

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File System - mounting

- Mount <device> <mountpoint>
 - eg, mount /dev/fd0 /mnt/floppy
- Mountpoint name arbitrary
 - eg, mount /dev/cdrom /mnt/floppy – no problem
- Masks any existing subtree at the mountpoint

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File System - sharing

- mount -t <filesystem type> <device> <mountpoint>
- Mountpoint directory must pre-exist
- Read a dos/fat floppy
 - mount -t vfat /dev/fd0 /mnt/floppy
- Read a dos or windows partition
 - mount -t msdos /dev/hda1 /mnt/dosdrivec
 - mount -t vfat /dev/hda1 /mnt/win98drivec
- List existing mounts
 - mount

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File System - checking

- fsck
- badblocks

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File System – backing up

- `tar -cvf dest.tar srcdir`
 - Executed from within parent directory of `srcdir`
 - Captures whole subtree under `srcdir`
- `tar -xvf dest.tar`
 - Executed from within any subdirectory
 - Creates a subdirectory “`srcdir`” with whole contents of the original
- `tar -tvf dest.tar`
 - View contents

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File System – backing up

- Better (more fully faithful) than cp for archiving
- tar default: no compression
 - use with gzip
 - or use -z option
 - <file>.tar <file>.gz <file>.tar.gz
- Destination can be a device (tar = tape + archive)
 - tar -cvzf /dev/fd0 srcdir
 - tar -xvzf /dev/fd0

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Users

- useradd/userdel
- /home/<user>
- /etc/passwd is the user database
- /etc/shadow has passwords (relocated from passwd)
- /etc/group
- whoami
- su

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Printing

- `lpr <filename>`

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Shutting down

- **Shut Down**
 - `shutdown -h now` or
 - `halt`
- **Restart**
 - `shutdown -r now` or
 - `reboot`

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