

# GNU/Linux most wanted

## Summary of most useful commands

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Sources:  
<http://git.free-electrons.com/training-materials>  
Updates:  
<http://free-electrons.com/doc/training/embedded-linux>  
Translations, command and concepts details:  
[http://free-electrons.com/training/intro\\_unix\\_linux](http://free-electrons.com/training/intro_unix_linux)

Thanks to Michel Blanc, Hermann J. Beckers and Thierry Grellier.

Latest update: Mar 20, 2016

## Handling files and directories

Create a directory:  
`mkdir dir`

Create nested directories:  
`mkdir -p dir1/dir2`

Changing directories:  
`cd newdir`  
`cd ..` (parent directory)  
`cd -` (previous directory)  
`cd` (home directory)  
`cd ~bill` (home directory of user `bill`)

Print the working (current) directory:  
`pwd`

Copy a file to another:  
`cp source_file dest_file`

Copy files to a directory:  
`cp file1 file2 dir`

Copy directories recursively:  
`cp -r source_dir dest_dir`  
`rsync -a source_dir/ dest_dir/`

Create a symbolic link:  
`ln -s linked_file link`

Rename a file, link or directory:  
`mv source_file dest_file`

Remove files or links:  
`rm file1 file2`

Remove empty directories:  
`rmdir dir`

Remove non-empty directories:  
`rm -rf dir`

## Listing files

List all "regular" files (not starting with `.`) in the current directory:  
`ls`

Display a long listing:  
`ls -l`

List all the files in the current directory, including "hidden" ones (starting with `.`):  
`ls -a`

List by time (most recent files first):  
`ls -t`

List by size (biggest files first)  
`ls -S`

List with a reverse sort order:  
`ls -r`

Long list with most recent files last:  
`ls -ltr`

## Displaying file contents

Concatenate and display file contents:  
`cat file1 file2`

Display the contents of several files (stopping at each page):  
`more file1 file2`  
`less file1 file2` (better: extra features)

Display the first 10 lines of a file:  
`head -10 file`

Display the last 10 lines of a file:  
`tail -10 file`

## File name pattern matching

Concatenate all "regular" files:  
`cat *`

Concatenate all "hidden" files:  
`cat .*`

Concatenate all files ending with `.log`:  
`cat *.log`

List "regular" files with `bug` in their name:  
`ls *bug*`

List all "regular" files ending with `.` and a single character:  
`ls *.*?`

## Handling file contents

Show only the lines in a file containing a given substring:  
`grep substring file`

Case insensitive search:  
`grep -i substring file`

Showing all the lines but the ones containing a substring:  
`grep -v substring file`

Search through all the files in a directory:  
`grep -r substring dir`

Sort lines in a given file:  
`sort file`

Sort lines, only display duplicate ones once:  
`sort -u file` (unique)

## Changing file access rights

Add write permissions to the current user:  
`chmod u+w file`

Add read permissions to users in the file group:  
`chmod g+r file`

Add execute permissions to other users:  
`chmod o+x file`

Add read + write permissions to all users:  
`chmod a+rw file`

Make executable files executable by all:  
`chmod a+rX *`

Make the whole directory and its contents accessible by all users:  
`chmod -R a+rX dir` (recursive)

## Comparing files and directories

Comparing 2 files:  
`diff file1 file2`

Comparing 2 files (graphical):  
`gvimdiff file1 file2`  
`tkdiff file1 file2`  
`meld file1 file2`

Comparing 2 directories:  
`diff -r dir1 dir2`

## Looking for files

Find all files in the current (`.`) directory and its subdirectories with `log` in their name:  
`find . -name "*log*"`

Find all the `.pdf` files in `dir` and subdirectories and run a command on each:  
`find . -name "*.pdf" -exec xpdf {} ';' ;'`

Quick system-wide file search by pattern (caution: index based, misses new files):  
`locate "*pub*"`

## Redirecting command output

Redirect command output to a file:  
`ls *.png > image_files`

Append command output to an existing file:  
`ls *.jpg >> image_files`

Redirect command output to the input of another command:  
`cat *.log | grep error`

## Job control

Show all running processes:  
`ps -ef`

Live hit-parade of processes (press `P`, `M`, `T`: sort by Processor, Memory or Time usage):  
`top`

Send a termination signal to a process:  
`kill <pid>` (number found in `ps` output)

Have the kernel kill a process:  
`kill -9 <pid>`

Kill all processes (at least all user ones):  
`kill -9 -1`

Kill a graphical application:  
`xkill` (click on the program window to kill)

## File and partition sizes

Show the total size on disk of files or directories (disk usage):  
`du -sh dir1 dir2 file1 file2`

Number of bytes, words and lines in file:  
`wc file` (word count)

Show the size, total space and free space of the current partition:  
`df -h .`

Display these info for all partitions:  
`df -h`

## Compressing

Compress a file:  
`gzip file` (.gz format)  
`bzip2 file` (.bz2 format, better)  
`lzma file` (.lzma format, best compression)  
`xz file` (.xz format, best for code)

Uncompress a file:  
`gunzip file.gz`  
`bunzip2 file.bz2`  
`unlzma file.lzma`

`unxz file.xz`

## Archiving

Create a compressed archive (tape archive):  
`tar zcvf archive.tar.gz dir`  
`tar jcvf archive.tar.bz2 dir`  
`tar Jcvf archive.tar.xz dir`  
`tar --lzma -cvf archive.tar.lzma`

Test (list) a compressed archive:  
`tar tvf archive.tar.[gz|bz2|lzma|xz]`

Extract the contents of a compressed archive:  
`tar xvf archive.tar.[gz|bz2|lzma|xz]`

tar options:  
`c`: create  
`t`: test  
`x`: extract  
`j`: on the fly `bzip2` (un)compression  
`J`: on the fly `xz` (un)compression  
`Z`: on the fly `gzip` (un)compression

Handling zip archives  
`zip -r archive.zip <files>` (create)  
`unzip -t archive.zip` (test / list)  
`unzip archive.zip` (extract)

## Printing

Send PostScript or text files to `queue`:  
`lpr -Pqueue f1.ps f2.txt` (local printer)

List all the print jobs in `queue`:  
`lpq -Pqueue`

Cancel a print job number in `queue`:  
`cancel 123 queue`

Print a PDF file:  
`pdf2ps doc.pdf`  
`lpr doc.ps`

View a PostScript file:  
`ps2pdf doc.ps`  
`xpdf doc.pdf`

## User management

List users logged on the system:  
`who`

Show which user I am logged as:  
`whoami`

Show which groups `user` belongs to:  
`groups user`

Tell more information about `user`:  
`finger user`

Switch to user `hulk`:  
`su - hulk`

Switch to super user (`root`):  
`su -` (switch `user`)  
`su` (keep same directory and environment)

## Time management

Wait for 60 seconds:  
`sleep 60`

Show the current date:  
`date`

Count the time taken by a command:  
`time find_charming_prince -cute -rich`

## Command help

Basic help (works for most commands):  
`grep --help`

Access the full manual page of a command:  
`man grep`

## Misc commands

Basic command-line calculator  
`bc -l`

## Basic system administration

Change the owner and group of a directory and all its contents:  
`sudo chown -R newuser.newgroup dir`

Reboot the machine in 5 minutes:  
`sudo shutdown -r +5`

Shutdown the machine now:  
`sudo shutdown -h now`

Display all available network interfaces:  
`ifconfig -a`

Assign an IP address to a network interface:  
`sudo ifconfig eth0 207.46.130.108`

Bring down a network interface:  
`sudo ifconfig eth0 down`

Define a default gateway for packets to machines outside the local network:  
`sudo route add default gw 192.168.0.1`

Delete the default route:  
`sudo route del default`

Test networking with another machine:  
`ping 207.46.130.108`

Create or remove partitions on the first IDE hard disk:  
`fdisk /dev/hda1`

Create (format) an ext3 filesystem:  
`mkfs.ext3 /dev/hda1`

Create (format) a FAT32 filesystem:  
`mkfs.vfat -v -F 32 /dev/hda2`

Mount a formatted partition:  
`mkdir /mnt/usbdisk` (just do it once)  
`sudo mount /dev/ubal /mnt/usbdisk`

Mount a filesystem image (loop device):  
`sudo mount -o loop fs.img /mnt/fs`

Unmount a filesystem:  
`sudo umount /mnt/usbdisk`

Check the system kernel version:  
`uname -a`

