Unix/Linux Command Reference

File Commands

ls – directory listing
ls -al – formatted listing with hidden files
cd *dir* - change directory to *dir*
cd – change to home
pwd – show current directory
mkdir *dir* – create a directory *dir*
rm *file* – delete *file*
rm -r *dir* – delete directory *dir*
rm -f *file* – force remove *file*
rm -rf *dir* – force remove directory *dir* *
cp *file1 file2* – copy *file1* to *file2*
cp -r *dir1 dir2* – copy *dir1* to *dir2*; create *dir2* if it doesn't exist
mv *file1 file2* – rename or move *file1* to *file2*
if *file2* is an existing directory, moves *file1* into directory *file2*
ln -s *file link* – create symbolic link *link* to *file*
touch *file* – create or update *file*
cat > *file* – places standard input into *file*
more *file* – output the contents of *file*
head *file* – output the first 10 lines of *file*
tail *file* – output the last 10 lines of *file*
tail -f *file* – output the contents of *file* as it grows, starting with the last 10 lines

Process Management

ps – display your currently active processes
top – display all running processes
kill *pid* – kill process id *pid*
killall *proc* – kill all processes named *proc* *
bg – lists stopped or background jobs; resume a stopped job in the background
fg – brings the most recent job to foreground
fg *n* – brings job *n* to the foreground

File Permissions

chmod *octal file* – change the permissions of *file* to *octal*, which can be found separately for user, group, and world by adding:
- 4 – read (r)
- 2 – write (w)
- 1 – execute (x)

Examples:
chmod 777 – read, write, execute for all
chmod 755 – rwx for owner, rx for group and world
For more options, see **man chmod**.

SSH

ssh *user@host* – connect to *host* as *user*
ssh -p *port user@host* – connect to *host* on port *port* as *user*
ssh-copy-id *user@host* – add your key to *host* for *user* to enable a keyed or passwordless login

Searching

grep *pattern files* – search for *pattern* in *files*
grep -r *pattern dir* – search recursively for *pattern* in *dir*
command | grep *pattern* – search for *pattern* in the output of *command*
locate *file* – find all instances of *file*

System Info

date – show the current date and time
cal – show this month's calendar
uptime – show current uptime
w – display who is online
whoami – who you are logged in as
finger *user* – display information about *user*
uname -a – show kernel information
cat /proc/cpuinfo – cpu information
cat /proc/meminfo – memory information
man *command* – show the manual for *command*
df – show disk usage
du – show directory space usage
free – show memory and swap usage
whereis *app* – show possible locations of *app*
which *app* – show which *app* will be run by default

Compression

tar cf *file.tar files* – create a tar named *file.tar* containing *files*
tar xf *file.tar* – extract the files from *file.tar*
tar czf *file.tar.gz files* – create a tar with Gzip compression
tar xzf *file.tar.gz* – extract a tar using Gzip
tar cjf *file.tar.bz2* – create a tar with Bzip2 compression
tar xjf *file.tar.bz2* – extract a tar using Bzip2
gzip *file* – compresses *file* and renames it to *file.gz*
gzip -d *file.gz* – decompresses *file.gz* back to *file*

Network

ping *host* – ping *host* and output results
whois *domain* – get whois information for *domain*
dig *domain* – get DNS information for *domain*
dig -x *host* – reverse lookup *host*
wget *file* – download *file*
wget -c *file* – continue a stopped download

Installation

Install from source:
./configure
make
make install
dpkg -i *pkg.deb* – install a package (Debian)
rpm -Uvh *pkg.rpm* – install a package (RPM)

Shortcuts

Ctrl+C – halts the current command
Ctrl+Z – stops the current command, resume with **fg** in the foreground or **bg** in the background
Ctrl+D – log out of current session, similar to **exit**
Ctrl+W – erases one word in the current line
Ctrl+U – erases the whole line
Ctrl+R – type to bring up a recent command
!! - repeats the last command
exit – log out of current session

* use with extreme caution.

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cd	Change to home
pwd	Show current directory
mkdir dir	Create a directory dir
rm file	Delete file
rm –r dir	Delete directory dir
rm –f file	Force remove fire
rm –rf dir	For remove directory dir
cp file1 file2	Copy file1 to file2
cp –r dir1 dir2	Copy dir1 to dir2; create dir2 if it doesn't exit
mv file1 file2	Rename or move file1 to file2. If filed 2 is an existing directory, moves file1 into directory file2
ln –s file link	Create symbolic link link to file
touch file	Create or update file
cat > file	Places standard input into file
more file	Output the contents of file
head file	Output the firest 10 lines of file
tail file	Output the last 10 lines of file
tail –f file	Output the contents of file as it grows, starting with the last 10 lines

Process Management

ps	display all currently active processes
top	display all running processes
kill pid	kill process id pid
killall proc	kill all processes named proc *
bg	lists stopped or background jobs; resume a stopped job in the background
fg	Brings the most recent job to the foreground
fg a	brings job a to the foreground

File Permissions

chmod octal file	change the permissions of file to octal, which can be found separately for user, group, and world by adding: • 4 – read (r) • 2 – write (w) • 1 – execute (x) **Examples:** **chmod 777** – read, write, execute for all **chmod 755** – rwx for owner, rx for group and world. For more options, see **man chmod.**

SSH

ssh user@host	connect to host as user
ssh -p port user@host	connect to host on port port as user
ssh-copy-id user@host	add your key to host for user to enable a keyed or passwordless login

Searching

grep pattern files	search for pattern in files
grep -r pattern dir	search recursively for pattern in dir
command | grep pattern	search for pattern in the output of command
locate file	find all instances of file

System Info

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which app	show which app will be run by default

Compression

tar cf file.tar files	create a tar named file.tar containing files
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tar xzf file.tar.gz	extract a tar using Gzip
tar cjf file.tar.bz2	create a tar with Bzip2 compression
tar xjf file.tar.bz2	extract a tar using Bzip2
gzip file	compresses file and renames it to file.gz
gzip -d file.gz	decompresses file.gz back to file

Network

ping host	ping host and output results
whois domain	get whois information for domain
dig domain	get DNS information for domain
dig -x host	reverse lookup host
wget file	download file
wget -c file	continue a stopped download

Installation

Install from source:

./configure **make** **make install**	
dpkg -i pkg.deb	install a package (Debian)
rpm -Uvh pkg.rpm	install a package (RPM)

Shortcuts

Ctrl+C	halts the current command
Ctrl+Z	stops the current command, resume with fg in the foreground or bg in the background
Ctrl+D	log out of current session, similar to exit
Ctrl+W	erases one word in the current line
Ctrl+U	erases the whole line
Ctrl+R	type to bring up a recent command
!!	repeats the last command
exit	log out of current session
*	use with extreme caution

THE ONE PAGE *LINUX* MANUAL

A summary of useful Linux commands

Starting & Stopping

shutdown -h now	Shutdown the system now and do not reboot
halt	Stop all processes - same as above
shutdown -r 5	Shutdown the system in 5 minutes and reboot
shutdown -r now	Shutdown the system now and reboot
reboot	Stop all processes and then reboot - same as above
startx	Start the X system

Accessing & mounting file systems

mount -t iso9660 /dev/cdrom /mnt/cdrom	Mount the device cdrom and call it cdrom under the /mnt directory
mount -t msdos /dev/hdd /mnt/ddrive	Mount hard disk d as a msdos file system and call it ddrive under the /mnt directory
mount -t vfat /dev/hda1 /mnt/cdrive	Mount hard disk a as a VFAT file system and call it cdrive under the /mnt directory
umount /mnt/cdrom	Unmount the cdrom

Finding files and text within files

find / -name fname	Starting with the root directory, look for the file called fname
find / -name "*fname*"	Starting with the root directory, look for the file containing the string fname
locate missingfilename	Find a file called missingfilename using the locate command - this assumes you have already used the command updatedb (see next)
updatedb	Create or update the database of files on all file systems attached to the linux root directory
which missingfilename	Show the subdirectory containing the executable file called missingfilename
grep textstringtofind /dir	Starting with the directory called dir , look for and list all files containing textstringtofind

The X Window System

xvidtune	Run the X graphics tuning utility
XF86Setup	Run the X configuration menu with automatic probing of graphics cards
Xconfigurator	Run another X configuration menu with automatic probing of graphics cards
xf86config	Run a text based X configuration menu

Moving, copying, deleting & viewing files

ls -l	List files in current directory using long format
ls -F	List files in current directory and indicate the file type
ls -laC	List all files in current directory in long format and display in columns

rm name	Remove a file or directory called name
rm -rf name	Kill off an entire directory and all it s includes files and subdirectories
cp filename /home/dirname	Copy the file called filename to the /home/dirname directory
mv filename /home/dirname	Move the file called filename to the /home/dirname directory
cat filetoview	Display the file called filetoview
man -k keyword	Display man pages containing keyword
more filetoview	Display the file called filetoview one page at a time, proceed to next page using the spacebar
head filetoview	Display the first 10 lines of the file called filetoview
head -20 filetoview	Display the first 20 lines of the file called filetoview
tail filetoview	Display the last 10 lines of the file called filetoview
tail -20 filetoview	Display the last 20 lines of the file called filetoview

Installing software for Linux

rpm -ihv name.rpm	Install the rpm package called name
rpm -Uhv name.rpm	Upgrade the rpm package called name
rpm -e package	Delete the rpm package called package
rpm -l package	List the files in the package called package
rpm -ql package	List the files and state the installed version of the package called package
rpm -i --force package	Reinstall the rpm package called name having deleted parts of it (not deleting using rpm -e)
tar -zxvf archive.tar.gz or tar -zxvf archive.tgz	Decompress the files contained in the zipped and tarred archive called archive
./configure	Execute the script preparing the installed files for compiling

User Administration

|	
adduser accountname	Create a new user call accountname
passwd accountname	Give accountname a new password
su	Log in as superuser from current login
exit	Stop being superuser and revert to normal user

Little known tips and tricks

ifconfig	List ip addresses for all devices on the machine
apropos subject	List manual pages for subject
usermount	Executes graphical application for mounting and unmounting file systems

/sbin/e2fsck hda5	Execute the filesystem check utility on partition hda5
fdformat /dev/fd0H1440	Format the floppy disk in device fd0
tar -cMf /dev/fd0	Backup the contents of the current directory and subdirectories to multiple floppy disks
tail -f /var/log/messages	Display the last 10 lines of the system log.
cat /var/log/dmesg	Display the file containing the boot time messages - useful for locating problems. Alternatively, use the **dmesg** command.
*	wildcard - represents everything. eg. cp from/* to will copy all files in the from directory to the to directory
?	Single character wildcard. eg. cp config.? /configs will copy all files beginning with the name config. in the current directory to the directory named configs.
[xyz]	Choice of character wildcards. eg. ls [xyz]* will list all files in the current directory starting with the letter x, y, or z.
linux single	At the lilo prompt, start in single user mode. This is useful if you have forgotten your password. Boot in single user mode, then run the **passwd** command.
ps	List current processes
kill 123	Kill a specific process eg. kill 123

Configuration files and what they do

/etc/profile	System wide environment variables for all users.
/etc/fstab	List of devices and their associated mount points. Edit this file to add cdroms, DOS partitions and floppy drives at startup.
/etc/motd	Message of the day broadcast to all users at login.
etc/rc.d/rc.local	Bash script that is executed at the end of login process. Similar to autoexec.bat in DOS.
/etc/HOSTNAME	Conatins full hostname including domain.
/etc/cron.*	There are 4 directories that automatically execute all scripts within the directory at intervals of hour, day, week or month.
/etc/hosts	A list of all know host names and IP addresses on the machine.
/etc/httpd/conf	Paramters for the Apache web server
/etc/inittab	Specifies the run level that the machine should boot into.
/etc/resolv.conf	Defines IP addresses of DNS servers.
/etc/smb.conf	Config file for the SAMBA server. Allows file and print sharing with Microsoft clients.
~/.Xdefaults	Define configuration for some X-applications. ~ refers to user s home directory.
/etc/X11/XF86Config	Config file for X-Windows.
~/.xinitrc	Defines the windows manager loaded by X. ~ refers to user s home directory.

File permissions
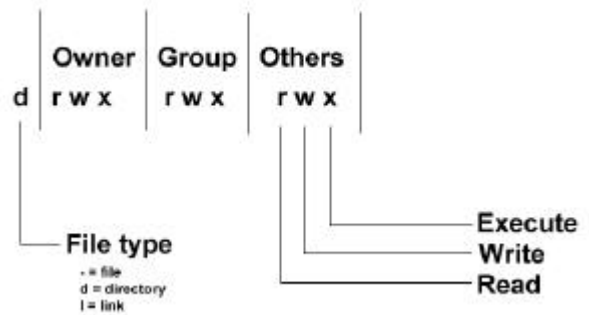
If the command ls -l is given, a long list of file names is displayed. The first column in this list details the permissions applying to the file. If a permission is missing for a owner, group of other, it is represented by - eg. drwxr-x   x

Read = 4	File permissions are altered by giving the chmod command and the appropriate octal code for each user type. eg
Write = 2	
Execute = 1	
	chmod 7 6 4 filename will make the file called filename R+W+X for the owner, R+W for the group and R for others.
chmod 7 5 5	Full permission for the owner, read and execute access for the group and others.
chmod +x filename	Make the file called filename executable to all users.

X Shortcuts - (mainly for Redhat)

Control|Alt + or -	Increase or decrease the screen resolution. eg. from 640x480 to 800x600
Alt | escape	Display list of active windows
Shift|Control F8	Resize the selected window
Right click on desktop background	Display menu
Shift|Control Altr	Refresh the screen
Shift|Control Altx	Start an xterm session

Printing

/etc/rc.d/init.d/lpd start	Start the print daemon
/etc/rc.d/init.d/lpd stop	Stop the print daemon
/etc/rc.d/init.d/lpd status	Display status of the print daemon
lpq	Display jobs in print queue
lprm	Remove jobs from queue
lpr	Print a file
lpc	Printer control tool
man subject | lpr	Print the manual page called subject as plain text
man -t subject | lpr	Print the manual page called subject as Postscript output
printtool	Start X printer setup interface

vi Editor "Cheat Sheet"

Invoking vi: vi *filename*

Format of vi commands: *[count][command]*   (count repeats the effect of the command)

Command mode versus input mode

Vi starts in command mode. The positioning commands operate only while vi is in command mode. You switch vi to input mode by entering any one of several vi input commands. (See next section.) Once in input mode, any character you type is taken to be text and is added to the file. You cannot execute any commands until you exit input mode. To exit input mode, press the escape (**Esc**) key.

Input commands (end with Esc)

a	Append after cursor
i	Insert before cursor
o	Open line below
O	Open line above
:r *file*	Insert *file* after current line

Any of these commands leaves vi in input mode until you press **Esc**. Pressing the **RETURN** key will not take you out of input mode.

Change commands (Input mode)

cw	Change word (Esc)
cc	Change line (Esc) - blanks line
c$	Change to end of line
r*c*	Replace character with *c*
R	Replace (Esc) - typeover
s	Substitute (Esc) - 1 char with string
S	Substitute (Esc) - Rest of line with text
.	Repeat last change

Changes during insert mode

<ctrl>h	Back one character
<ctrl>w	Back one word
<ctrl>u	Back to beginning of insert

File management commands

:w *name*	Write edit buffer to file *name*
:wq	Write to file and quit
:q!	Quit without saving changes
ZZ	Same as :wq
:sh	Execute shell commands (<ctrl>d)

Window motions

<ctrl>d	Scroll down (half a screen)
<ctrl>u	Scroll up (half a screen)
<ctrl>f	Page forward
<ctrl>b	Page backward
/string	Search forward
?string	Search backward
<ctrl>l	Redraw screen
<ctrl>g	Display current line number and file information
n	Repeat search
N	Repeat search reverse
G	Go to last line
*n*G	Go to line *n*
:*n*	Go to line *n*
z<CR>	Reposition window: cursor at top
z.	Reposition window: cursor in middle
z-	Reposition window: cursor at bottom

Cursor motions

H	Upper left corner (home)
M	Middle line
L	Lower left corner
h	Back a character
j	Down a line
k	Up a line
^	Beginning of line
$	End of line
l	Forward a character
w	One word forward
b	Back one word
f*c*	Find *c*
;	Repeat find (find next *c*)

Deletion commands

dd or *n*dd	Delete *n* lines to general buffer
dw	Delete word to general buffer
d*n*w	Delete *n* words
d)	Delete to end of sentence
db	Delete previous word
D	Delete to end of line
x	Delete character

Recovering deletions

p	Put general buffer after cursor
P	Put general buffer before cursor

Undo commands

u	Undo last change
U	Undo all changes on line

Rearrangement commands

yy or Y	Yank (copy) line to general buffer
"*z*6yy	Yank 6 lines to buffer *z*
yw	Yank word to general buffer
"*a*9dd	Delete 9 lines to buffer *a*
"*A*9dd	Delete 9 lines; Append to buffer *a*
"*a*p	Put text from buffer *a* after cursor
p	Put general buffer after cursor
P	Put general buffer before cursor
J	Join lines

Parameters

:set list	Show invisible characters
:set nolist	Don't show invisible characters
:set number	Show line numbers
:set nonumber	Don't show line numbers
:set autoindent	Indent after carriage return
:set noautoindent	Turn off autoindent
:set showmatch	Show matching sets of parentheses as they are typed
:set noshowmatch	Turn off showmatch
:set showmode	Display mode on last line of screen
:set noshowmode	Turn off showmode
:set all	Show values of all possible parameters

Move text from file *old* to file *new*

vi *old*	
"*a*10yy	yank 10 lines to buffer *a*
:w	write work buffer
:e *new*	edit new file
"*a*p	put text from *a* after cursor
:30,60w *new*	Write lines 30 to 60 in file *new*

Regular expressions (search strings)

^	Matches beginning of line
$	Matches end of line
.	Matches any single character
*	Matches any previous character
.*	Matches any character

Search and replace commands

Syntax:

```
:[address]s/old_text/new_text/
```

Address components:

.	Current line
n	Line number n
.+m	Current line plus m lines
$	Last line
/string/	A line that contains "string"
%	Entire file
[addr1],[addr2]	Specifies a range

Examples:

The following example replaces only the **first** occurrence of Banana with Kumquat in each of 11 lines starting with the current line (.) and continuing for the 10 that follow (.+10).

```
:.,.+10s/Banana/Kumquat
```

The following example replaces **every** occurrence (caused by the g at the end of the command) of apple with pear.

```
:%s/apple/pear/g
```

The following example removes the last character from every line in the file. Use it if every line in the file ends with ^M as the result of a file transfer. Execute it when the cursor is on the first line of the file.

```
:%s/.$//
```