

Important Notes

- Most commands have “switches” that change how they behave. The **man** command will list important switches. (in **cp -Rv ~/folder ~/Desktop**, both R and v are switches, meaning “recursive” and “verbose”)
- Linux is case sensitive on most things, including filenames, switches, usernames, passwords, and commands
- Files that begin with a period are hidden files (Like ~/.bashrc)
- Root will get a “permission denied” if it attempts to run a script without the executable bit set. This bit isn't exactly a “permission” but is more of a “make this file executable” (**chmod** can set the executable bit)
- Scripts must be run using the full pathname, starting with root (but you can use metacharacters to get around this)
- Spaces separate commands or parameters
- **ctrl+c** cancels a program by sending the default kill signal
- **ctrl+z** suspends a process to give you the terminal back, but doesn't background it. It's paused until backgrounded manually.

Common Metacharacters

Char	Meaning	Example / Usage
~	represents the currently logged on user's home folder	~/Desktop could mean /home/terry/Desktop
..	represents the folder above the current folder	cd .. can be used to go back a folder
.	represents the full path to the current folder, or is used to hide a file or folder if it's the first character in the name	If you're in /etc, ./X11 would mean /etc/X11 .bashrc is a hidden file
\$	Used to fetch variable values	\$VARIABLE will fetch the value in VARIABLE
/	represents the root of the filesystem and used to divide folders	/etc /opt /proc /home /usr
\	Treats the next character in an atypical manner	\ and a space can be used to create spaces in filenames
>	Redirects output to a file and overwrites the file	cat file > file2 takes contents of file and places it in file2
>>	Redirects output to a file and appends the data to the file	cat file >> file2 adds file contents to file2
	Redirects output to the input of another command	Ifconfig more runs ifconfig, then displays it using more
&	Backgrounds processes	Dhclient &
;	Used to string commands together	mv file file.old; mv file2 file
&&	Used to string commands together and stop if one fails	mv file file.old&& mv file2 file

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%	Used to reference background process IDs	fg %1 foregrounds the first background process
' and “	Force a string of words to behave as one command or parameter	alias ll='ls -l'
`	Force something to be a command instead of a literal value (the ` on the tilde key!)	VARIABLE=`cat file`

Bash

Command	Use	Example/Syntax	Notes
alias	Give nicknames to commands	alias ll="ls -l"	Temporary aliases, unless placed in ~/.bashrc
cd	Change directory to navigate folders	cd Music	"cd .." goes up one folder. cd without a parameter goes home
clear	Clear the terminal screen	clear	Works like cls in windows
echo	Repeat text back to the terminal, or wherever it is redirected to	echo foo bar	Can create or add to a file if you use it in conjunction with > or >>
grep	Search for a single string of text	ls grep foo	Can only search for one string
egrep	Search for multiple strings of text	ls egrep "foo bar"	Pipes separate strings in quotes
exit	Quit bash	exit	Also can logout of a virtual terminal
ls	List folder contents	ls -R	-R lists recursively, like tree in Windows
pwd	Print working directory	pwd	Shows you where you are
bg	Backgrounds a process in bash	bg %1	ctrl+z gives the terminal back so you can background something
fg	Foregrounds a process in bash	fg %1	Use "jobs" to see the processes you can foreground
logout	Logs out of a virtual terminal	logout	Exit can accomplish the same thing

Process Management

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Command	Use	Example/Syntax	Notes
jobs	Lists background processes	jobs	Use % to reference these PIDs
kill	Terminates processes by PID	kill -9 3042	Don't kill the PID of 1, it's "init"! -9 is the strongest kill signal
killall	Terminates all processes with the same name	killall xterm	You can use this to stop forkbombs if you are fast enough
ps	Lists processes	ps -e	-e lists all. First column is the PID. Second is the parent's PID
service	start/stop daemons	service gdm stop	Requires root privileges Uses scripts in /etc/init.d
startx	Starts the GUI system, X11	startx	Automatically runs in some distros

Networking

Command	Use	Example/Syntax	Notes
arp	Displays ARP table	arp -vn	-i lets you specify the device
dhclient	Performs DHCP requests	dhclient	-p lets you change the port
dig	Get information on a host	dig www.google.com	Similar to nslookup
finger	Get information on a user	finger tux	The queried user doesn't need to be logged in
ftp	Client for file transfers	ftp user@host	Use "put" and "get" to upload and download
ifconfig	Displays interface configuration (IP)	Ifconfig wlan0	You can also set IP addresses with this command, and use sub-interfaces like eth0:0
ifdown	Disables a network card	Ifdown eth0	Same as ifconfig eth0 down
ifup	Enables a network card	ifup eth0	Same as ifconfig eth0 up
ip	Show/manipulate routing, devices, tunnels	ip route show	Does same tasks as route and ifconfig
iptables	Configures the iptables firewall	iptables -L	http://www.howtogeek.com/wiki/Using_iptables_on_Linux

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iwlist	Lists wireless networks	iwlist scan	You can specify the device, like: iwlist wlan0 scan
lynx	Command-line internet browser	lynx www.google.com	The controls are listed on the bottom
nslookup	Get information on a host	nslookup www.google.com	Similar to dig
ping	ICMP test	ping -c 3 www.google.com	Infinite unless you specify the number of pings using -c
rarp	Manipulates the RARP table	rarp -a	The RARP table maps MAC addresses to hostnames
route	Manipulates the routing table	route -n	Can be used to set up static routes.
scp	Secure copy	scp user@host :dir localdir	Switch the parameter order to upload a file
sftp	Secure FTP	Sftp user@host :dir	Uses FTP over SSL
ssh	Remote administration	ssh -X user@host	-p lets you specify the port
traceroute	Uses UDP, ICMP, or TCP SYN to test the route to a destination	traceroute www.google.com	-T uses TCP SYN, -I uses ICMP -p specifies a port
w3m	Command-line internet browser	w3m www.google.com	w3m supports tabs, like in a modern browser
wpa_passphrase	Generates an ASCII passphrase	wpa_passphrase "ssid" "password" > file	Generates output that may be redirected to a file to use with the wpa_supplicant command
wpa_supplicant	Uses an ASCII passphrase to connect	Sudo wpa_supplicant -i<interface> -c<file>	After seeing connection output, press ctrl+z to get the terminal back, then use \$bg to background it

Filesystem Manipulation

Command	Use	Example/Syntax	Notes
chroot	Lock a command into a folder for security	chroot <newroot> <command>	Not specifying a command will change the shell's root.
df	Shows disk usage for mounted volumes	df -h	Also lists lock partitions, mounted into RAM
fdisk	Modifies partition tables on drives	fdisk /dev/sda	fdisk -l lists all connected drives

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			fdisk brings you into interactive mode and doesn't actually format partitions
fsck	Checks and repairs filesystems	fsck /dev/sdb1	Understands most filesystem types. Using fsck on a mounted partition is DANGEROUS!
mkdir	Makes directories	mkdir /mnt/disk	-p adds parent directories as needed
mkfs	Formats a partition	mkfs -t ext3 /dev/sdb1	You may also use mkfs.type instead of mkfs -t type
mount	Logically connects a storage device to the system for use	mount /dev/sdb1 /mnt/drive	Must mount a device to an existing folder
swapon	Enables a swap partition	swapon /dev/sdb2	Most systems automatically swapon all swap partitions during boot. You may set device priorities with -p
swapoff	Disables a swap partition	swapoff -v /dev/sdb2	This brings all swapped data on the device back into RAM or another swap device if possible
umount	Logically disconnects a storage device	umount /dev/sdb1	This does not delete the folder it was mounted to You may use the device file OR the folder

Kernel

Command	Use	Example/Syntax	Notes
lsmod	Lists running Linux kernel modules	lsmod	Shows /proc/modules in a nice format
init	Changes the system runlevel	init 6	0=off, 1=single user, 2-5=normal runlevels 6=reboot
halt	Shuts down the machine	halt	Powers off the system if it has no parameters
rmmod	Removes a kernel module	rmmod pcspkr	-w isolates a module so no one can use it, but leaves it running. -f forces removal if the kernel was compiled to support it.
telinit	Changes the system runlevel	telinit 6	0=off, 1=single user, 2-5=normal runlevels 6=reboot

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uname	Displays system information	uname -a	Without parameters, this command is useless
reboot	Restarts the machine	reboot	-w writes the reboot to the /var/log/wtmp log, but doesn't actually reboot
modprobe	Adds and removes modules from the kernel	modprobe -l	This can also check which drivers are running
modinfo	Shows information on a kernel module	modinfo pcspkr	-F can print a single field
runlevel	Displays the previous and current runlevels	runlevel	prints the previous and current runlevels

Users – Management, Switching, Etc

Command	Use	Example/Syntax	Notes
passwd	Changes passwords	passwd <user>	Without a parameter, this will change the current user's password
su	Switch user	su -	"-" grants more rights than "root" -c grants rights only for one command
sudo	Switch user to superuser for a short while	sudo <command>	Remembers credentials for a short time and records all actions in logs
gksu	GUI which asks for a password	gksu -u <user> vim <file>	Needed instead of sudo for panel icons, since they typically don't launch a terminal
useradd	Adds a user account	useradd -md /home/bob bob	Check the manual page on useradd for other parameters, such as groups and expiration
usermod	Modifies a user account	usermod <options> <loginname>	Check the manual page. There are many options.
visudo	Edits the sudoers file, which grants the ability to use sudo	visudo	The sudoers file is in /etc/sudoers
userdel	Deletes a user account	userdel bob	-f removes them, even if logged in. -r removes files in their home directory too.
who	Displays all users logged into the machine	who	-a gives more information
whoami	Displays which user account you are using	whoami	Does the same as id -un

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id	Prints group IDs	Id <username>	Without a username, it prints for the current user
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Text Files – Manipulation, Viewing, Etc

Command	Use	Example/Syntax	Notes
diff	Compares text files	diff <file1> <file2>	-i ignores case, -w ignores white space
awk	Scans for patterns in text	cat file awk '{print \$3}'	http://www.awktutorial.com/
cat	Dumps a text file to the screen	cat <file>	-n adds line numbers
head	Shows the beginning of a text file	head <file>	-n changes the number of lines
less	Shows a text file and allows scrolling both ways	less /etc/hosts	The manual page lists the parameters, but they're rarely used
more	Shows a text file and allows scrolling down	more /etc/hosts	Less powerful than the less command.
nano	Edits a text file (easier)	nano <file>	Commands are listed at the bottom
sed	String manipulator	sed 'two/ s/1/2/' myfile.txt	http://www.sedtutorial.com/
tail	Shows the end of a text file	tail -f /var/log/auth.log	-f causes it to constantly check the file for updates, then print them
vi	Edits a text file (harder)	vi <file>	May be aliased to vim by default
vim	Edits a text file (easier than vi)	vim <file>	-R opens a read-only copy
Tee	Split output. Show it <i>and</i> redirect it.	cat <file> tee <output>	If you redirect it with >, you can output to two files at once.

File Manipulation

Command	Use	Example/Syntax	Notes
chmod	Changes permissions on a file	chmod 700 file	Accepts both octal and symbolic parameters.

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		chmod -R u+x folder chmod g=r file	Octal is much more foolproof. -R is for recursive Octal: 4=read, 2 = write, 1 = execute Order: User, Group, Other
chown	Changes owner user and group on a file	chown user:group file	-R can recursively change a directory
cp	Copies a file or folder	cp -rv <folder> <folder>	-r is recursive, to copy a whole folder and its contents. -v shows what is happening
cpio	Copies files to and from an archive		
dd	Byte-per-byte copy	dd if=<input> of=<output>	Can result in extreme filesystem damage if you copy directly to a device file
mv	Moves a file or renames a file	mv <file> <file>	
shred	Destroys a file's contents	shred -zu <file>	-z zeroes the file on the last swipe -u removes the file when finished
tar	File archiver	tar -xf archive.tar	<i>At the end of the manual page, it gives 3 examples!</i> Can also compress using several algorithms
touch	Updates timestamps on files	touch <file>	Also creates empty files if they do not exist
umask	Changes default permissions on files and folders	umask u=rwx,g= ,o=	Octal mode also works

Packages – Installing, Compiling, Etc

Command	Use	Example/Syntax	Notes
aptitude	High-level control of the package manager	aptitude update	You can also use apt-get, apt-cache, and dpkg
apt-cache	Searches the database for information on packages, both installed and available.	apt-cache search bin cue	apt-cache depends <package> shows dependencies
dpkg	Install, build, and remove .deb packages	dpkg -i file.deb	The manual page gives many examples at the bottom
rpm	Install, build, and remove .rpm packages	rpm -i file.rpm	Works with Yellowdog manager only

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grub-install	Installs the grub bootloader to the specified drive's MBR or partition	grub-install /dev/sda	<i>Dangerous</i> if you don't know what you're doing.
make	Compiles source in the current directory	make	Usually run after ./configure
make-install	Installs compiled source	make install	Usually run after make
apt-get	Program fetcher for Aptitude	apt-get -y install centerim	Works in Debian (and Ubuntu)
yum	Program fetcher for Yellowdog manager	yum -y install oneko	Works in Red Hat (and Fedora)

Obtaining Help and Information

Command	Use	Example/Syntax	Notes
help	Lists built-in commands	help	Extremely limited help
man	In-depth help on an individual command.	man <command>	Best way to search for command help
which	Locate a command	which <command>	Prints the full path
date	Gives the date and time	date	-u shows the time in UTC
ddate	Gives the Discordian date	ddate	The Discordian calendar begins at the same time as the Gregorian calendar
env	List environmental variables	env	The variables can be referenced using \$, then the name