E. Linux Command Quick Reference

The following list describes some of the most useful and popular Linux commands. Consult the man page for each command to learn about additional arguments and details of operation.

adduser userid
Creates a new userid, prompting for necessary information (requires root privileges).

apropos keyword
Searches the manual pages for occurrences of the specified keyword and prints short descriptions from the beginning of matching manual pages.

at time
at -f file time
Executes commands entered via stdin (or, by using the alternative form, the specified file) at the specified time. The time can be specified in a variety of ways; for example, in hour and minute format hh: mm or in hour, minute, month, day, and year format hh: mm mm/ dd/ yy.

atq
Prints descriptions of jobs pending via the at command.

atrm job
Cancels execution of a job scheduled via the at command. Use the atq command to discover the identities of scheduled jobs.

bg
bg jobs
Places the current job (or, by using the alternative form, the specified jobs) in the background, suspending its execution so that a new user prompt appears immediately. Use the jobs command to discover the identities of background jobs.

cal month year
Prints a calendar for the specified month of the specified year.

cat files
Prints the contents of the specified files.

cd
cd directory
Changes the current working directory to the user's home directory or the specified directory.

chgrp group files
chgrp -R group files
Changes the group of the specified files to the specified group. The alternative form of the command operates recursively, changing the group of subdirectories and files beneath a specified directory. The group must be named in the /etc/groups file, maintained by the newgroup command.

chmod mode files
chmod -R mode files
Changes the access mode of the specified files to the specified mode. The alternative form of the command operates recursively, changing the mode of subdirectories and files beneath a specified directory.

chown userid files
chown -R userid files
Changes the owner of the specified files to the specified userid. The alternative form of the command operates recursively, changing the owner of subdirectories and files beneath a specified directory

clear
Clears the terminal screen.

cmp file1 file2
Compares two files, reporting all discrepancies. Similar to the diff command, though the output format differs.

cp file1 file2

cp files directory
cp -R files directory
Copies a file to another file or directory, or copies a subdirectory and all its files to another directory.

date
date date
Displays the current date and time or changes the system date and time to the specified value, of the form MMddhhmmyy or MMddhhmmyyyy.

df
Prints the amount of free disk space on each mounted filesystem.

diff file1 file2
Compares two files, reporting all discrepancies. Similar to the cmp command, though the output format differs.

dmesg
Prints the messages resulting from the most recent system boot.

du
du directories
Prints the amount of disk space used by the current directory (or the specified directories) and its (their) subdirectories.

echo string
echo -n string
Prints the specified text on the standard output stream. The -n option causes omission of the trailing newline character.

fdformat device
Formats the media inserted in the specified floppy disk drive. The command performs a low-level format only; it does not create a filesystem. To create a filesystem, issue the mkfs command after formatting the media.

fdisk device
Edits the partition table of the specified hard disk.

fg
fg jobs
Brings the current job (or the specified jobs) to the foreground.

file files
Determines and prints a description of the type of each specified file.

find path -name pattern -print
Searches the specified path for files with names matching the specified pattern (usually enclosed in single quotes) and prints their names. The find command has many other arguments and functions; see the online documentation.

finger users
Prints descriptions of the specified users.

free
Displays the amount of used and free system memory.

ftp hostname
Opens an FTP connection to the specified host, allowing files to be transferred. The FTP program provides subcommands for accomplishing file transfers; see the online documentation.

grep pattern files
grep -i pattern files
grep -n pattern files
grep -v pattern files
Search the specified files for text matching the specified pattern (usually enclosed in single quotes) and print matching lines. The -i option specifies that matching is performed without regard to case. The -n option specifies that each line of output is preceded by the file name and line number. The -v option reverses the matching, causing non-matched lines to be printed.

gzip files
gunzip files
Compress (or expand) the specified files. Generally, a compressed file has the same name as the original file, followed by . gz.

head files
Prints the first several lines of each specified file.

hostname
hostname name
Displays (or sets) the name of the host.

info
Launches the GNU Texinfo help system.

init run_level
Changes the system run level to the specified value (requires root privileges).

insmod module
Dynamically loads the specified module (requires root privileges).

jobs
Displays all background jobs.

ispell files
Checks the spelling of the contents of the specified files.

kill process_ids
kill - signal process_ids
kill -l
Kills the specified processes, sends the specified processes the specified signal (given as a number or name), or prints a list of available signals.

killall program
killall - signal program
Kills all processes that are instances of the specified program or sends the specified signal to all processes that are instances of the specified program.

ln old new
ln -s old new
Creates a hard (or soft) link associating a new name with an existing file or directory.

locate pattern
Locates files with names containing the specified pattern. Uses the database maintained by the updatedb command.

lpq
Prints the entries of the print queue.

lpr files
Prints the specified files.

lprm job
Cancels printing of the specified print queue entries. Use lpq to determine the contents of the print queue.

ls
ls files
ls -a files
ls -l files
ls -lR files
Lists (non-hidden) files in the current directory or the specified files or directories. The -a option lists hidden files as well has non-hidden files. The -l option causes the list to include descriptive information, such as file size and modification date. The -R option recursively lists the subdirectories of the specified directories.

mail
Launches a simple mail client that permits sending and receiving email messages.

man title
man section title
Prints the specified man page.

mkdir directories
mkdir -p directories
Creates the specified directories. The -p option causes creation of any parent directories needed to create a specified directory.

mkfs -t type device
Creates a file system of the specified type (such as ext2 or msdos) on the specified device (requires root privileges).

mkswap device
Creates a Linux swap space on the specified hard disk partition (requires root privileges).

more file
Lets the user peruse a file too large to be displayed as a single screen (page) of output. The more command provides many subcommands that let the user navigate the file. For example, the Space key moves forward one page, the b key moves back one page, and the q key exits the program.

mount
mount device directory
mount -o option -t type device directory
Prints the mounted devices or mounts the specified device at the specified mount point (generally a subdirectory of /mnt). The mount command consults /etc/fstab to determine standard options associated with a device. The command generally requires root privileges. The -o option allows specification of a variety of options; for example, ro for read-only access. The -t option allows specification of the filesystem type (for example, ext2, msdos, or iso9660, the filesystem type generally used for CD-ROMs).

mv paths target
Moves the specified files or directories to the specified target.

newgroup group
Creates the specified group.

passwd
passwd user
Changes the current user's password, or that of the specified user (requires root privileges). The command prompts for the new password.

ping host
Sends an echo request via TCP/IP to the specified host. A response confirms that the host is operational.

pr files
Formats the specified files for printing, by inserting page breaks and so on. The command provides many arguments and functions.

ps
ps -Aux
Displays the processes associated with the current userid or displays a description of each process.

pwd
Prints the absolute path corresponding to the current working directory.

reboot
Reboots the system (requires root privileges).

reset
Clears the terminal screen and resets the terminal status.

rm files
rm -i files
rm -f files
rm -if files
rm -rf files
Deletes the specified files or (when the -r option is specified) recursively deletes all subdirectories of the specified files and directories. The -i option causes the command to prompt for confirmation; the -f option suppresses confirmation. Because deleted files cannot generally be recovered, the -f option should be used only with extreme care, particularly when used by the root user.

rmdir directories
rmdir -p directories
Deletes the specified empty directories or (when the -p option is specified) the empty directories along the specified path.

shutdown minutes
shutdown -r minutes
Shuts down the system after the specified number of minutes elapses (requires root privileges). The -r option causes the system to be rebooted once it has shut down.

sleep time
Causes the command interpreter to pause for the specified number of seconds.

sort files
Sorts the specified files. The command has many useful arguments; see the online documentation.

split file
Splits a file into several smaller files. The command has many arguments; see the online documentation.

su
su user
su -
su - user
Changes the current userid to root or to the specified userid (the latter requires root privileges). The - option establishes a default environment for the new userid.

swapon device
Enables use of the specified device for swapping (requires root privileges).

swapoff device
Disables use of the specified device for swapping (requires root privileges).

sync
Completes all pending input/output operations (requires root privileges).

tail file
tail - n file
tail -f file
Prints the last several lines of the specified files. The -n option specifies the number of lines to be printed. The -f option causes the command to continuously print additional lines as they are written to the file.

talk user
Launches a program that allows a chat-like dialog with the specified user.

tar cvf tar_file files
tar zcvf tar_file files
Creates a tar file with the specified name, containing the specified files and their subdirectories. The z option specified that the tar file will be compressed.

tar xvf tar_file
tar zxvf tar_file
Extracts the contents of the specified tar file. The z option specified that the tar file has been compressed.

telnet host
Opens a login session on the specified host.

top
Prints a display of system processes that's continually updated until the user presses the q key.

traceroute host
Uses echo requests to determine and print a network path to the host.

umount device
Unmounts the specified filesystem (generally requires root privileges).

uptime
Prints the system uptime.

w
Prints the current system users.

wall
Prints a message to each user except those who've disabled message reception. Type Ctrl-D to end the message.

wc files
Prints the number of characters, words, and lines in the specified files.

Table E.1 identifies Linux commands that perform functions similar to MS-DOS commands. The operation of the Linux command is not generally identical to that of the corresponding MS-DOS command. See the index to this book or the Linux online documentation for further information about Linux commands.

Table E.1: MS-DOS Commands and Related Linux Commands

MS-DOS	Linux
ATTRIB	chmod
CD	cd
CHKDSK	df, du
DELTREE	rm -R
DIR	ls -l
DOSKEY	(built-in; no need to launch separately)
EDIT	ae, vi, and so on
EXTRACT	

tar

FC

cmp, diff

FDISK

fdisk

FIND

grep

FORMAT

fdformat

MORE

more

MOVE

mv

SORT

sort

START

at, bg

XCOPY, XCOPY32

cp

access -- determine whether a file can be accessed

Syntax

access -mode file

For more options and how to use check access man page

alias -- define or display aliases

Syntax

alias [alias-name[=string] ...]

For more options and how to use check alias man page

bg -- run jobs in the background

Syntax

bg [job_id ...]

For more options and how to use check bg man page

cal -- displays a calendar

Syntax

cal [-smjy13] [[month] year]

For more options and how to use check cal man page

cd -- change directories

Use cd to change directories. Type cd followed by the name of a directory to access that directory.Keep in mind that you are always in a directory and can navigate to directories hierarchically above or below.

Syntax

cd [-L | -P] [directory]

For more options and how to use check cd man page

chown -- change file owner and group

Syntax

chown [OPTION] OWNER[:[GROUP]] FILE

chown [OPTION] :GROUP FILE

chown [OPTION] --reference=RFILE FILE

For more options and how to use check chown man page

chmod -- change file access permissions

Syntax

chmod [-r] permissions filenames

Options

r Change the permission on files that are in the subdirectories of the directory that you are currently in. permission Specifies the rights that are being granted. Below is the different rights that you can grant in an alpha numeric format.filenames File or directory that you are associating the rights with Permissions

u -- User who owns the file.

g -- Group that owns the file.

o -- Other.

a -- All.

r -- Read the file.

w -- Write or edit the file.

x -- Execute or run the file as a program.

Numeric Permissions:

CHMOD can also to attributed by using Numeric Permissions:

400 read by owner

040 read by group

004 read by anybody (other)

200 write by owner

020 write by group

002 write by anybody

100 execute by owner

010 execute by group

001 execute by anybody

For more options and how to use check chmod man page

cp -- Copy files and directories

Syntax

cp [OPTION]... SOURCE DEST
cp [OPTION]... SOURCE... DIRECTORY
cp [OPTION]... --target-directory=DIRECTORY SOURCE...

Options

cp myfile yourfile

Copy the files "myfile" to the file "yourfile" in the current working directory. This command will create the file "yourfile" if it doesn't exist. It will normally overwrite it without warning if it exists.

cp -i myfile yourfile

With the "-i" option, if the file "yourfile" exists, you will be prompted before it is overwritten.

cp -i /data/myfile

Copy the file "/data/myfile" to the current working directory and name it "myfile". Prompt before overwriting the file.

cp -dpr srcdir destdir

Copy all files from the directory "srcdir" to the directory "destdir" preserving links (-poption), file attributes (-p option), and copy recursively (-r option). With these options, a directory and all it contents can be copied to another dir

For more options and how to use check cp man page

clear -- Clears the terminal screen.

Syntax

clear

For more options and how to use check clear man page

cmp -- Compares two files, reporting all discrepancies. Similar to the diff command, though the output format differs.

Syntax

cmp [-clsv] [-i NUM] [--help] [--print-chars] [--ignore-initial=NUM] [--verbose] [--quiet] [--silent] [--version] -I FILE1 [FILE2 [RANGE1 [RANGE2]]]

For more options and how to use check cmp man page

cat - Sends file contents to standard output. This is a way to list the contents of short files to the screen. It works well with piping.

Syntax

cat [OPTION] [FILE]...

For more options and how to use check cat man page

diff -- find differences between two files

Syntax

diff [options] from-file to-file

For more options and how to use check diff man page

dmesg -- Prints the messages resulting from the most recent system boot.

Syntax

dmesg [-c] [-n level] [-s bufsize]

For more options and how to use check dmesg man page

du -- estimate file space usage

Syntax

du [OPTION]... [FILE]...

For more options and how to use check du man page

df -- report filesystem disk space usage

Syntax

df [OPTION]... [FILE]...

For more options and how to use check df man page

exit - cause the shell to exit

syntax

exit [n]

For more options and how to use check exit man page

eject -- eject removable media

Syntax

eject -h

eject [-vnrsfqp] []
eject [-vn] -d
eject [-vn] -a on|off|1|0 []
eject [-vn] -c slot []
eject [-vn] -t []
eject [-vn] -x []
eject -V

For more options and how to use check eject man page

fuser -- identify processes using files or sockets

Syntax

fuser [-a|-s|-c] [-4|-6] [-n space] [-k [-i] [-signal]] [-muvf] name
fuser -l
fuser -V

For more options and how to use check fuser man page

fsck -- check and repair a Linux file system

Syntax

fsck [-sACVRTNP] [-t fstype] filesys [...] [--] [fsck-options]

For more options and how to use check fsck man page

fdisk -- Partition table manipulator for Linux

Syntax

fdisk [-u] [-b sectorsize] [-C cyls] [-H heads] [-S sects] device
fdisk -l [-u] device ...
fdisk -s partition ...
fdisk -v

For more options and how to use check fdisk man page

fg -- run jobs in the foreground

Syntax

fg [job_id]

For more options and how to use check fg man page

file -- determine file type

Syntax

file [-bciknsvzL] [-f namefile] [-m magicfiles] file ...
file -C [-m magicfile]

For more options and how to use check file man page

find -- search for files in a directory hierarchy

Syntax

find [path...] [expression]

For more options and how to use check find man page

finger -- Prints descriptions of the specified users.

Syntax

finger [-lmsp] [user ...] [user@host ...]

For more options and how to use check finger man page

free -- Displays the amount of used and free system memory.

Syntax

free [-b | -k | -m] [-o] [-s delay] [-t] [-V]

For more options and how to use check free man page

ftp -- A File Transfer Protocol client

Syntax

ftp hostname or ipaddress

For more options and how to use check ftp man page

grep, egrep, fgrep -- print lines matching a pattern

Syntax

grep [options] PATTERN [FILE...]
grep [options] [-e PATTERN | -f FILE] [FILE...]

For more options and how to use check grep, egrep, fgrep man page

head -- output the first part of files

Syntax

head [OPTION]... [FILE]...

For more options and how to use check head man page

history -- Manipulate the history list

Syntax

history option arg arg ...

For more options and how to use check history man page

!!

use the ! option. To automatically re-display the last command you typed at the prompt, type: !! and press enter. Press again to invoke the command. You can also automatically re-display a command you typed earlier by using the ! and the first few letters of the command.

& operator

execute a command as a background process.

Ex:-

#top&

init - process control initialization

Syntax

/sbin/init [-a] [-s] [-b] [-z xxx] [0123456Ss]

For more options and how to use check init man page

ispell - ispell, buildhash, munchlist, findaffix, tryaffix, icombine, ijoin -- Interactive spelling checking

Syntax

ispell [common-flags] [-M|-N] [-Lcontext] [-V] files
ispell [common-flags] -l
ispell [common-flags] [-f file] [-s] {-a|-A}
ispell [-d file] [-w chars] -c
ispell [-d file] [-w chars] -e[e]
ispell [-d file] -D
ispell -v[v]

For more options and how to use check ispell man page

id - Print real and effective user id (uid) and group id (gid), prints options about the given user, or if no user is specified the process running it

Syntax

id [options]... [username]

For more options and how to use check id man page

kill -- terminate a process

Syntax

kill [-s signal | -p] [-a] [--] pid ... kill -l [signal]

For more options and how to use check kill man page

killall -- kill processes by name

Syntax

killall [-Z,--context pattern] [-e,--exact] [-g,--process-group] [-i,--interactive] [-q,--quiet] [-r,--regexp] [-s,--signal signal] [-u,--user user] [-v,--verbose] [-w,--wait] [-I,--ignore-case] [-V,--version] [--] name ... killall -l killall -V,--version

For more options and how to use check killall man page

logname -- Print current login name

Syntax

logname [OPTION]

For more options and how to use check logname man page

less -- Opposite of the more command

Syntax

less -?

less --help
less -V
less --version
less [-[+]aBcCdeEfFgGiIJmMnNqQrRsSuUVwWX]
[-b space] [-h lines] [-j line] [-k keyfile]
[-{oO} logfile] [-p pattern] [-P prompt] [-t tag]
[-T tagsfile] [-x tab,...] [-y lines] [-[z] lines]
[+[+]cmd] [--] [filename]...

For more options and how to use check less man page

logout -- to quit using the system

Syntax

logout

lsof - list open files

Syntax

lsof [-?abChlnNOPRstUvVX] [-A A] [-c c] [+c c] [+|-d d] [+|-D D] [+|-f [cfgGn]] [-F [f]] [-g [s]] [-i [i]] [-k k] [+|-L [l]] [+|-m m] [+|-M] [-o [o]] [-p s] [+|-r [t]] [-S [t]] [-T [t]] [-u s] [+|-w] [-x [fl]] [-z [z]] [--] [names]

For more options and how to use check lsof man page

ls -- Short listing of directory contents

Syntax

ls [OPTION]... [FILE]...

Options

-a list hidden files

-d list the name of the current directory

-F show directories with a trailing â€˜/'

executable files with a trailing â€˜*'

-g show group ownership of file in long listing

-i print the inode number of each file

-l long listing giving details about files and directories

-R list all subdirectories encountered

-t sort by time modified instead of name

For more options and how to use check ls man page

ln -- make links between files

Syntax

ln [OPTION]... TARGET [LINK_NAME]
ln [OPTION]... TARGET... DIRECTORY
ln [OPTION]... --target-directory=DIRECTORY TARGET...

Option

ln -s test symlink

Creates a symbolic link named symlink that points to the file test Typing "ls -i test symlink" will show the two files are different with different inodes. Typing "ls -l test symlink" will show that symlink points to the file test.

For more options and how to use check ln man page

locate -- list files in databases that match a pattern

Syntax

locate [-d path | --database=path] [-e | --existing] [-i | --ignore-case] [--version] [--help] pattern...

For more options and how to use check locate man page

mail - Launches a simple mail client that permits sending and receiving email messages.

Syntax

mail [OPTION...] [address...]

For more options and how to use check mail man page

man -- an interface to the on-line reference manuals

Syntax

man [-c|-w|-tZHT device] [-adhu7V] [-m system[,...]] [-L locale] [-p string] [-M path] [-P pager] [-r prompt] [-S list] [-e extension] [[section] page ...] ...
man -l [-7] [-tZHT device] [-p string] [-P pager] [-r prompt] file ...
man -k [apropos options] regexp ...
man -f [whatis options] page ...

For more options and how to use check man man page

mkdir -- make directories

Syntax

mkdir [OPTION] DIRECTORY

Options

Create the Directory(ies), if they do not already exist.

Mandatory arguments to long options are mandatory for short options too.

-m, mode=MODE set permission mode (as in chmod)

-p, parents no error if existing, make parent directories as needed

-v, verbose print a message for each created directory

-help display this help and exit

-version output version options and exit

For more options and how to use check mkdir man page

mount -- mount a file system

Syntax

mount [-lhV]
mount -a [-fFnrsvw] [-t vfstype] [-O optlist]
mount [-fnrsvw] [-o options [,...]] device | dir
mount [-fnrsvw] [-t vfstype] [-o options] device dir

For more options and how to use check mount man page

mv -- change the name of a directory

Type mv followed by the current name of a directory and the new name of the directory
Syntax

mv [OPTION]... [-T] SOURCE DEST mv [OPTION]... SOURCE... DIRECTORY mv [OPTION]... -t DIRECTORY SOURCE...

Ex: mv testdir newnamedir

For more options and how to use check mv man page

more -- Allows file contents or piped output to be sent to the screen one page at a time.

Syntax

more [-dlfpcsu] [-num] [+/ pattern] [+ linenum] [file ...]

For more options and how to use check more man page

nohup -- run a command immune to hangups, with output to a non-tty

Syntax

nohup COMMAND [ARG]...
nohup OPTION

For more options and how to use check nohup man page

nice -- run a program with modified scheduling priority

Syntax

nice [OPTION] [COMMAND [ARG]...]

For more options and how to use check nice man page

ping -- send ICMP ECHO_REQUEST packets to network hosts

Syntax

ping [-Rdfnqrv] [-c count] [-i wait] [-l preload] [-p pattern] [-s packetsize] host

For more options and how to use check ping man page

ps -- report process status

Syntax

ps [options]

For more options and how to use check ps man page

pwd -- print working directory

will show you the full path to the directory you are currently in. This is very handy to use, especially when performing some of the other commands on this page.

Syntax

pwd [OPTION]

For more options and how to use check pwd man page

passwd -- change user password

Syntax

passwd [-f|-s] [name]
passwd [-g] [-r|R] group
passwd [-x max] [-n min] [-w warn] [-i inact] name
passwd {-l|-u|-d|-S|-e} name

For more options and how to use check passwd man page

reboot -- Reboots the system (requires root privileges).

Syntax

/sbin/halt [-n] [-w] [-d] [-f] [-i] [-p] [-h] /sbin/reboot [-n] [-w] [-d] [-f] [-i] /sbin/poweroff [-n] [-w] [-d] [-f] [-i] [-h]

For more options and how to use check reboot man page

rmdir -- remove empty directories

Syntax

rmdir [OPTION]... DIRECTORY...

For more options and how to use check rmdir man page

rm -- remove files or directories

Syntax

rm [OPTION]... FILE...

Option

rm -r -- Removes directories and files within the directories recursively.

For more options and how to use check rm man page

renice -- alter priority of running processes

Syntax

renice priority [[-p] pid ...] [[-g] pgrp ...] [[-u] user ...]

For more options and how to use check renice man page

shutdown -- bring the system down

Syntax

/sbin/shutdown [-t sec] [-arkhncfF] time [warning-message]

For more options and how to use check shutdown man page

sleep -- delay for a specified amount of time

Syntax

sleep NUMBER[SUFFIX]...
sleep OPTION

For more options and how to use check sleep man page

sort -- sort lines of text files

Syntax

sort [OPTION]... [FILE]...

For more options and how to use check sort man page

split -- split a file into pieces

Syntax

split [OPTION] [INPUT [PREFIX]]

For more options and how to use check split man page

slocate -- Security Enhanced version of the GNU Locate.

Syntax

slocate [-qi] [-d] [--database=]
slocate [-i] [-r] [--regexp=]
slocate [-qv] [-o] [--output=] slocate [-e] [-f] <[-l] [-c] <[-U] [-u]>
slocate [-Vh] [--version] [--help]

For more options and how to use check slocate man page

sync -- synchronize data on disk with memory

Syntax

sync [--help] [--version]

For more options and how to use check sync man page

su -- run a shell with substitute user and group IDs

Syntax

su [OPTION]... [-] [USER [ARG]...]

For more options and how to use check su man page

telnet -- user interface to the TELNET protocol

Syntax

telnet [-8] [-E] [-F] [-K] [-L] [-S tos] [-X authtype] [-a] [-c] [-d] [-e escapechar] [-f] [-k realm] [-l user] [-n tracefile] [-r] [-x] [host [port]]

For more options and how to use check telnet man page

top -- display top CPU processes

Syntax

top [-] [d delay] [p pid] [q] [c] [C] [S] [s] [i] [n iter] [b]

For more options and how to use check top man page

talk -- talk to another user

Syntax

talk person [ttyname]

For more options and how to use check talk man page

tree - list contents of directories in a tree-like format.

Syntax

tree [-adfgilnopqrstuxACDFNS] [-L level [-R]] [-H baseHREF] [-T title] [-o filename] [--nolinks] [-P pattern] [-I pattern] [--inodes] [--device] [--noreport] [--dirsfirst] [--version] [--help] [directory ...]

For more options and how to use check tree man page

tr -- translate or delete characters

Syntax

tr [OPTION]... SET1 [SET2]

For more options and how to use check tr man page

time -- time a simple command or give resource usage

Syntax

time [options] command [arguments...]

For more options and how to use check time man page

tty -- print the file name of the terminal connected to standard input

Syntax

tty [OPTION]...

For more options and how to use check tty man page

touch -- change file timestamps

Syntax

touch [OPTION]... FILE...

For more options and how to use check touch man page

tail -- output the last part of files

Syntax

tail [OPTION]... [FILE]...

For more options and how to use check tail man page

traceroute -- print route packets take to network host

Syntax

traceroute [-adnruvAMOQ] [-w wait_time] [-S start_ttl] [-m max_ttl] [-p port] [-q nqueries] [-g gateway] [-t tos] [-s src_addr] [-g router] host [packet size]

For more options and how to use check traceroute man page

uptime -- Tell how long the system has been running.

Syntax

uptime
uptime [-V]

For more options and how to use check uptime man page

umount -- unmount file systems

Syntax

umount [-hV]
umount -a [-dflnrv] [-t vfstype] [-O options]
umount [-dflnrv] dir | device [...]

For more options and how to use check umount man page

umask -- get or set the file mode creation mask

Syntax

umask [-S][mask]

For more options and how to use check umask man page

ulimit -- Control the resources available to a process started by the shell, on systems that allow such control.

Syntax

ulimit [-acdfHlmnpsStuv] [limit]

For more options and how to use check ulimit man page

uname -- print system options

Syntax

uname [OPTION]...

For more options and how to use check uname man page

uniq -- report or omit repeated lines

Syntax

uniq [OPTION]... [INPUT [OUTPUT]]

For more options and how to use check uniq man page

vdir -- list directory contents

Syntax

vdir [OPTION]... [FILE]...

For more options and how to use check vdir man page

w -- Show who is logged on and what they are doing.

Syntax

w -- [husfV] [user]

For more options and how to use check w man page

wall -- send a message to everybody's terminal.

Syntax

wall [-n] [message]

For more options and how to use check wall man page

who -- show who is logged on

Syntax

who [OPTION]... [FILE | ARG1 ARG2]

For more options and how to use check who man page

whoami -- print effective userid

Syntax

whoami [OPTION]...

For more options and how to use check whoami man page

watch -- execute a program periodically, showing output fullscreen

Syntax

watch [-dhv] [-n] [--differences[=cumulative]] [--help] [--interval=] [--version]

For more options and how to use check watch man page

whereis -- locate the binary, source, and manual page files for a command

Syntax

whereis [-bmsu] [-BMS directory... -f] filename ...

For more options and how to use check whereis man page

wc -- print the number of newlines, words, and bytes in files

Syntax

wc [OPTION]... [FILE]...

For more options and how to use check wc man page

xload -- system load average display for X

Syntax

xload [-toolkitoption ...] [-scale integer] [-update seconds] [-hl color] [-highlight color] [-remote host] [-jumpscroll pixels] [-label string] [-nolabel] [-lights]

For more options and how to use check xload man page

Debian Quick Reference
Chapter 3 - Debian package management

aptitude is now the preferred text front end for APT, the Advanced Package Tool. It remembers which packages you deliberately installed and which packages were pulled in through dependencies; the latter packages are automatically de-installed by aptitude when they are no longer needed by any deliberately installed packages. It has advanced package-filtering features but these can be difficult to configure.

synaptic is now the preferred Gtk GUI front end for APT. Its package filtering capability is easier to use than aptitude's. It also has experimental support for Debian Package Tags.

To reduce the network load on the Debian repositories and to speed up your downloads you should get packages from Debian mirror sites.

If you need to install the same package on several machines on your local network then you can set up a local HTTP proxy using squid for packages downloaded through APT. If necessary, set the http_proxy environment variable or set the http value in /etc/apt/apt.conf.

Although APT's pinning feature, described in apt_preferences(5), is powerful, its effects can be difficult to understand and manage. You should consider it an Advanced Feature.

The use of chroot is desirable for simultaneously securing both system stability and access to the latest versions of software.

This chapter is based on a post-Woody system. Some features may require a Sarge system or later.

3.1 Introduction

If reading all the developer documentation is too much for you, read this chapter first and start enjoying the full power of Debian with testing/unstable :-)

3.1.1 Main package management tools

dpkg â€“ Debian package file installer
apt-get â€“ Command line front end for APT
aptitude â€“ Advanced text and command line front end for APT
synaptic â€“ Gtk GUI front end for APT
dselect â€“ Menu-driven package manager
tasksel â€“ Task installer

These tools aren't all alternatives to one another. For example, dselect uses both APT and dpkg.

APT uses /var/lib/apt/lists/* for tracking available packages while dpkg uses /var/lib/dpkg/available. If you have installed packages using aptitude or other APT front ends and you want to use dselect to install packages then the first thing you should do is update /var/lib/dpkg/available by selecting [U]pdate from dselect's menu (or by running "dselect update").

apt-get automatically installs all packages upon which a requested package Depends. It does not install the packages that a requested package merely Recommends or Suggests.

aptitude, in contrast, can be configured to install packages that a requested package Recommends or Suggests.

dselect presents the user with a list of packages that a selected package Recommends or Suggests and allows these to be selected or deselected individually.

3.1.2 Convenience tools

```
dpkg-reconfigure  - reconfigure an already installed package
                    (if it uses debconf)
dpkg-source       - manage source package file
dpkg-buildpackage - automate the building of a package file
apt-cache         - check package archive in local cache
```

3.2 Beginning Debian package management

3.2.1 Set up APT

Set up sources.list as described in Preparing for upgrade, Section 2.2. [1]

3.2.2 Installing tasks

You can install sets of packages typically required in order to put a Debian system to a certain use. These sets of packages are called "tasks".

The simplest way to install tasks at the time of initial installation is to use tasksel. Note that you must run

```
dselect update
```

before using it.

aptitude can also install tasks and is the tool recommended for this purpose. It enables you to deselect individual packages within tasks before proceeding to the installation step.

3.2.3 aptitude

aptitude is a new menu-driven package installer similar to dselect but built from scratch on top of APT. It can be used as an alternative to apt-get for most commands. See aptitude(1) and /usr/share/doc/aptitude/README.

Once you start using aptitude it is best to continue using it rather than alternative methods of installing packages; otherwise you lose the advantage of aptitude keeping track of which packages you have deliberately installed.

aptitude in full screen mode accepts single-key commands which are usually lowercase. Notable key strokes are:

```
Keystroke   Action
F10         Menu
?           Help for keystroke (complete listing)
u           Update package archive information
+           Mark the package to be upgraded or newly installed
-           Mark the package to be removed (keep config)
_           Mark the package to be purged (remove config)
=           Place the package on hold
U           Mark all upgradable packages to be upgraded
g           Download and install selected packages
q           Quit current screen and save changes
x           Quit current screen and discard changes
Enter       View information about a package
C           View a package's changelog
l           Change the limit for the displayed packages
/           Search for the first match
\           Repeat the last search
```

Like apt-get, aptitude installs packages upon which a selected package Depends. aptitude also offers the option to pull in packages that a to-be-installed package Recommends or Suggests. You can change the default behavior by choosing F10 -> Options -> Dependency handling in its menu.

Other advantages of aptitude are:

aptitude offers access to all versions of a package.

aptitude logs its actions in /var/log/aptitude.

aptitude makes it easy to keep track of obsolete software by listing under "Obsolete and Locally Created Packages".

aptitude includes a fairly powerful system for searching particular packages and limiting the package display. Users familiar with mutt will pick up quickly, as mutt was the inspiration for the expression syntax. See "SEARCHING, LIMITING, AND EXPRESSIONS" in /usr/share/doc/aptitude/README.

aptitude in full screen mode has su functionality embedded and can be run from normal user until you really need administrative privileges.

3.2.4 dselect

In stable releases up to and including Potato, dselect was the principal package maintenance tool. For Sarge, you should consider using aptitude instead.

When started, dselect automatically selects all "Required", "Important", and "Standard" packages.

dselect has a somewhat strange user interface. Most people get used to it, however. It has four commands (Capital means CAPITAL!):

Key-stroke	Action
Q	Quit. Confirm current selection and quit anyway. (override dependencies)
R	Revert! I did not mean it.
D	Damn it! I do not care what dselect thinks. Just Do it!
U	Set all to sUggested state

With D and Q, you can select conflicting selections at your own risk. Handle these commands with care.

Add a line containing the option "expert" in /etc/dpkg/dselect.cfg to reduce noise.

If your machine runs dselect slowly then you might consider running dselect on another (faster) machine in order to determine the packages you want to install, then use apt-get install on the slow machine to install them.

3.2.5 Tracking a distribution using APT

To track the testing distribution as it changes, make your /etc/apt/preferences file look like this:

```
Package: *
Pin: release a=testing
Pin-Priority: 800

Package: *
Pin: release a=stable
Pin-Priority: 600
```

Note that tracking the testing distribution can have the side effect of delaying the installation of packages containing security fixes. Such packages are uploaded to unstable and migrate to testing only after a delay.

See apt_preferences(5) for more complicated examples which will allow you, for example, to track testing while installing selected packages from unstable.

Examples which lock particular packages at particular versions while tracking other packages as they are released are available in the examples subdirectory as preferences.testing and preferences.unstable.

If you mix distributions, e.g., testing with stable or unstable with stable, you will eventually pull in core packages such as libc6 from testing or unstable and there is no guarantee that these will not contain bugs. You have been warned.

Another example, preferences.stable, forces all packages to be downgraded to stable.

Downgrading from a later release of a package to an earlier one is not officially supported in Debian. However, you may find that you have to downgrade a specific package in order to re-install a version of a package that works when a

new version malfunctions. You may find these previous package files locally in /var/cache/apt/archives/ or remotely at http://snapshot.debian.net/. See also Rescue using dpkg, Section 3.3.3.

Downgrading from a later release of a distribution to an earlier one is not officially supported either and is very likely to cause problems. However, this may be worth trying as a last resort if you are desperate.

3.2.6 aptitude, apt-get and apt-cache commands

While tracking testing as described in the above example you can manage the system by using the following commands:

aptitude update (or apt-get update)

These update the list of available packages at the repositories.

aptitude upgrade (or apt-get upgrade or aptitude dist-upgrade or apt-get dist-upgrade)

These track the testing distribution â€” they upgrade each package on the system, after installing versions of packages upon which it Depends, from the testing distribution. [2]

apt-get dselect-upgrade

This tracks the testing distribution â€” it upgrades each package on the system according to the selections of dselect.

aptitude install package/unstable

This installs package from the unstable distribution while installing its dependencies from the testing distribution.

aptitude install -t unstable package

This installs package from the unstable distribution while installing its dependencies also from the unstable distribution by setting the Pin-Priority of unstable to 990.

apt-cache policy foo bar ...

This checks the status of packages foo bar ....

aptitude show foo bar ... | less (or apt-cache show foo bar ... | less)

This checks the information for packages foo bar ....

aptitude install foo=2.2.4-1

This installs the particular version 2.2.4-1 of the foo package.

aptitude install foo bar-

This installs the foo package and removes the bar package

aptitude remove bar

This removes the bar package but not its configuration files.

aptitude purge bar

This removes the bar package together with all its configuration files.

In the above examples, giving apt-get the -u option causes it to print a list of all packages that are to be upgraded and to prompt the user before taking action. aptitude does this by default. The following makes apt-get always do this:

```
$ cat >> /etc/apt/apt.conf << .
// Always show packages to be upgraded (-u)
APT::Get::Show-Upgraded "true";
```

.
Use the --no-act option to simulate actions without actually installing, removing, etc., any packages.

3.3 Debian survival commands

With this knowledge you can live the life of eternal upgrade :-)

3.3.1 Check bugs in Debian and seek help

If you are experiencing problems with a specific package, make sure to check out these sites first before you seek help or file a bug report. (lynx, links, and w3m work equally well):

```
$ lynx http://bugs.debian.org/
$ lynx http://bugs.debian.org/package-name  # if you know package name
$ lynx http://bugs.debian.org/bugnumber     # if you know bug number
```

Search Google (www.google.com) with search words including "site:debian.org".

When in doubt, read the fine manual. Set CDPATH as follows:

```
export CDPATH=.:/usr/local:/usr/share/doc
```

and type

```
$ cd packagename
$ pager README.Debian # if this exists
$ mc
```

3.3.2 APT upgrade troubleshooting

Package dependency problems may occur when upgrading in unstable or testing as described in Upgrading, Section 2.3. Most of the time this is because a package that will be upgraded Depends on a package that is not yet available. These problems are fixed by using

```
# aptitude dist-upgrade
```

If this does not work, then repeat one of the following until the problem resolves itself:

```
# aptitude -f upgrade        # continue upgrade even after error
... or
# aptitude -f dist-upgrade   # continue dist-upgrade even after error
```

Some really broken upgrade scripts may cause persistent trouble. It is usually better to resolve this type of situation by inspecting the /var/lib/dpkg/info/packagename.{post,pre}{inst,rm} scripts of the offending package and then running:

```
# dpkg --configure -a    # configures all partially installed packages
```

If a script complains about a missing configuration file, look in /etc/ for the corresponding configuration file. If one exists with an extension of .dpkg-new (or something similar), mv it to remove the suffix.

Package dependency problems may occur when installing in unstable or testing. There are ways to circumvent dependencies.

```
# aptitude -f install package # override broken dependencies
```

An alternative method to fix these situations is to use the equivs package. See /usr/share/doc/equivs/README.Debian.

3.3.3 Rescue using dpkg

If you reach a dead end using APT you can download package files from Debian mirrors and install them using dpkg. If you do have not access to the network you can look for cached copies of package files in /var/cache/apt/archives/.

```
# dpkg -i fetchmail_6.2.5-4_i386.deb
```

If attempting to install a package this way fails due to dependency violations and you really need to install the package then you can override dependency checks using dpkg's --ignore-depends, --force-depends and other options. See dpkg(8) for details.

3.3.4 Recover package selection data

If /var/lib/dpkg/status becomes corrupt for any reason, the Debian system loses package selection data and suffers

severely. Look for the old /var/lib/dpkg/status file at /var/lib/dpkg/status-old or /var/backups/dpkg.status.*.

Keeping /var/backups/ in a separate partition may be a good idea since this directory contains lots of important system data.

If no old /var/lib/dpkg/status file is available, you can still recover information from directories in /usr/share/doc/.

```
# ls /usr/share/doc | \
  grep -v [A-Z] | \
  grep -v '^texmf$' | \
  grep -v '^debian$' | \
  awk '{print $1 " install"}' | \
  dpkg --set-selections
# dselect --expert # reinstall system, de-select as needed
```

3.3.5 Rescue system after crashing /var

Since the /var directory contains regularly updated data such as mail, it is more susceptible of corruption than, e.g., /usr/. Putting /var/ on a separate partition reduces risks. If disaster happens, you may have to rebuild the /var directory to rescue your Debian system.

Obtain the skeleton content of the /var directory from a minimum working Debian system based on the same or older Debian version, for example var.tar.gz, and place it in the root directory of the broken system. Then

```
# cd /
# mv var var-old      # if any useful contents are left
# tar xvzf var.tar.gz # use Woody skeleton file
# aptitude            # or dselect
```

This should provide a working system. You can expedite the recovery of package selections by using the technique described in Recover package selection data, Section 3.3.4. ([FIXME]: This procedure needs more experiments to verify.)

3.3.6 Install a package into an unbootable system

Boot into Linux using a Debian rescue floppy/CD or an alternative partition in a multiboot Linux system. Mount the unbootable system on /target and use the chroot install mode of dpkg.

```
# dpkg --root /target -i packagefile.deb
```

Then configure and fix problems.

By the way, if a broken lilo is all that prevents booting, you can boot using a standard Debian rescue disk. At boot prompt, assuming the root partition of your Linux installation is in /dev/hda12 and you want runlevel 3, enter:

```
boot: rescue root=/dev/hda12 3
```

Then you are booted into an almost fully functional system with the kernel on floppy disk. (There may be minor glitches due to lack of kernel features or modules.)

3.3.7 What to do if the dpkg command is broken

A broken dpkg may make it impossible to install any .deb files. A procedure like the following will help you recover from this situation. (In the first line, you can replace "links" with your favorite browser command.)

```
$ links http://http.us.debian.org/debian/pool/main/d/dpkg/
  ... download the good dpkg_version_arch.deb
$ su
password: *****
# ar x dpkg_version_arch.deb
# mv data.tar.gz /data.tar.gz
# cd /
# tar xzfv data.tar.gz
```

For i386, http://packages.debian.org/dpkg may also be used as the URL.

3.4 Debian nirvana commands

Enlightenment with these commands will save a person from the eternal karmic struggle of upgrade hell and let him reach Debian nirvana. :-)

3.4.1 Information on a file

To find the package to which a particular filename pattern belongs in the installed packages:

```
$ dpkg {-S|--search} pattern
```

Or to find the similar in the Debian archive:

```
$ wget http://ftp.us.debian.org/debian/dists/sarge/Contents-i386.gz
$ zgrep -e pattern Contents-i386.gz
```

Or use specialized package commands:

```
# aptitude install dlocate
$ dlocate filename        # fast alternative to dpkg -L and dpkg -S
...
# aptitude install auto-apt # on-demand package installation tool
# auto-apt update         # create db file for auto-apt
$ auto-apt search pattern
            # search for pattern in all packages, installed or not
```

3.4.2 Information on a package

Search and display information from package archives. Make sure to point APT to the proper archive(s) by editing /etc/apt/sources.list. If you want to see how packages in testing/unstable do against the currently installed one, use apt-cache policyâ€”quite nice.

```
# apt-get   check          # update cache and check for broken packages
$ apt-cache search  pattern # search package from text description
$ apt-cache policy  package # package priority/dists information
$ apt-cache show -a package # show description of package in all dists
$ apt-cache showsrc package # show description of matching source package
$ apt-cache showpkg package # package information for debugging
# dpkg  --audit|-C         # search for partially installed packages
$ dpkg {-s|--status} package ... # description of installed package
$ dpkg -l package ...       # status of installed package (1 line each)
$ dpkg -L package ...       # list filenames installed by the package
```

apt-cache showsrc is not documented as of the Woody release but works :)

You can also find package information in (I use mc to browse these):

```
/var/lib/apt/lists/*
/var/lib/dpkg/available
```

The comparison of the following files provides information on what exactly has happened in the last few install sessions.

```
/var/lib/dpkg/status
/var/backups/dpkg.status*
```

3.4.3 Unattended installation with APT

For an unattended installation, add the following line in /etc/apt/apt.conf:

```
Dpkg::Options {"--force-confold";}
```

This equivalent to running aptitude -y install packagename or apt-get -q -y install packagename. Because this automatically answers "yes" to all prompts, it may cause problems, so use this trick with care. See apt.conf(5) and dpkg(1).

You can configure any particular packages later by following Reconfigure installed packages, Section 3.4.4.

3.4.4 Reconfigure installed packages

Use the following to reconfigure any already-installed package.

```
# dpkg-reconfigure --priority=medium package [...]
# dpkg-reconfigure --all   # reconfigure all packages
# dpkg-reconfigure locales # generate any extra locales
# dpkg-reconfigure --p=low xserver-xfree86 # reconfigure X server
```

Do this for debconf if you need to change the debconf dialog mode permanently.

Some programs come with special configuration scripts. [3]

```
apt-setup     - create /etc/apt/sources.list
install-mbr   - install a Master Boot Record manager
tzconfig      - set the local time zone
gpmconfig     - set gpm mouse daemon
eximconfig    - configure Exim (MTA)
texconfig     - configure teTeX
apacheconfig  - configure Apache (httpd)
cvsconfig     - configure CVS
sndconfig     - configure sound system
...
update-alternatives - set default command, e.g., vim as vi
update-rc.d         - System-V init script management
update-menus        - Debian menu system
...
```

3.4.5 Remove and purge packages

Remove a package while maintaining its configuration:

```
# aptitude remove package ...
# dpkg   --remove package ...
```

Remove a package and all configuration:

```
# aptitude purge  package ...
# dpkg   --purge  package ...
```

3.4.6 Holding older packages

For example, holding of libc6 and libc6-dev for dselect and aptitude install package can be done as follows:

```
# echo -e "libc6 hold\nlibc6-dev hold" | dpkg --set-selections
```

aptitude install package will not be hindered by this "hold". To hold a package through forcing automatic downgrade for aptitude upgrade package or aptitude dist-upgrade, add the following to /etc/apt/preferences:

```
Package: libc6
Pin: release a=stable
Pin-Priority: 2000
```

Here the "Package:" entry cannot use entries such as "libc6*". If you need to keep all binary packages related to the glibc source package in a synchronized version, you need to list them explicitly.

The following will list packages on hold:

```
dpkg --get-selections "*"|grep -e "hold$"
```

3.4.7 Mixed stable/testing/unstable system

apt-show-versions can list available package versions by distribution.

```
$ apt-show-versions | fgrep /testing | wc
... how many packages you have from testing
$ apt-show-versions -u
... list of upgradeable packages
$ aptitude install `apt-show-versions -u -b | fgrep /unstable`
... upgrade all unstable packages to their newest versions
```

3.4.8 Prune cached package files

Package installation with APT leaves cached package files in /var/cache/apt/archives/ and these need to be cleaned.

```
    # aptitude autoclean # removes only useless package files
    # aptitude clean     # removes all cached package files
```

3.4.9 Record/copy system configuration

To make a local copy of the package selection states:

```
    # dpkg --get-selections "*" >myselections   # or use \*
    # debconf-get-selections > debconfsel.txt
```

"*" makes myselections include package entries for "purge" too.

You can transfer this file to another computer, and install it there with:

```
    # dselect update
    # debconf-set-selections < debconfsel.txt
    # dpkg --set-selections <myselections
    # apt-get -u dselect-upgrade    # or dselect install
```

3.4.10 Port a package to the stable system

For partial upgrades of the stable system, rebuilding a package within its environment using the source package is desirable. This avoids massive package upgrades due to their dependencies. First, add the following entries to /etc/apt/sources.list:

```
    deb-src http://http.us.debian.org/debian testing \
     main contrib non-free
    deb-src http://http.us.debian.org/debian unstable \
     main contrib non-free
```

Here each entry for deb-src is broken into two lines because of printing constraints, but the actual entry in sources.list should consist of a single line.

Then get the source and make a local package:

```
    $ apt-get update  # update the source package search list
    $ apt-get source package
    $ dpkg-source -x package.dsc
    $ cd package-version
      ... inspect required packages (Build-Depends in .dsc file) and
          install them too.  You need the "fakeroot" package also.

    $ dpkg-buildpackage -rfakeroot

      ...or (no sig)
    $ dpkg-buildpackage -rfakeroot -us -uc # use "debsign" later if needed

      ...Then to install
    $ su -c "dpkg -i packagefile.deb"
```

Usually, one needs to install a few packages with the "-dev" suffix to satisfy package dependencies. debsign is in the devscripts package. auto-apt may ease satisfying these dependencies. Use of fakeroot avoids unnecessary use of the root account.

In Woody, these dependency issues can be simplified. For example, to compile a source-only pine package:

```
    # apt-get build-dep pine
    # apt-get source -b pine
```

3.4.11 Local package archive

In order to create a local package archive which is compatible with APT and the dselect system, Packages needs to be created and package files need to be populated in a particular directory tree.

A local deb repository similar to an official Debian archive can be made in this way:

```
    # aptitude install dpkg-dev
    # cd /usr/local
    # install -d pool # physical packages are located here
```

```
# install -d dists/unstable/main/binary-i386
# ls -1 pool | sed 's/_.*$/ priority section/' | uniq > override
# editor override # adjust priority and section
# dpkg-scanpackages pool override /usr/local/ \
  > dists/unstable/main/binary-i386/Packages
# cat > dists/unstable/main/Release << EOF
Archive: unstable
Version: 3.0
Component: main
Origin: Local
Label: Local
Architecture: i386
EOF
# echo "deb file:/usr/local unstable main" \
  >> /etc/apt/sources.list
```

Alternatively, a quick-and-dirty local deb repository can be made:

```
# aptitude install dpkg-dev
# mkdir /usr/local/debian
# mv /some/where/package.deb /usr/local/debian
# dpkg-scanpackages /usr/local/debian /dev/null | \
  gzip - > /usr/local/debian/Packages.gz
#  echo "deb file:/usr/local/debian ./" >> /etc/apt/sources.list
```

These archives can be remotely accessed by providing access to these directories through either HTTP or FTP methods and changing entries in /etc/apt/sources.list accordingly.

3.4.12 Convert or install an alien binary package

alien enables the conversion of binary packages provided in Red Hat rpm, Stampede slp, Slackware tgz, and Solaris pkg file formats into a Debian deb package. If you want to use a package from another Linux distribution than the one you have installed on your system, you can use alien to convert it to your preferred package format and install it. alien also supports LSB packages.

3.4.13 Automatically install command

auto-apt is an on-demand package installation tool.

```
$ sudo auto-apt update
 ... update database
$ auto-apt -x -y run
Entering auto-apt mode: /bin/bash
Exit the command to leave auto-apt mode.
$ less /usr/share/doc/med-bio/copyright # access non-existing file
 ...  Install the package which provide this file.
 ... Also install dependencies
```

3.4.14 Verify installed package files

debsums enables verification of installed package files against MD5 checksums. Some packages do not have available MD5 checksums. A possible temporary fix for sysadmins:

```
# cat >>/etc/apt/apt.conf.d/90debsums
DPkg::Post-Install-Pkgs {"xargs /usr/bin/debsums -sg";};
^D
```

per Joerg Wendland joergland@debian.org (untested).

3.5 Other Debian peculiarities

3.5.1 The dpkg-divert command

File diversions are a way of forcing dpkg not to install a file into its default location, but to a diverted location. Diversions can be used through the Debian package scripts to move a file away when it causes a conflict. System administrators can also use a diversion to override a package's configuration file, or whenever some files (which aren't marked as conffiles) need to be preserved by dpkg, when installing a newer version of a package which contains those

files.

```
# dpkg-divert [--add]  filename # add "diversion"
# dpkg-divert --remove filename # remove "diversion"
```

It's usually a good idea not to use dpkg-divert unless it is absolutely necessary.

3.5.2 The equivs package

If you compile a program from source, it is best to make it into a real local debianized package (*.deb). Use equivs as a last resort.

```
Package: equivs
Priority: extra
Section: admin
Description: Circumventing Debian package dependencies
 This is a dummy package which can be used to create Debian
 packages, which only contain dependency information.
```

3.5.3 Alternative commands

To make the command vi run vim, use update-alternatives:

```
# update-alternatives --display vi
...
# update-alternatives --config vi
  Selection    Command
-----------------------------------------------
      1       /usr/bin/elvis-tiny
      2       /usr/bin/vim
*+    3       /usr/bin/nvi

Enter to keep the default[*], or type selection number: 2
```

Items in the Debian alternatives system are kept in /etc/alternatives/ as symlinks.

To set your favorite X Window environment, apply update-alternatives to /usr/bin/x-session-manager and /usr/bin/x-window-manager.

/bin/sh is a direct symlink to /bin/bash or /bin/dash. It's safer to use /bin/bash to be compatible with old Bashism-contaminated scripts but better discipline to use /bin/dash to enforce POSIX compliance. Upgrading to a 2.4 Linux kernel tends to set this to /bin/dash.

3.5.4 Runlevel usage

When installed, most Debian packages configure their services to run in runlevels 2 through 5. Thus, there are no differences between runlevels 2, 3, 4 and 5 on a Debian system that has not been customized; Debian leaves it up to the local administrator to customize runlevels. This differs from the way runlevels are used by some other popular GNU/Linux distributions. One change you may want to make is to disable xdm or gdm in runlevel 2 so that the X display manager is not started at the end of the boot sequence; you can then start it by switching to runlevel 3.

3.5.5 Disabled daemon services

Debian developers take system security seriously. Many daemon services are installed with the fewest services and features enabled.

Run ps aux or check the contents of /etc/init.d/* and /etc/inetd.conf, if you have any doubts (about Exim, DHCP, ...). Also check /etc/hosts.deny. The pidof command is also useful (see pidof(8)).

X11 doesn't allow TCP/IP (remote) connections by default in recent versions of Debian. X forwarding in SSH is also disabled.