

## NAME

BusyBox - The Swiss Army Knife of Embedded Linux

## SYNTAX

```
busybox <applet> [arguments...] # or
```

```
<applet> [arguments...] # if symlinked
```

## DESCRIPTION

BusyBox combines tiny versions of many common UNIX utilities into a single small executable. It provides minimalist replacements for most of the utilities you usually find in GNU coreutils, util-linux, etc. The utilities in BusyBox generally have fewer options than their full-featured GNU cousins; however, the options that are included provide the expected functionality and behave very much like their GNU counterparts.

BusyBox has been written with size-optimization and limited resources in mind. It is also extremely modular so you can easily include or exclude commands (or features) at compile time. This makes it easy to customize your embedded systems. To create a working system, just add /dev, /etc, and a Linux kernel. BusyBox provides a fairly complete POSIX environment for any small or embedded system.

BusyBox is extremely configurable. This allows you to include only the components you need, thereby reducing binary size. Run 'make config' or 'make menuconfig' to select the functionality that you wish to enable. Then run 'make' to compile BusyBox using your configuration.

After the compile has finished, you should use 'make install' to install BusyBox. This will install the 'bin/busybox' binary, in the target directory specified by CONFIG\_PREFIX. CONFIG\_PREFIX can be set when configuring BusyBox, or you can specify an alternative location at install time (i.e., with a command line like 'make CONFIG\_PREFIX=/tmp/foo install'). If you enabled any applet installation scheme (either as symlinks or hardlinks), these will also be installed in the location pointed to by CONFIG\_PREFIX.

## USAGE

BusyBox is a multi-call binary. A multi-call binary is an executable program that performs the same job as more than one utility program. That means there is just a single BusyBox binary, but that single binary acts like a large number of utilities. This allows BusyBox to be smaller since all the built-in utility programs (we call them applets) can share code for many common operations.

You can also invoke BusyBox by issuing a command as an argument on the command line. For example, entering

```
/bin/busybox ls
```

will also cause BusyBox to behave as 'ls'.

Of course, adding '/bin/busybox' into every command would be painful. So most people will invoke BusyBox using links to the BusyBox binary.

For example, entering

```
ln -s /bin/busybox ls
./ls
```

will cause BusyBox to behave as 'ls' (if the 'ls' command has been compiled into BusyBox). Generally speaking, you should never need to make all these links yourself, as the BusyBox build system will do this for you when you run the 'make install' command.

If you invoke BusyBox with no arguments, it will provide you with a list of the applets that have been compiled into your BusyBox binary.

## COMMON OPTIONS

Most BusyBox applets support the **--help** argument to provide a terse runtime description of their behavior. If the CONFIG\_FEATURE\_VERBOSE\_USAGE option has been enabled, more detailed usage information will also be available.

## COMMANDS

Currently available applets include:

```
[, [[, acpid, adjtimex, ar, arp, arping, ash, awk, basename,
blockdev, brctl, bunzip2, bzip2, cal, cat, chgrp, chmod,
chown, chroot, chvt, clear, cmp, cp, cpio, cttyhack, cut, date, dc,
dd, dealloct, depmod, devmem, df, diff, dirname, dmesg,
dnsdomainname, dos2unix, du, dumpkmap, dumpleases, echo, egrep, env,
expand, expr, false, fgrep, find, fold, free, freeramdisk, fstrim,
ftpget, ftpput, getopt, getty, grep, groups, gunzip, gzip, halt,
head, hexdump, hostid, hostname, httpd, hwclock, id, ifconfig, init,
insmod, ionice, ip, ipcalc, kill, killall, klogd, last, less, ln,
loadfont, loadkmap, logger, login, logname, logread, losetup, ls,
lsmmod, lzcat, lzma, lzop, lzopcat, md5sum, mdev, microcom, mkdir,
mkfifo, mknod, mkswap, mktemp, modinfo, modprobe, more, mount, mt,
mv, nameif, nc, netstat, nslookup, od, openvt, patch, pidof, ping,
ping6, pivot_root, poweroff, printf, ps, pwd, rdate, readlink,
realpath, reboot, renice, reset, rev, rm, rmdir, rmmmod, route, rpm,
rpm2cpio, run-parts, sed, seq, setkeycodes, setsid, sh, shasum,
sha256sum, sha512sum, sleep, sort, start-stop-daemon, stat, strings,
stty, swapoff, swapon, switch_root, sync, sysctl, syslogd, tac,
tail, tar, taskset, tee, telnet, test, tftp, time, timeout, top,
touch, tr, traceroute, traceroute6, true, tty, udhcpc, udhcpcd,
umount, uname, uncompress, unexpand, uniq, unix2dos, unlzma, unlzop,
unxz, unzip, uptime, usleep, uudecode, uuencode, vconfig, vi, watch,
watchdog, wc, wget, which, who, whoami, xargs, xz, xzcat, yes, zcat
```

## COMMAND DESCRIPTIONS

### acpid

```
acpid [-df] [-c CONFDIR] [-l LOGFILE] [-a ACTIONFILE] [-M MAPFILE] [-e PROC_EVENT_FILE] [-p
PIDFILE]
```

Listen to ACPI events and spawn specific helpers on event arrival

```
-d Log to stderr, not log file (implies -f)
-f Run in foreground
-c DIR Config directory [/etc/acpi]
-e FILE /proc event file [/proc/acpi/event]
-l FILE Log file [/var/log/acpid.log]
-p FILE Pid file [/var/run/acpid.pid]
-a FILE Action file [/etc/acpid.conf]
-M FILE Map file [/etc/acpi.map]
```

Accept and ignore compatibility options -g -m -s -S -v

### adjtimex

```
adjtimex [-q] [-o OFF] [-f FREQ] [-p TCONST] [-t TICK]
```

Read and optionally set system timebase parameters. See [adjtimex\(2\)](#)

```
-q Quiet
-o OFF Time offset, microseconds
-f FREQ Frequency adjust, integer kernel units (65536 is 1ppm)
(positive values make clock run faster)
-t TICK Microseconds per tick, usually 10000
-p TCONST
```

```
ar [-o] [-v] [-p] [-t] [-x] ARCHIVE FILES
```

Extract or list FILES from an ar archive

- o Preserve original dates
- p Extract to stdout
- t List
- x Extract
- v Verbose

**arp** arp [-vn] [-H HWTYPE] [-i IF] -a [HOSTNAME] [-v] [-i IF] -d HOSTNAME [pub] [-v] [-H HWTYPE] [-i IF] -s HOSTNAME HWADDR [temp] [-v] [-H HWTYPE] [-i IF] -s HOSTNAME HWADDR [netmask MASK] pub [-v] [-H HWTYPE] [-i IF] -Ds HOSTNAME IFACE [netmask MASK] pub

Manipulate ARP cache

- a Display (all) hosts
- d Delete ARP entry
- s Set new entry
- v Verbose
- n Don't resolve names
- i IF Network interface
- D Read HWADDR from IFACE
- A,-p AF Protocol family
- H HWTYPE Hardware address type

### arping

arping [-fqbdDUA] [-c CNT] [-w TIMEOUT] [-I IFACE] [-s SRC\_IP] DST\_IP

Send ARP requests/replies

- f Quit on first ARP reply
- q Quiet
- b Keep broadcasting, don't go unicast
- D Duplicated address detection mode
- U Unsolicited ARP mode, update your neighbors
- A ARP answer mode, update your neighbors
- c N Stop after sending N ARP requests
- w TIMEOUT Time to wait for ARP reply, seconds
- I IFACE Interface to use (default eth0)
- s SRC\_IP Sender IP address
- DST\_IP Target IP address

**ash** ash [-/+OPTIONS] [-/+o OPT]... [-c 'SCRIPT' [ARG0 [ARGS]] / FILE [ARGS]]

Unix shell interpreter

### awk

awk [OPTIONS] [AWK\_PROGRAM] [FILE]...

- v VAR=VAL Set variable
- F SEP Use SEP as field separator
- f FILE Read program from FILE
- e AWK\_PROGRAM

### basename

basename FILE [SUFFIX]

Strip directory path and .SUFFIX from FILE

### blockdev

blockdev OPTION BLOCKDEV

```
--setro Set ro
--setrw Set rw
--getro Get ro
--getss Get sector size
--getbsz Get block size
--setbsz BYTES Set block size
--getsz Get device size in 512-byte sectors
--getsize64 Get device size in bytes
--flushbufs Flush buffers
--rereadpt Reread partition table
```

**brctl**

brctl COMMAND [BRIDGE [INTERFACE]]

Manage ethernet bridges

Commands:

```
addbr BRIDGE Create BRIDGE
delbr BRIDGE Delete BRIDGE
addif BRIDGE IFACE Add IFACE to BRIDGE
delif BRIDGE IFACE Delete IFACE from BRIDGE
```

**bunzip2**

bunzip2 [-cf] [FILE]...

Decompress FILES (or stdin)

```
-c Write to stdout
-f Force
```

**bzcat**

bzcat [FILE]...

Decompress to stdout

**bzip2**

bzip2 [OPTIONS] [FILE]...

Compress FILES (or stdin) with bzip2 algorithm

```
-1..9 Compression level
-d Decompress
-c Write to stdout
-f Force
```

**cal** cal [-jy] [[MONTH] YEAR]

Display a calendar

```
-j Use julian dates
-y Display the entire year
```

**cat** cat [FILE]...

Concatenate FILES and print them to stdout

**chgrp**

chgrp [-RhLHPcvf]... GROUP FILE...

Change the group membership of each FILE to GROUP

```

-R Recurse
-h Affect symlinks instead of symlink targets
-L Traverse all symlinks to directories
-H Traverse symlinks on command line only
-P Don't traverse symlinks (default)
-c List changed files
-v Verbose
-f Hide errors

```

**chmod**

`chmod [-Rcvf] MODE[,MODE]... FILE...`

Each MODE is one or more of the letters ugoa, one of the symbols += and one or more of the letters rwxst

```

-R Recurse
-c List changed files
-v List all files
-f Hide errors

```

**chown**

`chown [-RhLHPcvf]... OWNER[<|:>[GROUP]] FILE...`

Change the owner and/or group of each FILE to OWNER and/or GROUP

```

-R Recurse
-h Affect symlinks instead of symlink targets
-L Traverse all symlinks to directories
-H Traverse symlinks on command line only
-P Don't traverse symlinks (default)
-c List changed files
-v List all files
-f Hide errors

```

**chroot**

`chroot NEWROOT [PROG ARGS]`

Run PROG with root directory set to NEWROOT

**chvt**

`chvt N`

Change the foreground virtual terminal to /dev/ttyN

**clear**

`clear`

Clear screen

**cmp**

`cmp [-l] [-s] FILE1 [FILE2 [SKIP1 [SKIP2]]]`

Compare FILE1 with FILE2 (or stdin)

```

-l Write the byte numbers (decimal) and values (octal)
for all differing bytes
-s Quiet

```

**cp** `cp [OPTIONS] SOURCE... DEST`

Copy SOURCE(s) to DEST

```

-a Same as -dpR
-R,-r Recurse
-d,-P Preserve symlinks (default if -R)
-L Follow all symlinks
-H Follow symlinks on command line
-p Preserve file attributes if possible
-f Overwrite
-i Prompt before overwrite
-l,-s Create (sym)links

```

**cpio**

```
cpio [-dmvu] [-F FILE] [-H newc] [-tio] [EXTR_FILE]...
```

Extract or list files from a cpio archive, or create an archive using file list on stdin

Main operation mode:

```

-t List
-i Extract EXTR_FILEs (or all)
-o Create (requires -H newc)
-d Make leading directories
-m Preserve mtime
-v Verbose
-u Overwrite
-F FILE Input (-t,-i,-p) or output (-o) file
-H newc Archive format

```

**cttyhack**

```
cttyhack [PROG ARGS]
```

Give PROG a controlling tty if possible. Example for /etc/inittab (for busybox init):  
::respawn:/bin/cttyhack /bin/sh Giving controlling tty to shell running with PID 1: \$ exec cttyhack sh  
Starting interactive shell from boot shell script:

```
setsid cttyhack sh
```

**cut** cut [OPTIONS] [FILE]...

Print selected fields from each input FILE to stdout

```

-b LIST Output only bytes from LIST
-c LIST Output only characters from LIST
-d CHAR Use CHAR instead of tab as the field delimiter
-s Output only the lines containing delimiter
-f N Print only these fields
-n Ignored

```

**date**

```
date [OPTIONS] [+FMT] [TIME]
```

Display time (using +FMT), or set time

```

[-s,--set] TIME Set time to TIME
-u,--utc Work in UTC (don't convert to local time)
-R,--rfc-2822 Output RFC-2822 compliant date string
-I[SPEC] Output ISO-8601 compliant date string
SPEC='date' (default) for date only,
'hours', 'minutes', or 'seconds' for date and
time to the indicated precision
-r,--reference FILE Display last modification time of FILE
-d,--date TIME Display TIME, not 'now'
-D FMT Use FMT for -d TIME conversion

```

**Recognized TIME formats:**

```

hh:mm[:ss]
[YYYY.]MM.DD-hh:mm[:ss]
YYYY-MM-DD hh:mm[:ss]
[[[ [YY]YY]MM]DD]hh]mm[.ss]
'date TIME' form accepts MMDDhhmm[YY][YY][.ss] instead

```

**dc** dc EXPRESSION...

Tiny RPN calculator. Operations: +, add, -, sub, \*, mul, /, div, %, mod, and, or, not, xor, p - print top of the stack (without popping), f - print entire stack, o - pop the value and set output radix (must be 10, 16, 8 or 2). Examples: 'dc 2 2 add p' -> 4, 'dc 8 8 mul 2 2 + / p' -> 16

**dd** [if=FILE] [of=FILE] [ibs=N] [obs=N] [bs=N] [count=N] [skip=N] [seek=N] [conv=notrunc|noerror|sync|fsync]

Copy a file with converting and formatting

```

if=FILE Read from FILE instead of stdin
of=FILE Write to FILE instead of stdout
bs=N Read and write N bytes at a time
ibs=N Read N bytes at a time
obs=N Write N bytes at a time
count=N Copy only N input blocks
skip=N Skip N input blocks
seek=N Skip N output blocks
conv=notrunc Don't truncate output file
conv=noerror Continue after read errors
conv=sync Pad blocks with zeros
conv=fsync Physically write data out before finishing
conv=swab Swap every pair of bytes

```

N may be suffixed by c (1), w (2), b (512), kD (1000), k (1024), MD, M, GD, G

**deallocvt**

deallocvt [N]

Deallocate unused virtual terminal /dev/ttyN

**depmod**

depmod [-n] [-b BASE] [VERSION] [MODFILES]...

Generate modules.dep, alias, and symbols files

```

-b BASE Use BASE/lib/modules/VERSION
-n Dry run: print files to stdout

```

**devmem**

devmem ADDRESS [WIDTH [VALUE]]

Read/write from physical address

ADDRESS Address to act upon  
 WIDTH Width (8/16/...)  
 VALUE Data to be written

**df** df [-Pkmhai] [-B SIZE] [FILESYSTEM]...

Print filesystem usage statistics

-P POSIX output format  
 -k 1024-byte blocks (default)  
 -m 1M-byte blocks  
 -h Human readable (e.g. 1K 243M 2G)  
 -a Show all filesystems  
 -i Inodes  
 -B SIZE Blocksize

**diff** diff [-abBdiNqrTstw] [-L LABEL] [-S FILE] [-U LINES] FILE1 FILE2

Compare files line by line and output the differences between them. This implementation supports unified diffs only.

-a Treat all files as text  
 -b Ignore changes in the amount of whitespace  
 -B Ignore changes whose lines are all blank  
 -d Try hard to find a smaller set of changes  
 -i Ignore case differences  
 -L Use LABEL instead of the filename in the unified header  
 -N Treat absent files as empty  
 -q Output only whether files differ  
 -r Recurse  
 -S Start with FILE when comparing directories  
 -T Make tabs line up by prefixing a tab when necessary  
 -s Report when two files are the same  
 -t Expand tabs to spaces in output  
 -U Output LINES lines of context  
 -w Ignore all whitespace

**dirname**

dirname FILENAME

Strip non-directory suffix from FILENAME

**dmesg**

dmesg [-c] [-n LEVEL] [-s SIZE]

Print or control the kernel ring buffer

-c Clear ring buffer after printing  
 -n LEVEL Set console logging level  
 -s SIZE Buffer size

**dos2unix**

dos2unix [-ud] [FILE]

Convert FILE in-place from DOS to Unix format. When no file is given, use stdin/stdout.

-u dos2unix  
 -d unix2dos

**du** du [-aHLdclsxhmk] [FILE]...

Summarize disk space used for each FILE and/or directory



- a Show file sizes too
- L Follow all symlinks
- H Follow symlinks on command line
- d N Limit output to directories (and files with -a) of depth < N
- c Show grand total
- l Count sizes many times if hard linked
- s Display only a total for each argument
- x Skip directories on different filesystems
- h Sizes in human readable format (e.g., 1K 243M 2G)
- m Sizes in megabytes
- k Sizes in kilobytes (default)

**dumpkmap**

dumpkmap > keymap

Print a binary keyboard translation table to stdout

**dumpleases**

dumpleases [-r|-a] [-f LEASEFILE]

Display DHCP leases granted by udhcpd

- f, --file=FILE Lease file
- r, --remaining Show remaining time
- a, --absolute Show expiration time

**echo**

echo [-neE] [ARG]...

Print the specified ARGs to stdout

- n Suppress trailing newline
- e Interpret backslash escapes (i.e., \t=tab)
- E Don't interpret backslash escapes (default)

**env** env [-iu] [-] [name=value]... [PROG ARGS]

Print the current environment or run PROG after setting up the specified environment

- , -i Start with an empty environment
- u Remove variable from the environment

**expand**

expand [-i] [-t N] [FILE]...

Convert tabs to spaces, writing to stdout

- i, --initial Don't convert tabs after non blanks
- t, --tabs=N Tabstops every N chars

**expr**

expr EXPRESSION

Print the value of EXPRESSION to stdout

EXPRESSION may be:

```

ARG1 | ARG2 ARG1 if it is neither null nor 0, otherwise ARG2
ARG1 & ARG2 ARG1 if neither argument is null or 0, otherwise 0
ARG1 < ARG2 1 if ARG1 is less than ARG2, else 0. Similarly:
ARG1 <= ARG2
ARG1 = ARG2
ARG1 != ARG2
ARG1 >= ARG2
ARG1 > ARG2
ARG1 + ARG2 Sum of ARG1 and ARG2. Similarly:
ARG1 - ARG2
ARG1 * ARG2
ARG1 / ARG2
ARG1 % ARG2
STRING : REGEXP Anchored pattern match of REGEXP in STRING
match STRING REGEXP Same as STRING : REGEXP
substr STRING POS LENGTH Substring of STRING, POS counted from 1
index STRING CHARS Index in STRING where any CHARS is found, or 0
length STRING Length of STRING
quote TOKEN Interpret TOKEN as a string, even if
it is a keyword like 'match' or an
operator like '/'
(EXPRESSION) Value of EXPRESSION

```

Beware that many operators need to be escaped or quoted for shells. Comparisons are arithmetic if both ARGs are numbers, else lexicographical. Pattern matches return the string matched between `\(` and `\)` or null; if `\(` and `\)` are not used, they return the number of characters matched or 0.

**false**

```
false
```

Return an exit code of FALSE `\fi0(1)`

**find**

```
find [-HL] [PATH]... [OPTIONS] [ACTIONS]
```

Search for files and perform actions on them. First failed action stops processing of current file. Defaults: PATH is current directory, action is '-print'

```

-L,-follow Follow symlinks
-H ...on command line only
-xdev Don't descend directories on other filesystems
-maxdepth N Descend at most N levels. -maxdepth 0 applies
actions to command line arguments only
-mindepth N Don't act on first N levels
-depth Act on directory *after* traversing it

```

Actions:

```

( ACTIONS ) Group actions for -o / -a
! ACT Invert ACT's success/failure
ACT1 [-a] ACT2 If ACT1 fails, stop, else do ACT2
ACT1 -o ACT2 If ACT1 succeeds, stop, else do ACT2
Note: -a has higher priority than -o
-name PATTERN Match file name (w/o directory name) to PATTERN
-iname PATTERN Case insensitive -name
-path PATTERN Match path to PATTERN
-ipath PATTERN Case insensitive -path
-regex PATTERN Match path to regex PATTERN
-type X File type is X (one of: f,d,l,b,c,...)

```

-perm MASK At least one mask bit (+MASK), all bits (-MASK),  
 or exactly MASK bits are set in file's mode  
 -mtime DAYS mtime is greater than (+N), less than (-N),  
 or exactly N days in the past  
 -mmin MINS mtime is greater than (+N), less than (-N),  
 or exactly N minutes in the past  
 -newer FILE mtime is more recent than FILE's  
 -inum N File has inode number N  
 -user NAME/ID File is owned by given user  
 -group NAME/ID File is owned by given group  
 -size N[bck] File size is N (c:bytes,k:kbytes,b:512 bytes(def.))  
 +/-N: file size is bigger/smaller than N  
 -links N Number of links is greater than (+N), less than (-N),  
 or exactly N  
 -prune If current file is directory, don't descend into it  
 If none of the following actions is specified, -print is assumed  
 -print Print file name  
 -print0 Print file name, NUL terminated  
 -exec CMD ARG ; Run CMD with all instances of {} replaced by  
 file name. Fails if CMD exits with nonzero

**fold**

fold [-bs] [-w WIDTH] [FILE]...

Wrap input lines in each FILE (or stdin), writing to stdout

-b Count bytes rather than columns  
 -s Break at spaces  
 -w Use WIDTH columns instead of 80

**free**

free [-b/k/m/g]

Display the amount of free and used system memory

**freeramdisk**

freeramdisk DEVICE

Free all memory used by the specified ramdisk

**fstrim**

fstrim [OPTIONS] MOUNTPOINT

-o,--offset=OFFSET Offset in bytes to discard from  
 -l,--length=LEN Bytes to discard  
 -m,--minimum=MIN Minimum extent length  
 -v,--verbose Print number of discarded bytes

**ftpget**

ftpget [OPTIONS] HOST [LOCAL\_FILE] REMOTE\_FILE

Download a file via FTP

-c,--continue Continue previous transfer  
 -v,--verbose Verbose  
 -u,--username USER Username  
 -p,--password PASS Password  
 -P,--port NUM Port

**ftpput**

ftpput [OPTIONS] HOST [REMOTE\_FILE] LOCAL\_FILE

Upload a file to a FTP server

```
-v,--verbose Verbose
-u,--username USER Username
-p,--password PASS Password
-P,--port NUM Port
```

### getopt

getopt [OPTIONS] [--] OPTSTRING PARAMS

```
-a,--alternative Allow long options starting with single -
-l,--longoptions=LOPT[,...] Long options to recognize
-n,--name=PROGNAME The name under which errors are reported
-o,--options=OPTSTRING Short options to recognize
-q,--quiet No error messages on unrecognized options
-Q,--quiet-output No normal output
-s,--shell=SHELL Set shell quoting conventions
-T,--test Version test (exits with 4)
-u,--unquoted Don't quote output
```

Example:

```
O='getopt -l bb: — ab:c: “$@”‘ || exit 1 eval set — “$O” while true; do case “$1” in -a) echo A;
shift;; -b|--bb) echo “B:$2”; shift 2;; -c) case “$2” in “”) echo C; shift 2;; *) echo “C:$2”; shift 2;;
esac;; --) shift; break;; *) echo Error; exit 1;; esac done
```

### getty

getty [OPTIONS] BAUD\_RATE[,BAUD\_RATE]... TTY [TERMTYPE]

Open TTY, prompt for login name, then invoke /bin/login

```
-h Enable hardware RTS/CTS flow control
-L Set CLOCAL (ignore Carrier Detect state)
-m Get baud rate from modem's CONNECT status message
-n Don't prompt for login name
-w Wait for CR or LF before sending /etc/issue
-i Don't display /etc/issue
-f ISSUE_FILE Display ISSUE_FILE instead of /etc/issue
-l LOGIN Invoke LOGIN instead of /bin/login
-t SEC Terminate after SEC if no login name is read
-I INITSTR Send INITSTR before anything else
-H HOST Log HOST into the utmp file as the hostname
```

BAUD\_RATE of 0 leaves it unchanged

### grep

grep [-HhnlLoqvsriwFEz] [-m N] [-A/B/C N] PATTERN/-e PATTERN.../-f FILE [FILE]...

Search for PATTERN in FILEs (or stdin)

```
-H Add 'filename:' prefix
-h Do not add 'filename:' prefix
-n Add 'line_no:' prefix
-l Show only names of files that match
-L Show only names of files that don't match
-c Show only count of matching lines
-o Show only the matching part of line
-q Quiet. Return 0 if PATTERN is found, 1 otherwise
-v Select non-matching lines
-s Suppress open and read errors
-r Recurse
```

- i Ignore case
- w Match whole words only
- x Match whole lines only
- F PATTERN is a literal (not regexp)
- E PATTERN is an extended regexp
- z Input is NUL terminated
- m N Match up to N times per file
- A N Print N lines of trailing context
- B N Print N lines of leading context
- C N Same as '-A N -B N'
- e PTRN Pattern to match
- f FILE Read pattern from file

**groups**

groups [USER]

Print the group memberships of USER or for the current process

**gunzip**

gunzip [-cft] [FILE]...

Decompress FILEs (or stdin)

- c Write to stdout
- f Force
- t Test file integrity

**gzip**

gzip [-cfd] [FILE]...

Compress FILEs (or stdin)

- d Decompress
- c Write to stdout
- f Force

**halt**

halt [-d DELAY] [-n] [-f] [-w]

Halt the system

- d SEC Delay interval
- n Do not sync
- f Force (don't go through init)
- w Only write a wtmp record

**head**

head [OPTIONS] [FILE]...

Print first 10 lines of each FILE (or stdin) to stdout. With more than one FILE, precede each with a filename header.

- n N[kbm] Print first N lines
- n -N[kbm] Print all except N last lines
- c [-]N[kbm] Print first N bytes
- q Never print headers
- v Always print headers

N may be suffixed by k (x1024), b (x512), or m (x1024<sup>2</sup>).

**hexdump**

hexdump [-bcCdefnosvx] [FILE]...

Display FILEs (or stdin) in a user specified format

- b One-byte octal display
- c One-byte character display
- C Canonical hex+ASCII, 16 bytes per line
- d Two-byte decimal display
- e FORMAT\_STRING
- f FORMAT\_FILE
- n LENGTH Interpret only LENGTH bytes of input
- o Two-byte octal display
- s OFFSET Skip OFFSET bytes
- v Display all input data
- x Two-byte hexadecimal display

**hostid**

hostid

Print out a unique 32-bit identifier for the machine

**hostname**

hostname [OPTIONS] [HOSTNAME | -F FILE]

Get or set hostname or DNS domain name

- s Short
- i Addresses for the hostname
- d DNS domain name
- f Fully qualified domain name
- F FILE Use FILE's content as hostname

**httpd**

httpd [-ifv[v]] [-c CONFFILE] [-p [IP:]PORT] [-u USER[:GRP]] [-r REALM] [-h HOME] or httpd -d/-e/-m STRING

Listen for incoming HTTP requests

- i Inetd mode
- f Don't daemonize
- v[v] Verbose
- p [IP:]PORT Bind to IP:PORT (default \*:80)
- u USER[:GRP] Set uid/gid after binding to port
- r REALM Authentication Realm for Basic Authentication
- h HOME Home directory (default .)
- c FILE Configuration file (default {/etc,HOME}/httpd.conf)
- m STRING MD5 crypt STRING
- e STRING HTML encode STRING
- d STRING URL decode STRING

**hwclock**

hwclock [-r|--show] [-s|--hctosys] [-w|--systohc] [-t|--systz] [-l|--localtime] [-u|--utc] [-f|--rtc FILE]

Query and set hardware clock (RTC)

- r Show hardware clock time
- s Set system time from hardware clock
- w Set hardware clock from system time
- t Set in-kernel timezone, correct system time if hardware clock is in local time
- u Assume hardware clock is kept in UTC
- l Assume hardware clock is kept in local time
- f FILE Use specified device (e.g. /dev/rtc2)

**id** id [OPTIONS] [USER]

Print information about USER or the current user

```
-u User ID
-g Group ID
-G Supplementary group IDs
-n Print names instead of numbers
-r Print real ID instead of effective ID
```

**ifconfig**

ifconfig [-a] interface [address]

Configure a network interface

```
[add ADDRESS[/PREFIXLEN]]
[del ADDRESS[/PREFIXLEN]]
[[-]broadcast [ADDRESS]] [[-]pointopoint [ADDRESS]]
[netmask ADDRESS] [dstaddr ADDRESS]
[outfill NN] [keepalive NN]
[hw ether|infiniband ADDRESS] [metric NN] [mtu NN]
[[-]trailers] [[-]arp] [[-]allmulti]
[multicast] [[-]promisc] [txqueuelen NN] [[-]dynamic]
[mem_start NN] [io_addr NN] [irq NN]
[up|down] ...
```

**init** init

Init is the first process started during boot. It never exits. It (re)spawns children according to /etc/inittab.

**insmod**

insmod FILE [SYMBOL=VALUE]...

Load the specified kernel modules into the kernel

**ionice**

ionice [-c 1-3] [-n 0-7] [-p PID] [PROG]

Change I/O priority and class

```
-c Class. 1:realtime 2:best-effort 3:idle
-n Priority
```

**ip** ip [OPTIONS] {address | route | link | tunnel | rule} {COMMAND}

ip [OPTIONS] OBJECT {COMMAND} where OBJECT := {address | route | link | tunnel | rule} OPTIONS := { -f[amily] { inet | inet6 | link } | -o[neline] }

**ipcalc**

ipcalc [OPTIONS] ADDRESS[/]NETMASK [NETMASK]

Calculate IP network settings from a IP address

```
-b,--broadcast Display calculated broadcast address
-n,--network Display calculated network address
-m,--netmask Display default netmask for IP
-p,--prefix Display the prefix for IP/NETMASK
-h,--hostname Display first resolved host name
-s,--silent Don't ever display error messages
```

**kill** kill [-l] [-SIG] PID...

Send a signal (default: TERM) to given PIDs

-l List all signal names and numbers

**killall**

killall [-l] [-q] [-SIG] PROCESS\_NAME...

Send a signal (default: TERM) to given processes

-l List all signal names and numbers

-q Don't complain if no processes were killed

**klogd**

klogd [-c N] [-n]

Kernel logger

-c N Print to console messages more urgent than prio N (1-8)

-n Run in foreground

**last**

Show listing of the last users that logged into the system

**less** less [-EMmNh~I?] [FILE]...

View FILE (or stdin) one screenful at a time

-E Quit once the end of a file is reached

-M,-m Display status line with line numbers and percentage through the file

-N Prefix line number to each line

-I Ignore case in all searches

-~ Suppress ~s displayed past EOF

**ln** ln [OPTIONS] TARGET... LINK|DIR

Create a link LINK or DIR/TARGET to the specified TARGET(s)

-s Make symlinks instead of hardlinks

-f Remove existing destinations

-n Don't dereference symlinks - treat like normal file

-b Make a backup of the target (if exists) before link operation

-S suf Use suffix instead of ~ when making backup files

-T 2nd arg must be a DIR

-v Verbose

**loadfont**

loadfont < font

Load a console font from stdin

**loadkmap**

loadkmap < keymap

Load a binary keyboard translation table from stdin

**logger**

logger [OPTIONS] [MESSAGE]

Write MESSAGE (or stdin) to syslog

-s Log to stderr as well as the system log

-t TAG Log using the specified tag (defaults to user name)

-p PRIO Priority (numeric or facility.level pair)



**login**

login [-p] [-h HOST] [[-f] USER]

Begin a new session on the system

- f Don't authenticate (user already authenticated)
- h Name of the remote host
- p Preserve environment

**logname**

logname

Print the name of the current user

**logread**

logread [-f]

Show messages in syslogd's circular buffer

- f Output data as log grows

**losetup**

losetup [-r] [-o OFS] {-f[LOOPDEV] FILE - associate loop devices losetup -d LOOPDEV - disassociate losetup -a - show status losetup -f - show next free loop device

- o OFS Start OFS bytes into FILE
- r Read-only
- f Show/use next free loop device

**ls** ls [-lAaCxdLHRFplinsehrSXvctu] [-w WIDTH] [FILE]...

List directory contents

- l One column output
- a Include entries which start with .
- A Like -a, but exclude . and ..
- C List by columns
- x List by lines
- d List directory entries instead of contents
- L Follow symlinks
- H Follow symlinks on command line
- R Recurse
- p Append / to dir entries
- F Append indicator (one of \*/=@|) to entries
- l Long listing format
- i List inode numbers
- n List numeric UIDs and GIDs instead of names
- s List allocated blocks
- e List full date and time
- h List sizes in human readable format (1K 243M 2G)
- r Sort in reverse order
- S Sort by size
- X Sort by extension
- v Sort by version
- c With -l: sort by ctime
- t With -l: sort by mtime
- u With -l: sort by atime
- w N Assume the terminal is N columns wide
- color[={always,never,auto}] Control coloring

**lsmod**

lsmod

List the currently loaded kernel modules

**lzcat**

lzcat [FILE]...

Decompress to stdout

**lzma**

lzma -d [-cf] [FILE]...

Decompress FILE (or stdin)

- d Decompress
- c Write to stdout
- f Force

**lzop**

lzop [-cfvd123456789CF] [FILE]...

- 1..9 Compression level
- d Decompress
- c Write to stdout
- f Force
- v Verbose
- F Don't store or verify checksum
- C Also write checksum of compressed block

**lzopcat**

lzopcat [-vCF] [FILE]...

- v Verbose
- F Don't store or verify checksum

**md5sum**

md5sum [-c[sw]] [FILE]...

Print or check MD5 checksums

- c Check sums against list in FILES
- s Don't output anything, status code shows success
- w Warn about improperly formatted checksum lines

**mdev**

mdev [-s]

mdev -s is to be run during boot to scan /sys and populate /dev.

Bare mdev is a kernel hotplug helper. To activate it: echo /sbin/mdev &gt;/proc/sys/kernel/hotplug

It uses /etc/mdev.conf with lines [-][ENV=regex;]...DEVNAME UID:GID PERM [>|=PATH][!][@|\$]\*PROG where DEVNAME is device name regex, @major.minor[-minor2], or environment variable regex. A common use of the latter is to load modules for hotplugged devices:

```
$MODALIAS=.* 0:0 660 @modprobe "$MODALIAS"
```

If /dev/mdev.seq file exists, mdev will wait for its value to match \$SEQNUM variable. This prevents plug/unplug races. To activate this feature, create empty /dev/mdev.seq at boot.

If /dev/mdev.log file exists, debug log will be appended to it.

**microcom**

microcom [-d DELAY] [-t TIMEOUT] [-s SPEED] [-X] TTY

Copy bytes for stdin to TTY and from TTY to stdout

- d Wait up to DELAY ms for TTY output before sending every next byte to it
- t Exit if both stdin and TTY are silent for TIMEOUT ms
- s Set serial line to SPEED
- X Disable special meaning of NUL and Ctrl-X from stdin

### **mkdir**

mkdir [OPTIONS] DIRECTORY...

Create DIRECTORY

- m MODE Mode
- p No error if exists; make parent directories as needed

### **mkfifo**

mkfifo [-m MODE] NAME

Create named pipe

- m MODE Mode (default a=rw)

### **mknod**

mknod [-m MODE] NAME TYPE MAJOR MINOR

Create a special file (block, character, or pipe)

- m MODE Creation mode (default a=rw)

TYPE:

- b Block device
- c or u Character device
- p Named pipe (MAJOR and MINOR are ignored)

### **mkswap**

mkswap [-L LBL] BLOCKDEV [KBYTES]

Prepare BLOCKDEV to be used as swap partition

- L LBL Label

### **mktemp**

mktemp [-dt] [-p DIR] [TEMPLATE]

Create a temporary file with name based on TEMPLATE and print its name. TEMPLATE must end with XXXXXX (e.g. [/dir/]nameXXXXXX). Without TEMPLATE, -t tmp.XXXXXX is assumed.

- d Make directory, not file
- q Fail silently on errors
- t Prepend base directory name to TEMPLATE
- p DIR Use DIR as a base directory (implies -t)
- u Do not create anything; print a name

Base directory is: -p DIR, else \$TMPDIR, else /tmp

### **modinfo**

modinfo [-adlp0] [-F keyword] MODULE

- a Shortcut for '-F author'
- d Shortcut for '-F description'
- l Shortcut for '-F license'
- p Shortcut for '-F parm'
- F keyword Keyword to look for
- 0 Separate output with NULs

**modprobe**

modprobe [-alrqvsDb] MODULE [symbol=value]...

- a Load multiple MODULEs
- l List (MODULE is a pattern)
- r Remove MODULE (stacks) or do autoclean
- q Quiet
- v Verbose
- s Log to syslog
- D Show dependencies
- b Apply blacklist to module names too

**more**

more [FILE]...

View FILE (or stdin) one screenful at a time

**mount**

mount [OPTIONS] [-o OPTS] DEVICE NODE

Mount a filesystem. Filesystem autodetection requires /proc.

- a Mount all filesystems in fstab
- f Dry run
- i Don't run mount helper
- r Read-only mount
- w Read-write mount (default)
- t FSTYPE[,...] Filesystem type(s)
- O OPT Mount only filesystems with option OPT (-a only)
- o OPT:
  - loop Ignored (loop devices are autodetected)
  - [a]sync Writes are [a]synchronous
  - [no]atime Disable/enable updates to inode access times
  - [no]diratime Disable/enable atime updates to directories
  - [no]relatime Disable/enable atime updates relative to modification time
  - [no]dev (Dis)allow use of special device files
  - [no]exec (Dis)allow use of executable files
  - [no]suid (Dis)allow set-user-id-root programs
  - [r]shared Convert [recursively] to a shared subtree
  - [r]slave Convert [recursively] to a slave subtree
  - [r]private Convert [recursively] to a private subtree
  - [un]bindable Make mount point [un]able to be bind mounted
  - [r]bind Bind a file or directory [recursively] to another location
  - move Relocate an existing mount point
  - remount Remount a mounted filesystem, changing flags
  - ro/rw Same as -r/-w

There are filesystem-specific -o flags.

**mt** mt [-f device] opcode value

Control magnetic tape drive operation

Available Opcodes:

bsf bsfm bsr bss datacompression drvbuffer eof eom erase fsf fsm fsr fss load lock mkpart nop offline  
ras1 ras2 ras3 reset retension rewind rewoffline seek setblk setdensity setpart tell unload unlock weof  
wset

**mv** mv [-fin] SOURCE DEST or: mv [-fin] SOURCE... DIRECTORY

Rename SOURCE to DEST, or move SOURCE(s) to DIRECTORY

- f Don't prompt before overwriting
- i Interactive, prompt before overwrite
- n Don't overwrite an existing file

#### **nameif**

nameif [-s] [-c FILE] [IFNAME HWADDR]...

Rename network interface while it in the down state. The device with address HWADDR is renamed to IFACE.

- c FILE Configuration file (default: /etc/mactab)
- s Log to syslog

**nc** nc [-iN] [-wN] [-l] [-p PORT] [-f FILE|IPADDR PORT] [-e PROG]

Open a pipe to IP:PORT or FILE

- l Listen mode, for inbound connects  
(use -ll with -e for persistent server)
- p PORT Local port
- w SEC Connect timeout
- i SEC Delay interval for lines sent
- f FILE Use file (ala /dev/ttyS0) instead of network
- e PROG Run PROG after connect

#### **netstat**

netstat [-ral] [-tuwx] [-en]

Display networking information

- r Routing table
- a All sockets
- l Listening sockets
- Else: connected sockets
- t TCP sockets
- u UDP sockets
- w Raw sockets
- x Unix sockets
- Else: all socket types
- e Other/more information
- n Don't resolve names

#### **nslookup**

nslookup [HOST] [SERVER]

Query the nameserver for the IP address of the given HOST optionally using a specified DNS server

**od** od [-abcdfhilovxs] [-t TYPE] [-A RADIX] [-N SIZE] [-j SKIP] [-S MINSTR] [-w WIDTH] [FILE]...

Print FILEs (or stdin) unambiguously, as octal bytes by default

#### **openvt**

openvt [-c N] [-sw] [PROG ARGS]

Start PROG on a new virtual terminal

- c N Use specified VT
- s Switch to the VT
- w Wait for PROG to exit

**patch**

patch [OPTIONS] [ORIGFILE [PATCHFILE]]

-p,--strip N Strip N leading components from file names  
-i,--input DIFF Read DIFF instead of stdin  
-R,--reverse Reverse patch  
-N,--forward Ignore already applied patches  
-E,--remove-empty-files Remove output files if they become empty

**pidof**

pidof [NAME]...

List PIDs of all processes with names that match NAMEs

**ping**

ping [OPTIONS] HOST

Send ICMP ECHO\_REQUEST packets to network hosts

-4,-6 Force IP or IPv6 name resolution  
-c CNT Send only CNT pings  
-s SIZE Send SIZE data bytes in packets (default:56)  
-t TTL Set TTL  
-I IFACE/IP Use interface or IP address as source  
-W SEC Seconds to wait for the first response (default:10)  
(after all -c CNT packets are sent)  
-w SEC Seconds until ping exits (default:infinite)  
(can exit earlier with -c CNT)  
-q Quiet, only displays output at start  
and when finished

**ping6**

ping6 [OPTIONS] HOST

Send ICMP ECHO\_REQUEST packets to network hosts

-c CNT Send only CNT pings  
-s SIZE Send SIZE data bytes in packets (default:56)  
-I IFACE/IP Use interface or IP address as source  
-q Quiet, only displays output at start  
and when finished

**pivot\_root**

pivot\_root NEW\_ROOT PUT\_OLD

Move the current root file system to PUT\_OLD and make NEW\_ROOT the new root file system

**poweroff**

poweroff [-d DELAY] [-n] [-f]

Halt and shut off power

-d SEC Delay interval  
-n Do not sync  
-f Force (don't go through init)

**printf**

printf FORMAT [ARG]...

Format and print ARG(s) according to FORMAT (a-la C printf)

**ps** ps [-o COL1,COL2=HEADER] [-T]

Show list of processes

- o COL1,COL2=HEADER Select columns for display
- T Show threads

**pwd**

pwd

Print the full filename of the current working directory

**rdate**

rdate [-sp] HOST

Get and possibly set the system date/time from a remote HOST

- s Set the system date/time (default)
- p Print the date/time

**readlink**

readlink [-fnv] FILE

Display the value of a symlink

- f Canonicalize by following all symlinks
- n Don't add newline
- v Verbose

**realpath**

realpath FILE...

Return the absolute pathnames of given FILE

**reboot**

reboot [-d DELAY] [-n] [-f]

Reboot the system

- d SEC Delay interval
- n Do not sync
- f Force (don't go through init)

**renice**

renice {{-n INCREMENT} | PRIORITY} [[-p | -g | -u] ID...]

Change scheduling priority for a running process

- n Adjust current nice value (smaller is faster)
- p Process id(s) (default)
- g Process group id(s)
- u Process user name(s) and/or id(s)

**reset**

reset

Reset the screen

**rev** rev [FILE]...

Reverse lines of FILE

**rm** rm [-irf] FILE...

Remove (unlink) FILEs

- i Always prompt before removing
- f Never prompt
- R, -r Recurse

**rmdir**

rmdir [OPTIONS] DIRECTORY...

Remove DIRECTORY if it is empty

-p|--parents Include parents  
 --ignore-fail-on-non-empty

**rmmod**

rmmod [-wfa] [MODULE]...

Unload kernel modules

-w Wait until the module is no longer used  
 -f Force unload  
 -a Remove all unused modules (recursively)

**route**

route [{add|del|delete}]

Edit kernel routing tables

-n Don't resolve names  
 -e Display other/more information  
 -A inet{6} Select address family

**rpm**

rpm -i PACKAGE.rpm; rpm -qp[ildc] PACKAGE.rpm

Manipulate RPM packages

Commands:

-i Install package  
 -qp Query package  
 -qpi Show information  
 -qpl List contents  
 -qpd List documents  
 -qpc List config files

**rpm2cpio**

rpm2cpio package.rpm

Output a cpio archive of the rpm file

**run-parts**

run-parts [-a ARG]... [-u UMASK] [--reverse] [--test] [--exit-on-error] DIRECTORY

Run a bunch of scripts in DIRECTORY

-a ARG Pass ARG as argument to scripts  
 -u UMASK Set UMASK before running scripts  
 --reverse Reverse execution order  
 --test Dry run  
 --exit-on-error Exit if a script exits with non-zero

**sed** sed [-inrE] [-f FILE]... [-e CMD]... [FILE]... or: sed [-inrE] CMD [FILE]...

-e CMD Add CMD to sed commands to be executed  
 -f FILE Add FILE contents to sed commands to be executed  
 -i[SFX] Edit files in-place (otherwise sends to stdout)  
 Optionally back files up, appending SFX  
 -n Suppress automatic printing of pattern space  
 -r,-E Use extended regex syntax



If no `-e` or `-f`, the first non-option argument is the sed command string. Remaining arguments are input files (stdin if none).

**seq** seq [-w] [-s SEP] [FIRST [INC]] LAST

Print numbers from FIRST to LAST, in steps of INC. FIRST, INC default to 1.

-w Pad to last with leading zeros  
-s SEP String separator

#### setkeycodes

setkeycodes SCANCODE KEYCODE...

Set entries into the kernel's scancode-to-keycode map, allowing unusual keyboards to generate usable keycodes.

SCANCODE may be either `xx` or `e0xx` (hexadecimal), and KEYCODE is given in decimal.

#### setsid

setsid PROG ARGS

Run PROG in a new session. PROG will have no controlling terminal and will not be affected by keyboard signals (Ctrl-C etc). See [setsid\(2\)](#) for details.

**sh** sh [-/+OPTIONS] [-/+o OPT]... [-c 'SCRIPT' [ARG0 [ARGS]] / FILE [ARGS]]

Unix shell interpreter

#### sha1sum

sha1sum [-c[sw]] [FILE]...

Print or check SHA1 checksums

-c Check sums against list in FILEs  
-s Don't output anything, status code shows success  
-w Warn about improperly formatted checksum lines

#### sha256sum

sha256sum [-c[sw]] [FILE]...

Print or check SHA256 checksums

-c Check sums against list in FILEs  
-s Don't output anything, status code shows success  
-w Warn about improperly formatted checksum lines

#### sha512sum

sha512sum [-c[sw]] [FILE]...

Print or check SHA512 checksums

-c Check sums against list in FILEs  
-s Don't output anything, status code shows success  
-w Warn about improperly formatted checksum lines

#### sleep

sleep [N]...

Pause for a time equal to the total of the args given, where each arg can have an optional suffix of (s)econds, (m)inutes, (h)ours, or (d)ays

#### sort

sort [-nrugMcszbdfimSTokt] [-o FILE] [-k start[.offset][opts][,end[.offset][opts]] [-t CHAR] [FILE]...

Sort lines of text

```

-b Ignore leading blanks
-c Check whether input is sorted
-d Dictionary order (blank or alphanumeric only)
-f Ignore case
-g General numerical sort
-i Ignore unprintable characters
-k Sort key
-M Sort month
-n Sort numbers
-o Output to file
-k Sort by key
-t CHAR Key separator
-r Reverse sort order
-s Stable (don't sort ties alphabetically)
-u Suppress duplicate lines
-z Lines are terminated by NUL, not newline
-mST Ignored for GNU compatibility

```

**start-stop-daemon**

```
start-stop-daemon [OPTIONS] [-S|-K] ... [-- ARGS...]
```

Search for matching processes, and then **-K**: stop all matching processes. **-S**: start a process unless a matching process is found.

Process matching:

```

-u,--user USERNAME|UID Match only this user's processes
-n,--name NAME Match processes with NAME
in comm field in /proc/PID/stat
-x,--exec EXECUTABLE Match processes with this command
in /proc/PID/{exe,cmdline}
-p,--pidfile FILE Match a process with PID from the file
All specified conditions must match
-S only:
-x,--exec EXECUTABLE Program to run
-a,--startas NAME Zeroth argument
-b,--background Background
-N,--nicelevel N Change nice level
-c,--chuid USER[:[GRP]] Change to user/group
-m,--make-pidfile Write PID to the pidfile specified by -p
-K only:
-s,--signal SIG Signal to send
-t,--test Match only, exit with 0 if a process is found
Other:

```

```

-o,--oknodo Exit with status 0 if nothing is done
-v,--verbose Verbose
-q,--quiet Quiet

```

**stat**

```
stat [OPTIONS] FILE...
```

Display file (default) or filesystem status

```
-c fmt Use the specified format
-f Display filesystem status
-L Follow links
-t Display info in terse form
```

Valid format sequences for files:

```
%a Access rights in octal
%A Access rights in human readable form
%b Number of blocks allocated (see %B)
%B The size in bytes of each block reported by %b
%d Device number in decimal
%D Device number in hex
%f Raw mode in hex
%F File type
%g Group ID of owner
%G Group name of owner
%h Number of hard links
%i Inode number
%n File name
%N File name, with -> TARGET if symlink
%o I/O block size
%s Total size, in bytes
%t Major device type in hex
%T Minor device type in hex
%u User ID of owner
%U User name of owner
%x Time of last access
%X Time of last access as seconds since Epoch
%y Time of last modification
%Y Time of last modification as seconds since Epoch
%z Time of last change
%Z Time of last change as seconds since Epoch
```

Valid format sequences for file systems:

```
%a Free blocks available to non-superuser
%b Total data blocks in file system
%c Total file nodes in file system
%d Free file nodes in file system
%f Free blocks in file system
%i File System ID in hex
%l Maximum length of filenames
%n File name
%s Block size (for faster transfer)
%S Fundamental block size (for block counts)
%t Type in hex
%T Type in human readable form
```

### strings

```
strings [-afo] [-n LEN] [FILE]...
```

Display printable strings in a binary file

- a Scan whole file (default)
- f Precede strings with filenames
- n LEN At least LEN characters form a string (default 4)
- o Precede strings with decimal offsets

**stty**

stty [-a|g] [-F DEVICE] [SETTING]...

Without arguments, prints baud rate, line discipline, and deviations from stty sane

- F DEVICE Open device instead of stdin
- a Print all current settings in human-readable form
- g Print in stty-readable form
- [SETTING] See manpage

**swapoff**

swapoff [-a] [DEVICE]

Stop swapping on DEVICE

- a Stop swapping on all swap devices

**swapon**

swapon [-a] [DEVICE]

Start swapping on DEVICE

- a Start swapping on all swap devices

**switch\_root**

switch\_root [-c /dev/console] NEW\_ROOT NEW\_INIT [ARGS]

Free initramfs and switch to another root fs:

chroot to NEW\_ROOT, delete all in /, move NEW\_ROOT to /, execute NEW\_INIT. PID must be 1. NEW\_ROOT must be a mountpoint.

- c DEV Reopen stdio to DEV after switch

**sync**

sync

Write all buffered blocks to disk

**sysctl**

sysctl [OPTIONS] [KEY[=VALUE]]...

Show/set kernel parameters

- e Don't warn about unknown keys
- n Don't show key names
- a Show all values
- w Set values
- p FILE Set values from FILE (default /etc/sysctl.conf)
- q Set values silently

**syslogd**

syslogd [OPTIONS]

System logging utility (this version of syslogd ignores /etc/syslog.conf)

```

-n Run in foreground
-O FILE Log to FILE (default:/var/log/messages)
-l N Log only messages more urgent than prio N (1-8)
-S Smaller output
-R HOST[:PORT] Log to HOST:PORT (default PORT:514)
-L Log locally and via network (default is network only if -R)
-C[size_kb] Log to shared mem buffer (use logread to read it)

```

**tac** tac [FILE]...

Concatenate FILES and print them in reverse

**tail** tail [OPTIONS] [FILE]...

Print last 10 lines of each FILE (or stdin) to stdout. With more than one FILE, precede each with a filename header.

```

-f Print data as file grows
-s SECONDS Wait SECONDS between reads with -f
-n N[kbm] Print last N lines
-n +N[kbm] Start on Nth line and print the rest
-c [+]N[kbm] Print last N bytes
-q Never print headers
-v Always print headers

```

N may be suffixed by k (x1024), b (x512), or m (x1024<sup>2</sup>).

**tar** tar [-cxtZzJahmvO] [-f TARFILE] [-C DIR] [FILE]...

Create, extract, or list files from a tar file

Operation:

```

c Create
x Extract
t List
f Name of TARFILE ('-' for stdin/out)
C Change to DIR before operation
v Verbose
Z (De)compress using compress
z (De)compress using gzip
J (De)compress using xz
j (De)compress using bzip2
a (De)compress using lzma
O Extract to stdout
h Follow symlinks
m Don't restore mtime

```

**taskset**

taskset [-p] [MASK] [PID | PROG ARGS]

Set or get CPU affinity

```

-p Operate on an existing PID

```

**tee** tee [-ai] [FILE]...

Copy stdin to each FILE, and also to stdout

```

-a Append to the given FILES, don't overwrite
-i Ignore interrupt signals (SIGINT)

```

**telnet**

telnet [-a] [-l USER] HOST [PORT]

Connect to telnet server

- a Automatic login with \$USER variable
- l USER Automatic login as USER

**test** test EXPRESSION ]

Check file types, compare values etc. Return a 0/1 exit code depending on logical value of EXPRESSION

**tftp**

tftp [OPTIONS] HOST [PORT]

Transfer a file from/to tftp server

- l FILE Local FILE
- r FILE Remote FILE
- g Get file
- p Put file
- b SIZE Transfer blocks of SIZE octets

**time**

time [-v] PROG ARGS

Run PROG, display resource usage when it exits

- v Verbose

**timeout**

timeout [-t SECS] [-s SIG] PROG ARGS

Runs PROG. Sends SIG to it if it is not gone in SECS seconds. Defaults: SECS: 10, SIG: TERM.

**top** top [-b] [-nCOUNT] [-dSECONDS]

Provide a view of process activity in real time. Read the status of all processes from /proc each SECONDS and display a screenful of them. Keys:

```
N/M/P/T: sort by pid/mem/cpu/time
R: reverse sort
H: toggle threads
Q, ^C: exit
```

Options:

- b Batch mode
- n N Exit after N iterations
- d N Delay between updates

**touch**

touch [-c] [-d DATE] [-t DATE] [-r FILE] FILE...

Update the last-modified date on the given FILE[s]

- c Don't create files
- h Don't follow links
- d DT Date/time to use
- t DT Date/time to use
- r FILE Use FILE's date/time

**tr** tr [-cds] STRING1 [STRING2]

Translate, squeeze, or delete characters from stdin, writing to stdout

- c Take complement of STRING1
- d Delete input characters coded STRING1
- s Squeeze multiple output characters of STRING2 into one character

**traceroute**

traceroute [-46FIldnrV] [-f 1ST\_TTL] [-m MAXTTL] [-p PORT] [-q PROBES] [-s SRC\_IP] [-t TOS] [-w WAIT\_SEC] [-g GATEWAY] [-i IFACE] [-z PAUSE\_MSEC] HOST [BYTES]

Trace the route to HOST

- 4,-6 Force IP or IPv6 name resolution
- F Set the don't fragment bit
- I Use ICMP ECHO instead of UDP datagrams
- l Display the TTL value of the returned packet
- d Set SO\_DEBUG options to socket
- n Print numeric addresses
- r Bypass routing tables, send directly to HOST
- v Verbose
- m Max time-to-live (max number of hops)
- p Base UDP port number used in probes (default 33434)
- q Number of probes per TTL (default 3)
- s IP address to use as the source address
- t Type-of-service in probe packets (default 0)
- w Time in seconds to wait for a response (default 3)
- g Loose source route gateway (8 max)

**traceroute6**

traceroute6 [-dnrv] [-m MAXTTL] [-p PORT] [-q PROBES] [-s SRC\_IP] [-t TOS] [-w WAIT\_SEC] [-i IFACE] HOST [BYTES]

Trace the route to HOST

- d Set SO\_DEBUG options to socket
- n Print numeric addresses
- r Bypass routing tables, send directly to HOST
- v Verbose
- m Max time-to-live (max number of hops)
- p Base UDP port number used in probes (default is 33434)
- q Number of probes per TTL (default 3)
- s IP address to use as the source address
- t Type-of-service in probe packets (default 0)
- w Time in seconds to wait for a response (default 3)

**true**

true

Return an exit code of TRUE \fIs0(0)

**tty** tty

Print file name of stdin's terminal

- s Print nothing, only return exit status

**udhcp**

udhcp [-fbqaRB] [-t N] [-T SEC] [-A SEC/-n] [-i IFACE] [-s PROG] [-p PIDFILE] [-oC] [-r IP] [-V VENDOR] [-F NAME] [-x OPT:VAL]... [-O OPT]...

```

-i,--interface IFACE Interface to use (default eth0)
-s,--script PROG Run PROG at DHCP events (default /etc/udhcpc/default.script)
-p,--pidfile FILE Create pidfile
-B,--broadcast Request broadcast replies
-t,--retries N Send up to N discover packets (default 3)
-T,--timeout SEC Pause between packets (default 3)
-A,--tryagain SEC Wait if lease is not obtained (default 20)
-n,--now Exit if lease is not obtained
-q,--quit Exit after obtaining lease
-R,--release Release IP on exit
-f,--foreground Run in foreground
-b,--background Background if lease is not obtained
-S,--syslog Log to syslog too
-a,--arping Use arping to validate offered address
-r,--request IP Request this IP address
-o,--no-default-options Don't request any options (unless -O is given)
-O,--request-option OPT Request option OPT from server (cumulative)
-x OPT:VAL Include option OPT in sent packets (cumulative)
Examples of string, numeric, and hex byte opts:
-x hostname:bbox - option 12
-x lease:3600 - option 51 (lease time)
-x 0x3d:0100BEEFC0FFEE - option 61 (client id)
-F,--fqdn NAME Ask server to update DNS mapping for NAME
-V,--vendorclass VENDOR Vendor identifier (default 'udhcp VERSION')
-C,--clientid-none Don't send MAC as client identifier
Signals:

```

```

USR1 Renew lease
USR2 Release lease

```

**udhcpd**

```
udhcpd [-fS] [-I ADDR] [CONFFILE]
```

DHCP server

```

-f Run in foreground
-S Log to syslog too
-I ADDR Local address

```

**umount**

```
umount [OPTIONS] FILESYSTEM|DIRECTORY
```

Unmount file systems

```

-a Unmount all file systems
-r Try to remount devices as read-only if mount is busy
-l Lazy umount (detach filesystem)
-f Force umount (i.e., unreachable NFS server)
-D Don't free loop device even if it has been used

```

**uname**

```
uname [-amnrspv]
```

Print system information



- a Print all
- m The machine (hardware) type
- n Hostname
- r OS release
- s OS name (default)
- p Processor type
- v OS version

**uncompress**

uncompress [-cf] [FILE]...

Decompress .Z file[s]

- c Write to stdout
- f Overwrite

**unexpand**

unexpand [-fa][-t N] [FILE]...

Convert spaces to tabs, writing to stdout

- a, --all Convert all blanks
- f, --first-only Convert only leading blanks
- t, --tabs=N Tabstops every N chars

**uniq**

uniq [-cdu][-f,s,w N] [INPUT [OUTPUT]]

Discard duplicate lines

- c Prefix lines by the number of occurrences
- d Only print duplicate lines
- u Only print unique lines
- f N Skip first N fields
- s N Skip first N chars (after any skipped fields)
- w N Compare N characters in line

**unix2dos**

unix2dos [-ud] [FILE]

Convert FILE in-place from Unix to DOS format. When no file is given, use stdin/stdout.

- u dos2unix
- d unix2dos

**unlzma**

unlzma [-cf] [FILE]...

Decompress FILE (or stdin)

- c Write to stdout
- f Force

**unlzop**

unlzop [-cfvCF] [FILE]...

- c Write to stdout
- f Force
- v Verbose
- F Don't store or verify checksum

**unxz**

unxz [-cf] [FILE]...

Decompress FILE (or stdin)

```
-c Write to stdout
-f Force
```

**unzip**

```
unzip [-lnopq] FILE[.zip] [FILE]... [-x FILE...] [-d DIR]
```

Extract FILEs from ZIP archive

```
-l List contents (with -q for short form)
-n Never overwrite files (default: ask)
-o Overwrite
-p Print to stdout
-q Quiet
-x FILE Exclude FILEs
-d DIR Extract into DIR
```

**uptime**

```
uptime
```

Display the time since the last boot

**usleep**

```
usleep N
```

Pause for N microseconds

**uudecode**

```
uudecode [-o OUTFILE] [INFILE]
```

Uudecode a file Finds OUTFILE in uuencoded source unless -o is given

**uuencode**

```
uuencode [-m] [FILE] STORED_FILENAME
```

Uuencode FILE (or stdin) to stdout

```
-m Use base64 encoding per RFC1521
```

**vconfig**

```
vconfig COMMAND [OPTIONS]
```

Create and remove virtual ethernet devices

```
add IFACE VLAN_ID
rem VLAN_NAME
set_flag IFACE 0|1 VLAN_QOS
set_egress_map VLAN_NAME SKB_PRIO VLAN_QOS
set_ingress_map VLAN_NAME SKB_PRIO VLAN_QOS
set_name_type NAME_TYPE
```

**vi** vi [OPTIONS] [FILE]...

Edit FILE

```
-c CMD Initial command to run ($EXINIT also available)
-R Read-only
-H List available features
```

**watch**

```
watch [-n SEC] [-t] PROG ARGS
```

Run PROG periodically

```
-n Loop period in seconds (default 2)
-t Don't print header
```

**watchdog**

watchdog [-t N[ms]] [-T N[ms]] [-F] DEV

Periodically write to watchdog device DEV

- T N Reboot after N seconds if not reset (default 60)
- t N Reset every N seconds (default 30)
- F Run in foreground

Use 500ms to specify period in milliseconds

**wc** wc [-cmlwL] [FILE]...

Count lines, words, and bytes for each FILE (or stdin)

- c Count bytes
- m Count characters
- l Count newlines
- w Count words
- L Print longest line length

**wget**

wget [-c|--continue] [-s|--spider] [-q|--quiet] [-O|--output-document FILE] [--header 'header: value']  
[-Y|--proxy on/off] [-P DIR] [-U|--user-agent AGENT] URL...

Retrieve files via HTTP or FTP

- s Spider mode - only check file existence
- c Continue retrieval of aborted transfer
- q Quiet
- P DIR Save to DIR (default .)
- O FILE Save to FILE ('-' for stdout)
- U STR Use STR for User-Agent header
- Y Use proxy ('on' or 'off')

**which**

which [COMMAND]...

Locate a COMMAND

**who**

who [-a]

Show who is logged on

- a Show all
- H Print column headers

**whoami**

whoami

Print the user name associated with the current effective user id

**xargs**

xargs [OPTIONS] [PROG ARGS]

Run PROG on every item given by stdin

```

-p Ask user whether to run each command
-r Don't run command if input is empty
-0 Input is separated by NUL characters
-t Print the command on stderr before execution
-e[STR] STR stops input processing
-n N Pass no more than N args to PROG
-s N Pass command line of no more than N bytes
-x Exit if size is exceeded

```

**xz** xz -d [-cf] [FILE]...

Decompress FILE (or stdin)

```

-d Decompress
-c Write to stdout
-f Force

```

**xzcat**

xzcat [FILE]...

Decompress to stdout

**yes** yes [STRING]

Repeatedly output a line with STRING, or 'y'

**zcat**

zcat [FILE]...

Decompress to stdout

## LIBC NSS

GNU Libc (glibc) uses the Name Service Switch (NSS) to configure the behavior of the C library for the local environment, and to configure how it reads system data, such as passwords and group information. This is implemented using an `/etc/nsswitch.conf` configuration file, and using one or more of the `/lib/libnss_*` libraries. BusyBox tries to avoid using any libc calls that make use of NSS. Some applets however, such as `login` and `su`, will use libc functions that require NSS.

If you enable `CONFIG_USE_BB_PWD_GRP`, BusyBox will use internal functions to directly access the `/etc/passwd`, `/etc/group`, and `/etc/shadow` files without using NSS. This may allow you to run your system without the need for installing any of the NSS configuration files and libraries.

When used with glibc, the BusyBox 'networking' applets will similarly require that you install at least some of the glibc NSS stuff (in particular, `/etc/nsswitch.conf`, `/lib/libnss_dns*`, `/lib/libnss_files*`, and `/lib/libresolv*`).

Shameless Plug: As an alternative, one could use a C library such as uClibc. In addition to making your system significantly smaller, uClibc does not require the use of any NSS support files or libraries.

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## AUTHORS

The following people have contributed code to BusyBox whether they know it or not. If you have written code included in BusyBox, you should probably be listed here so you can obtain your bit of eternal glory. If you should be listed here, or the description of what you have done needs more detail, or is incorrect, please send in an update.

Emanuele Aina <emanuele.aina@tiscali.it> run-parts

Erik Andersen <andersen@codepoet.org>

Tons of new stuff, major rewrite of most of the core apps, tons of new apps as noted in header files. Lots of tedious effort writing these boring docs that nobody is going to actually read.

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rpm2cpio, unzip, get\_header\_cpio, read\_gz interface, rpm

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more(v2), makedevs, dutmp, modularization, auto links file, various fixes, Linux Router Project maintenance

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ipcalc

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tftp client insmod powerpc support

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pristine source directory compilation, lots of patches and fixes.

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httpd

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Sysklogd (single threaded syslogd, IPC Circular buffer support, logread), various fixes.

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cp\_mv.c, the test suite, various fixes to utility.c, &c.

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mktemp.c

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documentation, bugfixes, test suite

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ipcalc, Red Hat equivalence

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tr

Glenn McGrath <bug1@iinet.net.au>

Common unarchiving code and unarchiving applets, ifupdown, ftpgetput, nameif, sed, patch, fold, install, uudecode.  
Various bugfixes, review and apply numerous patches.

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cat, head, mkfifo, mknod, rmdir, sleep, tee, tty, uniq, usleep, wc, yes, mesg, vconfig, make\_directory, parse\_mode, dirname, mode\_string, get\_last\_path\_component, simplify\_path, and a number trivial libbb routines

also bug fixes, partial rewrites, and size optimizations in ash, basename, cal, cmp, cp, df, du, echo, env, ln, logname, md5sum, mkdir, mv, realpath, rm, sort, tail, touch, uname, watch, arith, human\_readable, interface, dntmp, ifconfig, route

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cmdedit; xargs(current), httpd(current);  
ports: ash, crond, fdisk, inetd, stty, traceroute, top;  
locale, various fixes  
and irreconcilable critic of everything not perfect.

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Original author of BusyBox in 1995, 1996. Some of his code can still be found hiding here and there...

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reset, tons and tons of bug reports and patches.

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wget - Contributed by permission of Covad Communications

Pavel Roskin <proski@gnu.org>

Lots of bugs fixes and patches.

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Remote logging feature for syslogd

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mkswap, fsck.minix, mkfs.minix

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grep, sed, cut, xargs(previous),  
style-guide, new-applet-HOWTO, bug fixes, etc.

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gzip, mini-netcat(nc)

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tarcat (since removed), loadkmap, various fixes, Debian maintenance

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devfsd and size optimizations in strings, openvt and dealloctv.

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initial e2fsprogs, printenv, setarch, sum, misc  
Jie Zhang <jie.zhang@analog.com>  
fixed two bugs in msh and hush (exitcode of killed processes)