

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, arch, arp, arping, ash, awk, basename,
bc, blkdiscard, blockdev, brctl, bunzip2, busybox, bzip2,
cal, cat, chgrp, chmod, chown, chpasswd, chroot, chvt, clear, cmp,
cp, cpio, crond, crontab, ctttyhack, cut, date, dc, dd, dealloct,
depmod, devmem, df, diff, dirname, dmesg, dnsdomainname, dos2unix,
dpkg, dpkg-deb, du, dumpkmap, dumpleases, echo, ed, egrep, env,
expand, expr, factor, falloct, false, fatattr, fdisk, fgrep, find,
fold, free, freeramdisk, fsfreeze, fstrim, ftpget, ftpput, getopt,
getty, grep, groups, gunzip, gzip, halt, head, hexdump, hostid,
hostname, httpd, hwclock, i2cdetect, i2cdump, i2cget, i2cset, id,
ifconfig, ifdown, ifup, init, insmod, ionice, ip, ipcalc, ipneigh,
kill, killall, klogd, last, less, link, linux32, linux64, linuxrc,
ln, loadfont, loadkmap, logger, login, logname, logread, losetup,
ls, lsmod, lsscsi, lzcat, lzma, lzop, md5sum, mdev, microcom, mkdir,
mkdosfs, mke2fs, mkfifo, mknod, mkpasswd, mkswap, mktemp, modinfo,
modprobe, more, mount, mt, mv, nameif, nc, netstat, nl, nologin,
nproc, nsenter, nslookup, nuke, od, openvt, partprobe, passwd,
paste, patch, pidof, ping, ping6, pivot_root, poweroff, printf, ps,
pwd, rdate, readlink, realpath, reboot, renice, reset, resume, rev,
rm, rmdir, rmmmod, route, rpm, rpm2cpio, run-init, run-parts, sed,
seq, setkeycodes, setpriv, setsid, sh, shasum, sha256sum,
sha512sum, shred, shuf, sleep, sort, ssl_client, start-stop-daemon,
stat, static-sh, strings, stty, su, sulogin, svc, svok, swapoff,
swapon, switch_root, sync, sysctl, syslogd, tac, tail, tar, taskset,
tc, tee, telnet, telnetd, test, tftp, time, timeout, top, touch, tr,
traceroute, traceroute6, true, truncate, tty, tuncctl, ubirename,
udhcpd, udhcpc, uevent, umount, uname, uncompress, unexpand, uniq,
unix2dos, unlink, unlzma, unshare, unxz, unzip, uptime, usleep,
uudecode, uuencode, vconfig, vi, w, watch, watchdog, wc, wget,
which, who, whoami, xargs, xxd, 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 or set kernel time variables. See **adjtimex** (2)

```

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

```

ar 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

```

arch

arch

Print system architecture

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 [-fqbdUA] [-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          Exit with 1 if DST_IP replies
-U          Unsolicited ARP mode, update your neighbors
-A          ARP answer mode, update your neighbors
-c N        Stop after sending N ARP requests
-w TIMEOUT  Seconds to wait for ARP reply
-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] / -s [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

bc bc [-sqlw] FILE...

Arbitrary precision calculator

-q Quiet
 -l Load standard math library
 -s Be POSIX compatible
 -w Warn if extensions are used

\$BC_LINE_LENGTH changes output width

blkdiscard

blkdiscard [-o OFS] [-l LEN] [-s] DEVICE

Discard sectors on DEVICE

-o OFS Byte offset into device
 -l LEN Number of bytes to discard
 -s Perform a secure discard

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 [-cfk] [FILE]...

Decompress FILEs (or stdin)

```

-c      Write to stdout
-f      Force
-k      Keep input files

```

bzcat

bzcat [FILE]...

Decompress to stdout

bzip2

bzip2 [OPTIONS] [FILE]...

Compress FILES (or stdin) with bzip2 algorithm

```

-1..9   Compression level
-d      Decompress
-t      Test file integrity
-c      Write to stdout
-f      Force
-k      Keep input files

```

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

Display a calendar

```

-j      Use julian dates
-y      Display the entire year

```

cat cat [-nbvteA] [FILE]...

Print FILES to stdout

```

-n      Number output lines
-b      Number nonempty lines
-v      Show nonprinting characters as ^x or M-x
-t      ...and tabs as ^I
-e      ...and end lines with $
-A      Same as -vte

```

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]... USER[:[GRP]] FILE...

Change the owner and/or group of each FILE to USER and/or GRP

```
-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
```

chpasswd

chpasswd [--md5|--encrypted|--crypt-method|--root]

Read user:password from stdin and update /etc/passwd

```
-e,--encrypted      Supplied passwords are in encrypted form
-m,--md5            Encrypt using md5, not des
-c,--crypt-method ALG  des,md5,sha256/512 (default sha256)
-R,--root DIR        Directory to chroot into
```

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
-T      Treat DEST as a normal file
-u      Copy only newer files
```

cpio

`cpio [-dmvu] [-F FILE] [-R USER[:GRP]] [-H newc] [-tio] [EXTR_FILE]...`

Extract (-i) or list (-t) files from a cpio archive, or take file list from stdin and create an archive (-o)

Main operation mode:

```
-t      List
-i      Extract EXTR_FILEs (or all)
-o      Create (requires -H newc)
```

Options:

```
-H newc Archive format
-d      Make leading directories
-m      Preserve mtime
-v      Verbose
-u      Overwrite
-F FILE Input (-t,-i,-p) or output (-o) file
-R USER[:GRP] Set owner of created files
-L      Dereference symlinks
-0      Input is separated by NULs
```

crond

`crond -fbS -l N -L LOGFILE -c DIR`

```
-f      Foreground
-b      Background (default)
-S      Log to syslog (default)
-l N    Set log level. Most verbose 0, default 8
-L FILE Log to FILE
-c DIR  Cron dir. Default:/var/spool/cron/crontabs
```

crontab

`crontab [-c DIR] [-u USER] [-ler][FILE]`

```
-c      Crontab directory
-u      User
-l      List crontab
-e      Edit crontab
-r      Delete crontab
FILE    Replace crontab by FILE ('-' : stdin)
```

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 [-x] [-eSCRIPT]... [-fFILE]... [FILE]...

Tiny RPN calculator. Operations: +, -, *, /, %, ~, ^, |, p – print top of the stack without popping f – print entire stack k – pop the value and set the precision i – pop the value and set input radix o – pop the value and set output radix Examples: dc -e'2 2 + p' -> 4, dc -e'8 8 * 2 2 + / p' -> 16

dd dd [if=FILE] [of=FILE] [ibs=N obs=N/bs=N] [count=N] [skip=N] [seek=N]
 [conv=notrunc|noerror|sync|fsync] [iflag=skip_bytes|fullblock] [oflag=seek_bytes]

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
iflag=skip_bytes skip=N is in bytes
iflag=fullblock Read full blocks
oflag=seek_bytes seek=N is in bytes
status=noxfer Suppress rate output
status=none  Suppress all output

```


N may be suffixed by c (1), w (2), b (512), kB (1000), k (1024), MB, M, GB, 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 [-PkmhTai] [-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)
-T Print filesystem type
-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
-r	Print raw message buffer

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

dpkg

dpkg [-ilCPru] [-F OPT] PACKAGE

Install, remove and manage Debian packages

-i,--install	Install the package
-l,--list	List of installed packages
--configure	Configure an unpackaged package
-P,--purge	Purge all files of a package
-r,--remove	Remove all but the configuration files for a package
--unpack	Unpack a package, but don't configure it
--force-depends	Ignore dependency problems
--force-confnew	Overwrite existing config files when installing
--force-confold	Keep old config files when installing

dpkg-deb

dpkg-deb [-cefxX] FILE [DIR]

Perform actions on Debian packages (.deb)

-c	List files
-f	Print control fields
-e	Extract control files to DIR (default: ./DEBIAN)
-x	Extract files to DIR (no default)
-X	Verbose -x

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] [-d] [-f LEASEFILE]

Display DHCP leases granted by udhcpd

```
-f,--file FILE    Lease file
-r,--remaining    Show remaining time
-a,--absolute     Show expiration time
-d,--decimal      Show time in seconds
```

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)
```

ed ed [FILE]

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          Don't convert tabs after non blanks
-t          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.

factor

factor [NUMBER]...

Print prime factors

fallocate

fallocate [-o OFS] -l LEN FILE

Preallocate space for FILE

-o OFS	Offset of range
-l LEN	Length of range

fatattr

fatattr [--rhsvda] FILE...

Change file attributes on FAT filesystem

-	Clear attributes
+	Set attributes
r	Read only
h	Hidden
s	System
v	Volume label
d	Directory
a	Archive

fdisk

fdisk [-ul] [-C CYLINDERS] [-H HEADS] [-S SECTORS] [-b SSZ] DISK

Change partition table

-u	Start and End are in sectors (instead of cylinders)
-l	Show partition table for each DISK, then exit
-b 2048	(for certain MO disks) use 2048-byte sectors
-C CYLINDERS	Set number of cylinders/heads/sectors
-H HEADS	Typically 255
-S SECTORS	Typically 63

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 <i>after</i> 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,s,p)
-executable	File is executable
-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
-exec CMD ARG +	Run CMD with {} replaced by list of file names
-quit	Exit

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

fsfreeze

fsfreeze **---**[un]freeze MOUNTPOINT

Flush and halt writes to MOUNTPOINT

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 previous transfer
-v	Verbose
-u USER	Username
-p PASS	Password
-P NUM	Port

ftpput

ftpput [OPTIONS] HOST [REMOTE_FILE] LOCAL_FILE

Upload a file to a FTP server

-v	Verbose
-u USER	Username
-p PASS	Password
-P NUM	Port number

getopt

getopt [OPTIONS] **---** OPTSTRING PARAMS

-a	Allow long options starting with single -
-l LOPT[,...]	Long options to recognize
-n PROGNAME	The name under which errors are reported
-o OPTSTRING	Short options to recognize
-q	No error messages on unrecognized options
-Q	No normal output
-s SHELL	Set shell quoting conventions
-T	Version test (exits with 4)
-u	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 [-cftk] [FILE]...

Decompress FILEs (or stdin)

```

-c          Write to stdout
-f          Force
-k          Keep input files
-t          Test file integrity

```

gzip

gzip [-cfkdt] [FILE]...

Compress FILEs (or stdin)

-d	Decompress
-t	Test file integrity
-c	Write to stdout
-f	Force
-k	Keep input files

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 (x1024²).

hexdump

hexdump [-bcCdefnosvx] [FILE]...

Display FILEs (or stdin) in a user specified format

-b	1-byte octal display
-c	1-byte character display
-d	2-byte decimal display
-o	2-byte octal display
-x	2-byte hex display
-C	hex+ASCII 16 bytes per line
-v	Show all (no dup folding)
-e FORMAT_STR	Example: '16/1 "%02x ""\n"'
-f FORMAT_FILE	
-n LENGTH	Show only first LENGTH bytes
-s OFFSET	Skip OFFSET bytes

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] [--systz] [--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
--systz    Set in-kernel timezone, correct system time
           if hardware clock is in local time
-u          Assume hardware clock is kept in UTC
--localtime Assume hardware clock is kept in local time
-f FILE    Use specified device (e.g. /dev/rtc2)

```

i2cdetect

```
i2cdetect -l | -F I2CBUS | [-ya] [-q|-r] I2CBUS [FIRST LAST]
```

Detect I2C chips

```

-l          List installed buses
-F BUS#    List functionalities on this bus
-y          Disable interactive mode
-a          Force scanning of non-regular addresses
-q          Use smbus quick write commands for probing (default)
-r          Use smbus read byte commands for probing
FIRST and LAST limit probing range

```

i2cdump

```
i2cdump [-fy] [-r FIRST-LAST] BUS ADDR [MODE]
```

Examine I2C registers

```

I2CBUS    I2C bus number
ADDRESS   0x03-0x77

```

MODE is:

```

b      Byte (default)
w      Word
W      Word on even register addresses
i      I2C block
s      SMBus block
c      Consecutive byte
Append p for SMBus PEC

-f      Force access
-y      Disable interactive mode
-r      Limit the number of registers being accessed

```

i2cget

```
i2cget [-fy] BUS CHIP-ADDRESS [DATA-ADDRESS [MODE]]
```

Read from I2C/SMBus chip registers

```

I2CBUS  I2C bus number
ADDRESS 0x03-0x77

```

MODE is:

```

b      Read byte data (default)
w      Read word data
c      Write byte/read byte
Append p for SMBus PEC

-f      Force access
-y      Disable interactive mode

```

i2cset

```
i2cset [-fy] [-m MASK] BUS CHIP-ADDRESS DATA-ADDRESS [VALUE] ... [MODE]
```

Set I2C registers

```

I2CBUS  I2C bus number
ADDRESS 0x03-0x77

```

MODE is:

```

c      Byte, no value
b      Byte data (default)
w      Word data
i      I2C block data
s      SMBus block data
Append p for SMBus PEC

-f      Force access
-y      Disable interactive mode
-r      Read back and compare the result
-m MASK Mask specifying which bits to write

```

```
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] ...

```

ifdown

ifdown [-anmvf] [-i FILE] IFACE...

```

-a      Deconfigure all interfaces
-i FILE Use FILE for interface definitions
-n      Print out what would happen, but don't do it
        (note: doesn't disable mappings)
-m      Don't run any mappings
-v      Print out what would happen before doing it
-f      Force deconfiguration

```

ifup

ifup [-anmvf] [-i FILE] IFACE...

```

-a      Configure all interfaces
-i FILE Use FILE instead of /etc/network/interfaces
-n      Print out what would happen, but don't do it
        (note: doesn't disable mappings)
-m      Don't run any mappings
-v      Print out what would happen before doing it
-f      Force configuration

```

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 kernel module

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|neigh|rule [ARGS]

OPTIONS := -f[amily] inet|inet6|link | -o[neline]

ip addr add|del IFADDR dev IFACE | show|flush [dev IFACE] [to PREFIX] ip route list|flush|add|del|change|append|replace|test ROUTE ip link set IFACE [up|down] [arp on|off] [multicast on|off] [promisc on|off] [mtu NUM] [name NAME] [qlen NUM] [address MAC] [master IFACE | nomaster] ip tunnel add|change|del|show [NAME] [mode ipip|gre|sit] [remote ADDR] [local ADDR] [ttl TTL] ip neigh show|flush [to PREFIX] [dev DEV] [nud STATE] ip rule [list] | add|del SELECTOR ACTION

ipcalc

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

Calculate and display network settings from IP address

-b Broadcast address
 -n Network address
 -m Default netmask for IP
 -p Prefix for IP/NETMASK
 -h Resolved host name
 -s No error messages

ipneigh

ipneigh show|flush [to PREFIX] [dev DEV] [nud STATE]

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]

Log kernel messages to syslog

-c N Print to console messages more urgent than prio N (1-8)
 -n Run in foreground

last

last

Show listing of the last users that logged into the system

less

less [-EFIMmNSRh~] [FILE]...

View FILE (or stdin) one screenful at a time

```

-E      Quit once the end of a file is reached
-F      Quit if entire file fits on first screen
-I      Ignore case in all searches
-M, -m  Display status line with line numbers
        and percentage through the file
-N      Prefix line number to each line
-S      Truncate long lines
-R      Remove color escape codes in input
-~      Suppress ~s displayed past EOF

```

link

link FILE LINK

Create hard LINK to FILE

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 HOST Host user came from (for network logins)
-p      Preserve environment

```

logname

logname

Print the name of the current user

logread

logread [-fF]

Show messages in syslogd's circular buffer

-f Output data as log grows
 -F Same as -f, but dump buffer first

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 [-lAaCxdLHRFplinshsXvctu] [-w WIDTH] [FILE]...

List directory contents

-l One column output
 -a Include entries which start with .
 -A Like -a, but exclude . and ..
 -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
 -lc List ctime
 -lu List atime
 --full-time List full date and time
 -h Human readable sizes (1K 243M 2G)
 --group-directories-first
 -S Sort by size
 -X Sort by extension
 -v Sort by version
 -t Sort by mtime
 -tc Sort by ctime
 -tu Sort by atime
 -r Reverse sort order
 -w N Format N columns wide
 --color[={always,never,auto}] Control coloring

lsmod

lsmod

List loaded kernel modules

lzcat

lzcat [FILE]...

Decompress to stdout

lzma

lzma -d [-cfk] [FILE]...

Decompress FILE (or stdin)

```

-d      Decompress
-c      Write to stdout
-f      Force
-k      Keep input files

```

lzop

lzop [-cfUvd123456789CF] [FILE]...

```

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

```

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 >/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

```

mkdosfs

mkdosfs [-v] [-n LABEL] BLOCKDEV [KBYTES]

Make a FAT32 filesystem

-v Verbose
-n LBL Volume label

mke2fs

mke2fs [-Fn] [-b BLK_SIZE] [-i INODE_RATIO] [-I INODE_SIZE] [-m RESERVED_PERCENT] [-L LABEL] BLOCKDEV [KBYTES]

-b BLK_SIZE Block size, bytes
-F Force
-i RATIO Max number of files is filesystem_size / RATIO
-I BYTES Inode size (min 128)
-L LBL Volume label
-m PERCENT Percent of blocks to reserve for admin
-n Dry run

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 MINOR must be omitted)

mkpasswd

mkpasswd [OPTIONS] [PASSWORD] [SALT]

Print **crypt**(3) hashed PASSWORD

-P, --password-fd N Read password from fd N
-m, --method TYPE des,md5,sha256/512 (default sha256)
-S, --salt SALT

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.XXXXXXX 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 [-adlpn0] [-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 OPT] 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
-t FSTYPE[,...] Filesystem type(s)
-T FILE  Read FILE instead of /etc/fstab
-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	Same as -r

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

nl nl [OPTIONS] [FILE]...

Write FILEs to standard output with line numbers added

-b STYLE	Which lines to number - a: all, t: nonempty, n: none
-i N	Line number increment
-s STRING	Use STRING as line number separator
-v N	Start from N
-w N	Width of line numbers

nologin

nologin

Politely refuse a login

nproc

nproc --all --ignore=N

Print number of available CPUs

--all	Number of installed CPUs
--ignore=N	Exclude N CPUs

nsenter

nsenter [OPTIONS] [PROG [ARGS]]

-t PID	Target process to get namespaces from
-m[FILE]	Enter mount namespace
-u[FILE]	Enter UTS namespace (hostname etc)
-i[FILE]	Enter System V IPC namespace
-n[FILE]	Enter network namespace
-p[FILE]	Enter pid namespace
-U[FILE]	Enter user namespace
-S UID	Set uid in entered namespace
-G GID	Set gid in entered namespace
--preserve-credentials	Don't touch uids or gids
-r[DIR]	Set root directory
-w[DIR]	Set working directory
-F	Don't fork before exec'ing PROG

nslookup

nslookup [-type=QUERY_TYPE] [-debug] HOST [DNS_SERVER]

Query DNS about HOST

QUERY_TYPE: soa,ns,a,aaaa,cname,mx,txt,ptr,any

nuke

nuke DIR...

Remove DIRs

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

partprobe

partprobe DEVICE...

Ask kernel to rescan partition table

passwd

passwd [OPTIONS] [USER]

Change USER's password (default: current user)

```
-a ALG    des,md5,sha256/512 (default sha256)
-d        Set password to ''
-l        Lock (disable) account
-u        Unlock (enable) account
```

paste

paste [OPTIONS] [FILE]...

Paste lines from each input file, separated with tab

```
-d LIST   Use delimiters from LIST, not tab
-s        Serial: one file at a time
```

patch

patch [OPTIONS] [ORIGFILE [PATCHFILE]]

```
-p N      Strip N leading components from file names
-i DIFF   Read DIFF instead of stdin
-R        Reverse patch
-N        Ignore already applied patches
-E        Remove output files if they become empty
--dry-run Don't actually change files
```

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)
-i SECS   Interval
-A        Ping as soon as reply is received
-t TTL    Set TTL
-I IFACE/IP Source interface or IP address
-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 display output at start
          and when finished
-p HEXBYTE Pattern to use for payload
```

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 SECS	Interval
-A	Ping as soon as reply is received
-I IFACE/IP	Source interface or IP address
-q	Quiet, only display output at start and when finished
-p HEXBYTE	Pattern to use for payload

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 [-s/-p] HOST

Set and print time from HOST using RFC 868

-s	Only set system time
-p	Only print 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] PRIORITY [[-p | -g | -u] ID...]...
```

Change scheduling priority of a running process

```

-n        Add PRIORITY to current nice value
           Without -n, nice value is set to PRIORITY
-p        Process ids (default)
-g        Process group ids
-u        Process user names

```

reset

```
reset
```

Reset the screen

resume

```
resume BLOCKDEV [OFFSET]
```

Restore system state from 'suspend-to-disk' data in BLOCKDEV

```
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        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[ilc] 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-init

run-init [-d CAP,CAP...] [-n] [-c CONSOLE_DEV] 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
-d CAPS Drop capabilities
-n      Dry run

```

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 [-i[SFX]] [-nrE] [-f FILE]... [-e CMD]... [FILE]... or: sed [-i[SFX]] [-nrE] 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 }...

Modify kernel's scancode-to-keycode map, allowing unusual keyboards to generate usable keycodes.

SCANCODE is either xx or e0xx (hexadecimal), KEYCODE is decimal.

setpriv

setpriv [OPTIONS] PROG [ARGS]

Run PROG with different privilege settings

-d,--dump Show current capabilities --nnp,--no-new-privs Ignore setuid/setgid bits and file capabilities --inh-caps CAP,CAP Set inheritable capabilities --ambient-caps CAP,CAP Set ambient capabilities

setsid

setsid [-c] PROG ARGS

Run PROG in a new session. PROG will have no controlling terminal and will not be affected by keyboard signals (^C etc).

-c Set controlling terminal to stdin

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

shred

shred FILE...

Overwrite/delete FILEs

-f Chmod to ensure writability
 -n N Overwrite N times (default 3)
 -z Final overwrite with zeros
 -u Remove file

shuf

shuf [-e|-i L-H] [-n NUM] [-o FILE] [-z] [FILE|ARG...]

Randomly permute lines


```

-e      Treat ARGs as lines
-i L-H  Treat numbers L-H as lines
-n NUM  Output at most NUM lines
-o FILE Write to FILE, not standard output
-z      End lines with zero byte, not newline

```

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 [-nrugMcszbdfiokt] [-o FILE] [-k start[.offset][opts][.end[.offset][opts]] [-t CHAR] [FILE]...

Sort lines of text

```

-o FILE Output to FILE
-c      Check whether input is sorted
-b      Ignore leading blanks
-f      Ignore case
-i      Ignore unprintable characters
-d      Dictionary order (blank or alphanumeric only)
-n      Sort numbers
-g      General numerical sort
-M      Sort month
-V      Sort version
-t CHAR Field separator
-k N[,M] Sort by Nth field
-r      Reverse sort order
-s      Stable (don't sort ties alphabetically)
-u      Suppress duplicate lines
-z      Lines are terminated by NUL, not newline

```

ssl_client

ssl_client [-e] -s FD [-r FD] [-n SNI]

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 USERNAME|UID Match only this user's processes
-n NAME          Match processes with NAME
                  in comm field in /proc/PID/stat
-x EXECUTABLE    Match processes with this command
                  command in /proc/PID/cmdline
-p FILE          Match a process with PID from FILE
All specified conditions must match

```

-S only:

```

-x EXECUTABLE    Program to run
-a NAME          Zeroth argument
-b              Background
-N N             Change nice level
-c USER[:[GRP]] Change user/group
-m              Write PID to pidfile specified by -p

```

-K only:

```

-s SIG      Signal to send
-t          Match only, exit with 0 if found
Other:

```

```

-o          Exit with status 0 if nothing is done
-v          Verbose
-q          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          Terse display

```

FMT sequences for files:

```

%a          Access rights in octal
%A          Access rights in human readable form
%b          Number of blocks allocated (see %B)
%B          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
%G          Group name
%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
%U          User name
%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

```

FMT sequences for file systems:

```
%a      Free blocks available to non-superuser
%b      Total data blocks
%c      Total file nodes
%d      Free file nodes
%f      Free blocks
%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 [-fo] [-t o/d/x] [-n LEN] [FILE]...

Display printable strings in a binary file

```
-f          Precede strings with filenames
-o          Precede strings with octal offsets
-t o/d/x   Precede strings with offsets in base 8/10/16
-n LEN     At least LEN characters form a string (default 4)
```

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
```

su su [-lmp] [-] [-s SH] [USER [SCRIPT ARGS / -c 'CMD' ARG0 ARGS]]

Run shell under USER (by default, root)

```
-, -l      Clear environment, go to home dir, run shell as login shell
-p, -m     Do not set new $HOME, $SHELL, $USER, $LOGNAME
-c CMD     Command to pass to 'sh -c'
-s SH      Shell to use instead of user's default
```

sulogin

sulogin [-t N] [TTY]

Single user login

```
-t N      Timeout
```

svc svc [--udopchaitkx] SERVICE_DIR...

Control services monitored by runsv supervisor

```
-u          If service is not running, start it; restart if it stops
-d          If service is running, send TERM+CONT signals; do not restart it
-o          Once: if service is not running, start it; do not restart it
-pchaitk    Send STOP, CONT, HUP, ALRM, INT, TERM, KILL signal to service
-x          Exit: runsv will exit as soon as the service is down
```

svok

svok SERVICE_DIR

Check whether runsv supervisor is running. Exit code is 0 if it does, 100 if it does not, 111 (with error message) if SERVICE_DIR does not exist.

swapoff

swapoff [-a] [DEVICE]

Stop swapping on DEVICE

-a Stop swapping on all swap devices

swapon

swapon [-a] [-e] [-d[POL]] [DEVICE]

Start swapping on DEVICE

-a Start swapping on all swap devices
 -d[POL] Discard blocks at swapon (POL=once),
 as freed (POL=pages), or both (POL omitted)
 -e Silently skip devices that do not exist

switch_root

switch_root [-c CONSOLE_DEV] 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 [-df] [FILE]...

Write all buffered blocks (in FILEs) to disk -d Avoid syncing metadata
 -f Sync filesystems underlying FILEs

sysctl

sysctl -p [-enq] [FILE...] / [-enqaw] [KEY[=VALUE]]...

Show/set kernel parameters

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

syslogd

syslogd [OPTIONS]

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

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

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
-c [+]N[kbm]  Print last N bytes
-n N[kbm]    Print last N lines
-n +N[kbm]   Start on Nth line and print the rest
-q          Never print headers
-s SECONDS   Wait SECONDS between reads with -f
-v          Always print headers
-F          Same as -f, but keep retrying
```

N may be suffixed by k (x1024), b (x512), or m (x1024^2).

tar tar c|x|t [-ZzJjahmvokO] [-f TARFILE] [-C DIR] [FILE]...

Create, extract, or list files from a tar file

```
c          Create
x          Extract
t          List
-f FILE    Name of TARFILE ('-' for stdin/out)
-C DIR     Change to DIR before operation
-v         Verbose
-O         Extract to stdout
-m         Don't restore mtime
-o         Don't restore user:group
-k         Don't replace existing files
-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
-h         Follow symlinks
```

taskset

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

Set or get CPU affinity

```
-p          Operate on an existing PID
```

tc tc OBJECT CMD [dev STRING]

OBJECT: qdisc|class|filter CMD: add|del|change|replace|show

```
qdisc [handle QHANDLE] [root|ingress|parent CLASSID] [[QDISC_KIND] [help|OPTIONS]]
      QDISC_KIND := [p|b]fifo|tb|prio|cbq|red|etc. qdisc show [dev STRING] [ingress] class
[CLASSID CLASSID] [root|parent CLASSID] [[QDISC_KIND] [help|OPTIONS]] ] class show [
dev STRING ] [root|parent CLASSID] filter [pref PRIO] [protocol PROTO] [root|CLASSID
CLASSID] [handle FILTERID] [[FILTER_TYPE] [help|OPTIONS]] filter show [dev STRING]
[root|parent CLASSID]
```

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
```

telnetd

```
telnetd [OPTIONS]
```

Handle incoming telnet connections

```
-l LOGIN      Exec LOGIN on connect
-f ISSUE_FILE Display ISSUE_FILE instead of /etc/issue
-K           Close connection as soon as login exits
              (normally wait until all programs close slave pty)
-p PORT      Port to listen on
-b ADDR[:PORT] Address to bind to
-F           Run in foreground
-i           Inetd mode
```

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 [-vpa] [-o FILE] PROG ARGS
```

Run PROG, display resource usage when it exits

```
-v      Verbose
-p      POSIX output format
-f FMT  Custom format
-o FILE Write result to FILE
-a      Append (else overwrite)
```

timeout

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

Runs PROG. Sends SIG to it if it is not gone in SECS seconds. Default 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 [-46FIlnrv] [-f 1ST_TTL] [-m MAXTTL] [-q PROBES] [-p PORT] [-t TOS] [-w WAIT_SEC] [-s SRC_IP] [-i IFACE] [-z PAUSE_MSEC] HOST [BYTES]`

Trace the route to HOST

```

-4,-6   Force IP or IPv6 name resolution
-F      Set don't fragment bit
-l      Display TTL value of the returned packet
-n      Print numeric addresses
-r      Bypass routing tables, send directly to HOST
-v      Verbose
-f N    First number of hops (default 1)
-m N    Max number of hops
-q N    Number of probes per hop (default 3)
-p N    Base UDP port number used in probes
        (default 33434)
-s IP   Source address
-i IFACE Source interface
-t N    Type-of-service in probe packets (default 0)
-w SEC  Time to wait for a response (default 3)
-g IP   Loose source route gateway (8 max)

```

traceroute6

`traceroute6 [-nrv] [-m MAXTTL] [-q PROBES] [-p PORT] [-t TOS] [-w WAIT_SEC] [-s SRC_IP] [-i IFACE] HOST [BYTES]`

Trace the route to HOST

```

-n      Print numeric addresses
-r      Bypass routing tables, send directly to HOST
-v      Verbose
-m N    Max number of hops
-q N    Number of probes per hop (default 3)
-p N    Base UDP port number used in probes
        (default 33434)
-s IP   Source address
-i IFACE Source interface
-t N    Type-of-service in probe packets (default 0)
-w SEC  Time wait for a response (default 3)

```

truncate

`truncate [-c] -s SIZE FILE...`

Truncate FILES to the given size

```
-c          Do not create files
-s SIZE    Truncate to SIZE
```

tty tty

Print file name of stdin's terminal

```
-s          Print nothing, only return exit status
```

tunctl

```
tunctl [-f device] ([-t name] | -d name)
```

Create or delete tun interfaces

```
-f name          tun device (/dev/net/tun)
-t name          Create iface 'name'
-d name          Delete iface 'name'
```

ubirename

```
ubirename UBI_DEVICE OLD_VOLNAME NEW_VOLNAME [OLD2 NEW2]...
```

Rename UBI volumes on UBI_DEVICE

udhcpc

```
udhcpc [-fbqRB] [-a[MSEC]] [-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 IFACE          Interface to use (default eth0)
-s PROG          Run PROG at DHCP events (default /etc/udhcpc/default.scri
-p FILE          Create pidfile
-B              Request broadcast replies
-t N             Send up to N discover packets (default 3)
-T SEC          Pause between packets (default 3)
-A SEC          Wait if lease is not obtained (default 20)
-n             Exit if lease is not obtained
-q             Exit after obtaining lease
-R             Release IP on exit
-f             Run in foreground
-b             Background if lease is not obtained
-S             Log to syslog too
-a[MSEC]        Validate offered address with ARP ping
-r IP           Request this IP address
-o             Don't request any options (unless -O is given)
-O 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)
-x 14:"dumpfile" - option 14 (shell-quoted)
-F NAME        Ask server to update DNS mapping for NAME
-V VENDOR      Vendor identifier (default 'udhcp VERSION')
-C            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
 -a MSEC Timeout for ARP ping (default 2000)

uevent

uevent [PROG [ARGS]]

uevent runs PROG for every netlink notification. PROG's environment contains data passed from the kernel. Typical usage (daemon for dynamic device node creation): # uevent mdev & mdev -s

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 unmount (detach filesystem)
 -f Force umount (i.e., unreachable NFS server)
 -d Free loop device if it has been used
 -t FSTYPE[,...] Unmount only these filesystem type(s)

uname

uname [-amnrspvio]

Print system information

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

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 Convert all blanks
 -f Convert only leading blanks
 -t 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
-i      Ignore case
-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

```

unlink

```
unlink FILE
```

Delete FILE by calling **unlink()**

unlzma

```
unlzma [-cfk] [FILE]...
```

Decompress FILE (or stdin)

```

-c      Write to stdout
-f      Force
-k      Keep input files

```

unshare

```
unshare [OPTIONS] [PROG [ARGS]]
```

```

-m,--mount[=FILE]      Unshare mount namespace
-u,--uts[=FILE]         Unshare UTS namespace (hostname etc.)
-i,--ipc[=FILE]         Unshare System V IPC namespace
-n,--net[=FILE]         Unshare network namespace
-p,--pid[=FILE]         Unshare PID namespace
-U,--user[=FILE]        Unshare user namespace
-f,--fork               Fork before execing PROG
-r,--map-root-user      Map current user to root (implies -U)
--mount-proc[=DIR]      Mount /proc filesystem first (implies -m)
--propagation slave|shared|private|unchanged
                        Modify mount propagation in mount namespace
--setgroups allow|deny  Control the setgroups syscall in user namespaces

```

unxz

```
unxz [-cfk] [FILE]...
```

Decompress FILE (or stdin)

```

-c      Write to stdout
-f      Force
-k      Keep input files

```

unzip

```
unzip [-lnojq] 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
-j      Do not restore paths
-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

```

```
w w
```

Show who is logged on

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] [--spider] [-q|--quiet] [-O|--output-document FILE]      [--header
'header: value'] [-Y|--proxy on/off] [-P DIR]                                [--no-check-certificate]
[-S|--server-response] [-U|--user-agent AGENT] URL...
```

Retrieve files via HTTP or FTP

```
--spider      Only check URL existence: $? is 0 if exists
--no-check-certificate Don't validate the server's certificate
-c            Continue retrieval of aborted transfer
-q            Quiet
-P DIR        Save to DIR (default .)
-S            Show server response
-O FILE       Save to FILE ('-' for stdout)
-U STR        Use STR for User-Agent header
-Y on/off     Use proxy
```

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 NULs
-a FILE Read from FILE instead of stdin
-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
-I STR  Replace STR within PROG ARGS with input line
-P N    Run up to N PROGs in parallel
-x      Exit if size is exceeded

```

xxd

xxd [OPTIONS] [FILE]

Hex dump FILE (or stdin)

```

-g N      Bytes per group
-c N      Bytes per line
-p        Show only hex bytes, assumes -c30
-l LENGTH Show only first LENGTH bytes
-s OFFSET Skip OFFSET bytes

```

xz xz -d [-cfk] [FILE]...

Decompress FILE (or stdin)

```

-d      Decompress
-c      Write to stdout
-f      Force
-k      Keep input files

```

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.

MAINTAINER

Denis Vlasenko <vda.linux@googlemail.com>

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.

Laurence Anderson <l.d.anderson@warwick.ac.uk>

rpm2cpio, unzip, get_header_cpio, read_gz interface, rpm

Jeff Angelski <jeff@theptgroup.com>

ftpput, ftpget

Edward Betts <edward@debian.org>

expr, hostid, logname, whoami

John Beppu <beppu@codepoet.org>

du, nslookup, sort

Brian Candler <B.Candler@pobox.com>

tiny-ls(ls)

Randolph Chung <tausq@debian.org>

fbset, ping, hostname

Dave Cinege <dcinege@psychosis.com>

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

Jordan Crouse <jordan@cosmicpenguin.net>

ipcalc

Magnus Damm <damm@opensource.se>

tftp client insmod powerpc support

Larry Doolittle <ldoolitt@recycle.lbl.gov>

pristine source directory compilation, lots of patches and fixes.

Glenn Engel <glenne@engel.org>

httpd

Gennady Feldman <gfeldman@gena01.com>

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

Karl M. Hegbloom <karlheg@debian.org>

cp_mv.c, the test suite, various fixes to utility.c, &c.

Daniel Jacobowitz <dan@debian.org>

mktemp.c

Matt Kraai <kraai@alumni.cmu.edu>

documentation, bugfixes, test suite

Stephan Linz <linz@li-pro.net>

ipcalc, Red Hat equivalence

John Lombardo <john@deltanet.com>

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.

Manuel Novoa III <mjn3@codepoet.org>

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, dutmp, ifconfig, route

Vladimir Oleynik <dzo@simtreas.ru>

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

Bruce Perens <bruce@pixar.com>

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

Tim Riker <Tim@Rikers.org>

bug fixes, member of fan club

Kent Robotti <robotti@metconnect.com>

reset, tons and tons of bug reports and patches.

Chip Rosenthal <chip@unicom.com>, <crosenth@covad.com>

wget - Contributed by permission of Covad Communications

Pavel Roskin <proski@gnu.org>

Lots of bugs fixes and patches.

Gyepi Sam <gyepi@praxis-sw.com>

Remote logging feature for syslogd

Linus Torvalds <torvalds@transmeta.com>

mkswap, fsck.minix, mkfs.minix

Mark Whitley <markw@codepoet.org>

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

Charles P. Wright <cpwright@villagenet.com>

gzip, mini-netcat(nc)

Enrique Zanardi <ezanardi@ull.es>

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

Tito Ragusa <farmatito@tiscali.it>

devfsd and size optimizations in strings, openvt and dealloct.

Paul Fox <pgf@foxharp.boston.ma.us>

vi editing mode for ash, various other patches/fixes

Roberto A. Foglietta <me@roberto.foglietta.name>

port: dnssd

Bernhard Reutner-Fischer <rep.dot.nop@gmail.com>

misc

Mike Frysinger <vapier@gentoo.org>

initial e2fsprogs, printenv, setarch, sum, misc

Jie Zhang <jie.zhang@analog.com>

fixed two bugs in msh and hush (exitcode of killed processes)