# tar Archive files

**Files** on disk → `tar -c` → **Archive** .tar → `-z / -j / -J` → **Compressed** .tar.gz .bz2 .xz → `tar -x` → **Files** restored

## CONCEPTS

Exactly one mode letter is needed: c create, x extract, t list. -f <file> names the archive and must be followed by it.

Reading an archive, GNU tar detects the compression itself, so -xf works for .gz, .bz2 and .xz alike.

Archives store the paths you gave. Pack with relative paths and use -C to control where things land.

This sheet covers GNU tar 1.35. macOS and BSD ship bsdtar, which lacks some options here (--sort, --one-top-level, --exclude-vcs-ignores).

## CREATE

`tar -cf <out.tar> <path>...`
Create an archive

`tar -czf <out.tar.gz> <path>...`
Create gzip archive

`tar -cjf <out.tar.bz2> <path>...`
Create bzip2 archive

## CREATE (cont.)

`tar -cJf <out.tar.xz> <path>...`
Create xz archive

`tar --zstd -cf <out.tar.zst> <path>...`
Create zstd archive

`tar -czvf <out.tar.gz> <path>`
Create, list files as added

`tar -czf <out.tar.gz> -C <dir> .`
Pack a dir's contents, no prefix

`tar -rf <out.tar> <path>`
Append to an uncompressed archive

`tar -cf - <path> | gzip > <out.tar.gz>`
Write the archive to stdout

## EXTRACT

`tar -xf <archive>`
Extract everything

`tar -xf <archive> -C <dir>`
Extract into a directory

`tar -xzf <archive>`
Extract, forcing gzip

`tar -xf <archive> <member>...`
Extract named members only

## EXTRACT (cont.)

`tar -xf <archive> --wildcards '*.conf'`
Extract members by pattern

`tar -xf <archive> --strip-components=1`
Drop leading path levels

`tar -xvf <archive>`
Extract and show names

`tar -xf <archive> --keep-old-files`
Never overwrite existing files

`tar -xf <archive> --one-top-level`
Extract into a dir named after archive

`tar -xpf <archive>`
Keep permissions as stored

`tar -xf <archive> -O <member>`
Print one member to stdout

## LIST AND CHECK

`tar -tf <archive>`
List member names

`tar -tvf <archive>`
List with size, owner, date

`tar -tf <archive> | grep <pat>`
Find a file in an archive

## LIST AND CHECK (cont.)

`tar -df <archive>`
Compare archive with disk

`tar -tf <archive> | head`
Peek at the first entries

## SELECT FILES

`--exclude=<pattern>`
Skip matching names

`--exclude-from=<file>`
Read exclude patterns from file

`--exclude-vcs`
Skip .git, .svn and similar

`--exclude-vcs-ignores`
Honour .gitignore-style files

`--exclude-caches`
Skip dirs tagged CACHEDIR.TAG

`-C <dir>`
Change directory first

`-T <file>`
Read paths from a file

`--null -T <file>`
Read NUL-separated paths

`--newer=<date>`
Only files changed after a date

`--one-file-system`
Stay on one filesystem

## COMPRESSION

`-z / --gzip`
Filter through gzip

`-j / --bzip2`
Filter through bzip2

`-J / --xz`
Filter through xz

`--zstd`
Filter through zstd

`-a / --auto-compress`
Pick compressor from the suffix

## RECIPES

### Backup a project, skipping junk

```
tar -czf proj.tar.gz \
  --exclude-vcs --
exclude='node_modules' \
  -C ~/code proj
```

### Copy a tree over ssh

```
tar -cf - -C <src> . | ssh
<host> 'tar -xf - -C <dst>'
# no temporary archive on
either side
```

### Pull one file out of a big archive

```
tar -tf big.tar.gz | grep
app.conf
tar -xzf big.tar.gz path/to/
app.conf -C /tmp
```

### Unpack a release tarball flat

```
tar -xzf app-1.2.tar.gz --
strip-components=1 -C /opt/
app
```