

Linux tar Command: The Ultimate Guide

The tar command is an essential tool for archiving and compressing files in Linux. Use this guide for quick reference on the most common tasks.

Syntax & Core Operations


The basic structure of a tar command is: `tar -[options] [archive-name] [file-or-directory-to-archive]`
There are three main operations you'll use constantly. You must specify **exactly one** of these.

Operation	Flag	Description
Create	-c	Creates a new archive.
Extract	-x	Extracts files from an archive.
List	-t	Lists the contents of an archive without extracting.

Commonly Used Options (Flags)

These flags are combined with the core operations to modify tar's behavior.

Option	Flag/Options	Description
File	-f	Specifies the archive filename. This is almost always used.
Verbose	-v	Lists the files as they are being processed. Very useful for feedback.
gzip	-z	Filters the archive through gzip for compression/decompression (.tar.gz or .tgz).
gzip2	-j	Filters the archive through bzip2 (.tar.bz2 or .tbz2).
XZ	-J	Filters the archive through xz (.tar.xz).
Change Directory	-C	Changes to a specified directory before performing any operations.
Preserve Permissions	-p	Preserves all file permissions, ownership, and timestamps.
Update	-u	Only adds files that are newer than the copy already in the archive.
Append	-r	Appends files to the end of an existing (uncompressed) archive.
Exclude	--exclude	Excludes files or patterns from the operation.
Strip Components	--strip-components=N	Removes N leading directory components from filenames on extraction.

 **Pro Tip:** You can group flags/options. For example, `-c -v -f` is the same as `-cvf`.

Practical Examples

Creating Archives

- Create a basic, uncompressed archive:** Bundles the `project_files` directory into `archive.tar`.

```
tar -cvf archive.tar project_files/
```
- Create a gzipped archive (.tar.gz):** This is the most common type of compressed archive. The `v` (verbose) flag shows you which files are being added.

```
tar -cvzf my_stuff.tar.gz my_stuff/
```
- Create a bzip2 archive (.tar.bz2):** bzip2 offers better compression than gzip but is a bit slower.

```
tar -cvjf website_backup.tar.bz2 public_html/
```
- Create an archive but exclude certain files:** Archives the `home/` directory but excludes all `.bak` files and the `.cache` directory.

```
tar -cvzf home_backup.tar.gz --exclude="*.bak" --exclude=".cache" home/
```

Listing Archive Contents

- **List the contents of a .tar.gz file:** This lets you see what's inside without extracting anything.

```
tar -tvf archive.tar.gz
```

Extracting Archives

- **Extract a .tar.gz archive in the current directory:** Unpacks the contents of archive.tar.gz.

```
tar -xvzf archive.tar.gz
```

- **Extract files to a specific directory:** The -C flag tells tar where to put the extracted files.

```
tar -xvzf archive.tar.gz -C /path/to/destination/
```

- **Extract a single file from an archive:** Specifies the exact file(s) you want to pull out of the archive.

```
tar -xvzf archive.tar.gz "path/inside/archive/to/file.txt"
```

- **Extract while removing leading directories:** If archive.tar.gz contains some/long/path/to/files/, this command will extract just the files/ directory into your current location.

```
tar -xvzf archive.tar.gz --strip-components=3
```

Modifying Archives

- **Append a file to an existing .tar archive:** Note: This only works on uncompressed (.tar) archives.

```
tar -rvf archive.tar new_file.txt
```

- **Update an archive with newer files:** Adds file1.txt to archive.tar only if its modification date is more recent than the version already in the archive.

```
tar -uvf archive.tar file1.txt
```

Getting Help & More Information

If you need a quick reminder or a deep dive into advanced options, use these built-in commands.

- **For a quick summary of options:** This is the fastest way to see a list of all available flags and their syntax right in your terminal.

```
tar --help
```

- **For the official manual page:** This provides a comprehensive and detailed explanation of the command and all its options. Use the arrow keys to scroll and press q to quit.

```
man tar
```

- **For the GNU info page:** This often contains the most in-depth documentation, structured with hyperlinks for easier navigation (use arrow keys and Enter to navigate links, q to quit).

```
info tar
```