

# Tar Command Tutorial with Practical Examples

Internal reference: topics/05-6.md

## Introduction

On Unix platform, `tar` command is the primary archiving utility. Understanding various `tar` command options will help you master the archive file manipulation.

In this article, let us review various `tar` examples including how to create `tar` archives (with `gzip` and `bzip` compression), extract a single file or directory, view `tar` archive contents, validate the integrity of `tar` archives, finding out the difference between `tar` archive and file system, estimate the size of the `tar` archives before creating it etc.,

## Creating an archive using tar command

### Creating an uncompressed tar archive

This is the basic command to create a `tar` archive.

```
$ tar cvf archive_name.tar dirname/
```

In the above command:

1. `c` - create a new archive
2. `v` - verbosely list files which are processed.
3. `f` - following is the archive file name

### Creating a tar gzipped archive

The above `tar cvf` option, does not provide any compression. To use a `gzip` compression on the `tar` archive, use the `z` option as shown below.

```
# z - filter the archive through gzip
$ tar cvzf archive_name.tar.gz dirname/
```

Note: `.tgz` is same as `.tar.gz`

Note: I like to keep the `cvf` (or `tvf` or `xvf`) option unchanged for all archive creation (or view, or extract) and add additional option at the end, which is easier to remember. I.e `cvf` for archive

creation, cvfz for compressed gzip archive creation, cvfj for compressed bzip2 archive creation etc., For this method to work properly, don't give - in front of the options.

## Extracting (untar) an archive

### Extract a .tar file using option xvf

Extract a tar file using option x as shown below:

```
# x – extract files from archive
$ tar xvf archive_name.tar
```

### Extract a gzipped tar archive ( .tar.gz )

Use the option z for uncompressing a gzip tar archive.

```
# using option xvzf
$ tar xvzf archive_name.tar.gz
```

### Extracting a bziped tar archive ( .tar.bz2 )

Use the option j for uncompressing a bzip2 tar archive.

```
# using option xvjf
$ tar xvjf archive_name.tar.bz2
```

Note: In all the above commands v is optional, which lists the file being processed.

## Listing an archive

### View the tar archive file content without extracting using option tvf

You can view the .tar file content before extracting as shown below.

```
$ tar tvf archive_name.tar
```

## View the .tar.gz file content without extracting using option tvzf

You can view the .tar.gz file content before extracting as shown below.

```
$ tar tvfz archive_name.tar.gz
```

## Extract a single file from tar, tar.gz file

To extract a specific file from a tar archive, specify the file name at the end of the tar xvf command as shown below. The following command extracts only a specific file from a large tar file.

```
$ tar xvf archive_file.tar /path/to/file
```

Use the relevant option z or j according to the compression method gzip or bzip2 respectively as shown below.

```
$ tar xvfz archive_file.tar.gz /path/to/file
```

## Extract a single directory from tar, tar.gz file

To extract a single directory (along with its subdirectory and files) from a tar archive, specify the directory name at the end of the tar xvf command as shown below. The following extracts only a specific directory from a large tar file.

```
$ tar xvf archive_file.tar /path/to/dir/
```

To extract multiple directories from a tar archive, specify those individual directory names at the end of the tar xvf command as shown below.

```
$ tar xvf archive_file.tar /path/to/dir1/ /path/to/dir2/
```

Use the relevant option z or j according to the compression method gzip or bzip2 respectively as shown below.

```
$ tar xvfz archive_file.tar.gz /path/to/dir/
```

## Extract group of files from tar, tar.gz, tar.bz2 archives using regular expression

You can specify a regex, to extract files matching a specified pattern. For example, following tar command extracts all the files with pl extension.

```
# wildcards *.pl – files with pl extension
$ tar xvf archive_file.tar --wildcards '*.pl'
```

## Adding a file or directory to an existing archive using option -r

You can add additional files to an existing tar archive as shown below. For example, to append a file to \*.tar file do the following:

```
$ tar rvf archive_name.tar newfile
```

This newfile will be added to the existing archive\_name.tar. Adding a directory to the tar is also similar,

```
$ tar rvf archive_name.tar newdir/
```

Note: You cannot add file or directory to a compressed archive. If you try to do so, you will get “tar: Cannot update compressed archives” error as shown below.

```
$ tar rvfz archive_name.tgz newfile
tar: Cannot update compressed archives
Try 'tar --help' or 'tar --usage' for more information.
```

## Verify files available in tar using option -W

As part of creating a tar file, you can verify the archive file that got created using the option W as shown below.

```
$ tar cvfW file_name.tar dir/
```

If you are planning to remove a directory/file from an archive file or from the file system, you might want to verify the archive file before doing it as shown below.

```
$ tar tvfW file_name.tar
Verify 1/file1
1/file1: Mod time differs
1/file1: Size differs
Verify 1/file2
```

## Verify 1/file3

If an output line starts with Verify, and there is no differs line then the file/directory is Ok. If not, you should investigate the issue.

Note: for a compressed archive file ( .tar.gz, .tar.bz2 ) you cannot do the verification.

Finding the difference between an archive and file system can be done even for a compressed archive. It also shows the same output as above excluding the lines with Verify.

Finding the difference between gzip archive file and file system

```
$ tar dfz file_name.tgz
```

Finding the difference between bzip2 archive file and file system

```
$ tar dfj file_name.tar.bz2
```

## Estimate the tar archive size

The following command, estimates the tar file size ( in KB ) before you create the tar file.

```
$ tar -cf - /directory/to/archive/ | wc -c  
20480
```

The following command, estimates the compressed tar file size ( in KB ) before you create the tar.gz, tar.bz2 files.

```
$ tar -czf - /directory/to/archive/ | wc -c  
508  
  
$ tar -cjf - /directory/to/archive/ | wc -c  
428
```

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Based on: „<https://www.thegeekstuff.com/2010/04/unix-tar-command-examples/>“

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