**Compression Utilities**Graphical user interface

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The Linux shell comes standard with many [compression / decompression](https://en.wikipedia.org/wiki/Data_compression) and [archive / extraction](https://en.wikipedia.org/wiki/Archive_file) commands.

Let’s first talk about the compression commands which reduce file sizes and [differ mainly by the algorithms](https://linuxreviews.org/Comparison_of_Compression_Algorithms) behind them. Three popular compression commands are:

* gzip: retains the original file’s ownership modes, access, and modification timestamps. Compressed files have the .gz extension.
* bzip2: compressed files have the .bz2 extension.
* xz: compressed files have the .xz extension.

The syntax to compress a file using one of these compression utilities is:

<compression\_utility> [options] <file\_name>

For example, the command gzip hello.txt will result in a compressed file named hello.txt.gz and delete the original file. Adding the -k option will retain the original file.

Multiple files can be compressed by adding all of their names as arguments or by using the wildcard symbol (\*). For example:

bzip2 poem.txt riddle.txt`

will result in two compressed files: poem.txt.bz2 and riddle.txt.bz2 whereas

xz \*.txt

would compress all files in the current directory with the .txt extension.

The gzip command has the ability to compress all files in a directory using the -r option and providing the path to a directory.

Files can be decompressed using the -d option.

**Note:** For more information and options, you can refer to the manual or info pages for these commands or use the --help option for each command.

Text

Description automatically generatedArchive Utilities

Archiving allows to consolidate multiple files or directories into a single [archived file](https://en.wikipedia.org/wiki/Archive_file).

Two of the popular archive commands on Linux, zip and tar, have the ability to compress *and* archive files.

**This means that unlike the compression commands which compress a single file at a time, the files’ size will be reduced and packaged into a single archive file in one command.**

**zip**

Zip files are very popular across multiple operating systems. We can create a .zip archive like so:

zip <archive\_name>.zip <file1> <file2> …

**Note: On some distributions of Linux, zip must first be installed using the command sudo apt install zip unzip.**

Directories can be easily archived with the -r option. Archived files can be extracted and decompressed using the unzip command and providing paths to one or more .zipfiles.

**tar**

**tar, which stands for tape archive or tarball, is a very important archiving utility for Linux systems**. While a zip archive is more popular across platforms, it is **recommended to use tar when distributing archives among Linux-based systems. This is because tar archives store Unix file attributes, retaining file permissions and other metadata**.

tar -cf <archive\_name>.tar <files or directories>

creates an *uncompressed* .tar archive. A .tar file can be referred to as a tarball.

For example,

tar -cf example.tar index.html script.js style.css

will create a .tar archive file with three files: index.html, script.js, and style.css.

**To extract the files in a .tar archive, we can use the -xf option.**

tar -xf <archive\_name>.tar

Compressing .tar Files

A screenshot of a computer

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