

Chapter – 11 ARCHIVING AND TRANSFERRING FILES

Objectives:

- Archive files and directories into a compressed file using tar, and extract the contents of an existing tar archive.
- Transfer files to or from a remote system securely using SSH.
- Synchronize the contents of a local file or directory with a copy on a remote server.

MANAGING COMPRESSED TAR ARCHIVES

THE tar COMMAND

Archiving and compressing files are useful when creating backups and transferring data across a network.

Overview of tar Operations

OPTION	DESCRIPTION
-c, --create	Create a new archive.
-x, --extract	Extract from an existing archive.
-t, --list	List the table of contents of an archive.

Selected tar General Options

OPTION	DESCRIPTION
-v, --verbose	Verbose. Shows which files get archived or extracted.
-f, --file=	File name. This option must be followed by the file name of the archive to use or create.
-p, --preserve-permissions	Preserve the permissions of files and directories when extracting an archive, without subtracting the umask.

Overview of tar Compression Options

OPTION	DESCRIPTION
-z, --gzip	Use gzip compression (.tar.gz).
-j, --bzip2	Use bzip2 compression (.tar.bz2). bzip2 typically achieves a better compression ratio than gzip.
-J, --xz	Use xz compression (.tar.xz). The xz compression typically achieves a better compression ratio than bzip2.

ARCHIVING FILES AND DIRECTORIES

The first option to use when creating a new archive is the `c` option, followed by the `f` option, then a single space, then the file name of the archive to be created, and finally the list of files and directories that should get added to the archive. The archive is created in the current directory unless specified otherwise.

Syntax: `tar options tar-filename actual-filename`

EXTRACTING FILES FROM AN ARCHIVE

A tar archive should usually be extracted in an empty directory to ensure it does not overwrite any existing files. When root extracts an archive, the tar command preserves the original user and group ownership of the files. If a regular user extracts files using tar, the file ownership belongs to the user extracting the files from the archive.

Syntax: `tar options tar-filename`

CREATING A COMPRESSED ARCHIVE

The tar command supports three compression methods. There are three different compression methods supported by the tar command.

Use one of the following options to create a compressed tar archive:

- `-z` or `--gzip` for gzip compression (filename.tar.gz or filename.tgz)
- `-j` or `--bzip2` for bzip2 compression (filename.tar.bz2)
- `-J` or `--xz` for xz compression (filename.tar.xz)

TRANSFERRING FILES BETWEEN SYSTEMS

SECURELY

TRANSFERRING FILES USING SECURE COPY

OpenSSH is useful for securely running shell commands on remote systems. The Secure Copy command, `scp`, which is part of the OpenSSH suite, copies files from a remote system to the local system or from the local system to a remote system.

Syntax: `scp actual-files remoteuser@remotehost:/home/remoteuser`

SYNCHRONIZING FILES BETWEEN SYSTEMS

SECURELY

SYNCHRONIZE FILES AND DIRECTORIES WITH `rsync`

The `rsync` command is another way to securely copy files from one system to another. The tool uses an algorithm that minimizes the amount of data copied by synchronizing only the portions of files that have changed. It differs from `scp` in that if two files or directories are similar between two servers, `rsync` copies the differences between the file systems on the two servers, while `scp` would need to copy everything.

The two most common options when synchronizing files and directories with `rsync` are the `-v` and `-a` options.

- The `-v` or `--verbose` option provides more detailed output as the synchronization runs. This is useful for troubleshooting and to help see progress.
- The `-a` or `--archive` option enables "archive mode". This is a quick way to enable recursive copying and turn on a large number of useful options to preserve most characteristics of the files. Archive mode is the same as specifying the following options:

Options Enabled with rsync -a (Archive Mode)

OPTION	DESCRIPTION
-r, --recursive	synchronize recursively the whole directory tree
-l, --links	synchronize symbolic links
-p, --perms	preserve permissions
-t, --times	preserve time stamps
-g, --group	preserve group ownership
-o, --owner	preserve the owner of the files
-D, --devices	synchronize device file