# rsync File sync tool

**START HERE**

`rsync -av <src>/ <dest>/`
Mirror a folder

`rsync -avn <src>/ <dest>/`
Dry run first

`rsync -avz <src>/ <user>@<host>:<dir>/`
Push over ssh

`rsync -avz <user>@<host>:<dir>/ <dest>/`
Pull over ssh

`rsync -avP <src> <dest>`
Progress, resumable

`rsync -av --delete <src>/ <dest>/`
Make dest identical

`rsync -av --exclude '<pat>' <src>/ <dest>/`
Skip files

`rsync -avh --stats <src>/ <dest>/`
Totals at the end

**Source** local or host:path → `quick check` → **Compare** size + mtime → `delta` → **Transfer** changed parts only → `apply` → **Destination** local or host:path

## CONCEPTS

A trailing slash on the source copies its contents; without it the folder itself lands inside the destination.

Always rehearse with -n (dry run) before using --delete or --remove-source-files.

Remote jobs need rsync installed on both ends. Daemon mode (host::module) is unencrypted; use ssh for sensitive data.

## BASIC COPY

`rsync -av <src>/ <dest>/`
Copy contents, keep attributes
*-a = recursive plus permissions, times, symlinks, owner, group.*

`rsync -av <src> <dest>/`
Copy the folder itself into dest
*No trailing slash on <src> creates <dest>/<src>.*

`rsync -n -av <src>/ <dest>/`
Dry run, change nothing

`rsync -avP <src> <dest>`
Show progress, keep partial files
*-P = --partial --progress; rerun to resume.*

`rsync -avh --info=progress2 <src>/ <dest>/`
One overall progress line

`rsync -avi <src>/ <dest>/`
Itemize what changes per file
*Output like >f+++++++++ means a new file; *deleting means removal.*

`rsync -a --stats -h <src>/ <dest>/`
Print transfer totals

`rsync -r <src>/ <dest>/`
Recurse without attributes

`rsync -a <file> <dest>/<newname>`
Copy one file, renaming it
*No trailing slash on the destination, or it is treated as a folder.*

`rsync -R <path/./sub/file> <dest>/`
Keep part of the source path

`rsync --mkpath -a <src> <dest>/new/dir/`
Create missing destination folders

## REMOTE SYNC

`rsync -avz <src>/ <user>@<host>:<dir>/`
Push to a remote host

`rsync -avz <user>@<host>:<dir>/ <dest>/`
Pull from a remote host

`rsync -avz -e "ssh -p <port>" <src>/ <host>:<dir>/`
Use a custom ssh command

`rsync -a --bwlimit=<rate> <src>/ <host>:<dir>/`
Limit bandwidth
*Plain number is KiB/s; suffixes like 5M work.*

`rsync -a --rsync-path="sudo rsync" <src>/ <host>:<dir>/`
Run remote side as root

`rsync -a --timeout=<sec> <src>/ <host>:<dir>/`
Abort if the link stalls

`rsync -a rsync://<host>/<module>/ <dest>/`
Pull from an rsync daemon

`rsync -a --list-only <host>:<dir>/`
List remote files, no copy

`rsync -azs <host>:"<dir with spaces>/" <dest>/`
Protect odd remote filenames
*-s (secluded args) keeps the remote shell from re-parsing names.*

## INCLUDE & EXCLUDE

`--exclude '<pattern>'`
Skip matching files
*No slash in the pattern: matches any name at any depth.*

`--exclude '<dir>/'`
Skip a directory
*A trailing slash matches directories only.*

`--exclude '/<path>'`
Skip only at the transfer root

`--include '<pattern>'`
Re-include; must precede the exclude
*First matching rule wins.*

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

`--files-from <file>`
Copy exactly the listed paths
*Not recursive by itself; -a does not imply -r here.*

`--max-size=<size> / --min-size=<size>`
Skip big or tiny files

## INCLUDE & EXCLUDE (cont.)

`-m`
Drop empty directories

`-x`
Stay on one filesystem

**Pattern wildcards**

| Pattern | Matches |
|---|---|
| `*` | any chars except / |
| `**` | any chars including / |
| `?` | one char except / |
| `[abc]` | one of a, b, c |
| `dir/**` | dir and everything in it |

## DELETING & SAFETY

`rsync -av --delete <src>/ <dest>/`
Remove extras from destination
*Destination becomes a mirror. Rehearse with -n.*

`rsync -av --delete-after <src>/ <dest>/`
Delete only after the transfer

`rsync -av --delete --delete-excluded <src>/ <dest>/`
Also delete excluded files

`rsync -av --max-delete=<n> <src>/ <dest>/`
Cap number of deletions
*Exit code 25 if the limit stopped deletions.*

`rsync -av --remove-source-files <src>/ <dest>/`
Move files, not copy
*Source folders remain; only files are removed.*

`rsync -av -b --backup-dir=<dir> <src>/ <dest>/`
Keep replaced files in a folder

`rsync -av --ignore-existing <src>/ <dest>/`
Never overwrite existing files

`rsync -avu <src>/ <dest>/`
Skip files newer on the receiver

## COMPARING & RESUMING

`rsync -avc <src>/ <dest>/`
Compare by checksum
*Reads every file on both sides; slow.*

`rsync -av --size-only <src>/ <dest>/`
Compare by size only

`rsync -av --partial-dir=.rsync-partial <src>/ <host>:<dir>/`
Keep partials out of sight

## COMPARING & RESUMING (cont.)

`rsync -av --append-verify <src> <dest>`
Resume growing files

`rsync -av --inplace <src> <dest>`
Write straight into target files

`rsync -av --delay-updates <src>/ <dest>/`
Swap files in at the end

`rsync -av --link-dest=<prev> <src>/ <new>/`
Hard-link unchanged files
*Core of snapshot-style backups.*

`rsync -avn --itemize-changes <src>/ <dest>/`
Preview exactly what would change

## ATTRIBUTES

`rsync -aHAX <src>/ <dest>/`
Add hard links, ACLs, xattrs

`rsync -aS <src>/ <dest>/`
Keep sparse files sparse

`rsync -a --numeric-ids <src>/ <dest>/`
Keep raw uid/gid numbers

`rsync -a --chown=<user>:<group> <src>/ <dest>/`
Set owner on the destination
*Needs permission to change owners on the receiver.*

## RECIPES

**Deploy a site**

```
rsync -avz --delete \
  --exclude '.git/' --exclude
'node_modules/' \
  ./build/ <user>@<host>:/var/
www/site/
```

**Dated hard-link backups**

```
today=$(date +%F)
rsync -a --delete --link-
dest=../latest \
  <src>/ <backup>/$today/
ln -sfn $today <backup>/latest
```

**Only one file type**

```
rsync -av --include='*/' --
include='*.jpg' \
  --exclude='*' -m <src>/
<dest>/
```

**Resume a large transfer**

```
rsync -avP --partial-
dir=.rsync-partial \
  <big-dir>/
<user>@<host>:<dir>/
# rerun the same command after
an interruption
```

## HELP

`man rsync`
Full manual