



Robocopy Cheatsheet

Command & Syntax Reference



Robocopy

The switches that decide what gets copied and how, attributes and ACLs, filtering, retry and throttling behaviour on a slow link, and the exit codes that tell you what actually happened.

Kept current at zaur.it/cheat-sheets/robocopy-cheat-sheet/ · Version 2.0, reviewed September 2026

⚡ Start here

Copy a tree, keep empty folders	/E
Make destination identical to source	/MIR
Keep NTFS permissions	/COPYALL
Show what would happen, change nothing	/L
Do not hang on a locked file	/R:2 /W:5
Success in a script	exit code below 8

/MIR deletes. Anything in the destination that is not in the source is removed, including a full destination when the source path is wrong or empty. Run the command once with /L before you run it for real.

>_ Syntax

PART	MEANING
robocopy source destination [file] [options]	The order is fixed. Options always come last.
robocopy D:\data E:\backup	Files in the top folder only, no subfolders
robocopy D:\data E:\backup *.log	Only files matching the mask
robocopy "D:\my data" "E:\my backup" /E	Quote any path with spaces, without a trailing backslash
robocopy \\SRV01\share E:\backup /E	UNC source, no drive letter needed

Never end a quoted path with a backslash. "D:\data\" escapes the closing quote and robocopy reads the rest of the line as part of the path. Use "D:\data".

📁 What to copy

FLAG	EFFECT
/S	Subfolders, skipping empty ones
/E	Subfolders including empty ones
/MIR	/E plus /PURGE, a true mirror
/PURGE	Delete destination items that no longer exist in the source
/MOV	Move files, deleting them from the source

FLAG	EFFECT
/MOVE	Move files and folders, leaving the source empty
/CREATE	Create the tree and zero-length files only
/L	List only, copy nothing
/XX	Exclude extra files present only in the destination
/IS	Include files that are already identical

🛡 Attributes, ACLs and timestamps

FLAG	EFFECT
/COPY:DAT	The default: data, attributes, timestamps
/COPY:DATSOU	Adds security, owner and auditing
/COPYALL	Same as /COPY:DATSOU
/SEC	Same as /COPY:DATS, data plus NTFS ACLs
/DCOPY:DAT	Copy folder timestamps too, not just file ones
/NOCOPY	Copy nothing, used with /SECFIX or /TIMFIX
/SECFIX	Fix security on all files, including skipped ones
/TIMFIX	Fix timestamps on all files, including skipped ones
/A-:SH	Strip the system and hidden attributes on the copy
/SL	Copy symbolic links as links instead of their targets

A mirror is not a permissions copy. /MIR on its own carries /COPY:DAT, so the destination gets fresh inherited ACLs. Add /COPYALL when the permissions have to survive, and run it from an elevated session.

🔍 Filtering

FLAG	EFFECT
/XF pattern	Exclude files by name or mask
/XD folder	Exclude folders, by name or full path

FLAG	EFFECT
/X0	Exclude older files, do not overwrite a newer destination
/XN	Exclude newer files
/XC	Exclude changed files
/MAXAGE:n	Skip files older than n days, or a date as YYYYMMDD
/MINAGE:n	Skip files newer than n days
/MAX:n / /MIN:n	Size limits in bytes
/IA:RASHCNET0	Include only files with these attributes
/XA:SH	Exclude system and hidden files
/XJ	Exclude junctions, the flag that stops infinite loops

Use /XJ on any user profile or system folder. Legacy junctions such as Documents and Settings point back up the tree, and without /XJ robocopy follows them until the path limit stops it.

⚡ Speed, retries and network

FLAG	EFFECT
/MT:n	Multithreaded copy, 1 to 128, default 8. The single biggest win on many small files.
/J	Unbuffered I/O, use on very large files such as VHDX or backups
/Z	Restartable mode, resumes a partial file after a network drop
/B	Backup mode, uses the backup privilege to bypass ACLs
/ZB	Restartable, falling back to backup mode on access denied
/R:n	Retries per failed file. The default is 1,000,000.
/W:n	Seconds between retries. The default is 30.
/IPG:n	Inter-packet gap in ms, throttles a WAN copy
/FFT	Two-second timestamp granularity, needed for many NAS targets
/DST	Compensate for one-hour daylight saving differences
/TBD	Wait for the share name to be defined

Always set /R and /W. With the defaults, one file held open by another process stops the job for roughly 347 days. /R:2 /W:5 is a sane starting point for anything scheduled.

/MT does not combine with everything. It cannot be used with /IPG or /EFSRAW, and its log lines arrive out of order because several threads write at once.

📄 Logging

FLAG	EFFECT
/LOG:file	Write to a log, overwriting it
/LOG+:file	Append to an existing log
/UNICODE:file	Same, as Unicode
/TEE	Console and log at the same time
/NP	No percentage counter, essential in a log file
/NFL / /NDL	No file list / no folder list
/NJH / /NJS	No job header / no job summary
/V	Verbose, shows skipped files as well
/TS / /FP	Show file timestamps / full paths
/BYTES	Sizes in bytes instead of rounded units
/ETA	Estimated finish time per file

The log-friendly set. /NP /NDL /TEE /LOG+:C:\logs\copy.log gives a readable file that stays small, while still listing every file that was actually copied.

🏷️ Exit codes

CODE	MEANING
0	Nothing to do. Source and destination already match.
1	Files were copied. This is success, not failure.
2	Extra files or folders exist in the destination
3	Files copied, extras present (1 + 2)
4	Mismatched files or folders, a file where a folder was expected
5	Files copied, mismatches present (1 + 4)
6	Extras and mismatches, nothing copied (2 + 4)
7	Copied, extras and mismatches (1 + 2 + 4)

CODE	MEANING
8	Some files could not be copied. Retry limit was reached.
16	Fatal error. Nothing was copied, usually a bad path or no access.
CHECK	COMMAND
Batch, treat 8 and above as failure	<code>if %ERRORLEVEL% GEQ 8 exit /b 1</code>
Batch, normalise success to 0	<code>if %ERRORLEVEL% LSS 8 exit /b 0</code>
PowerShell	<code>if (\$LASTEXITCODE -ge 8) { throw "Robocopy failed: \$LASTEXITCODE" }</code>

The codes are bit flags. 1 copied, 2 extras, 4 mismatches, 8 failures, 16 fatal. Anything below 8 is a normal run, which is why a scheduled task that treats a non-zero code as an error reports a healthy copy as broken.

🔧 Recipes

TASK	COMMAND
Dry run before anything destructive	<code>robocopy D:\data E:\backup /MIR /L /NP /NDL</code>
Mirror a file server share with permissions	<code>robocopy \\SRV01\data E:\data /MIR /COPYALL /XJ /R:2 /W:5 /MT:16 /NP /LOG:C:\logs\data.log</code>
Simple nightly backup, never delete	<code>robocopy D:\data E:\backup /E /X0 /R:2 /W:5 /NP /LOG+:C:\logs\backup.log</code>
Move a folder to another volume	<code>robocopy D:\old E:\new /MOVE /E /COPYALL /R:1 /W:1</code>
Copy only what changed this week	<code>robocopy D:\data E:\delta /E /MAXAGE:7 /NP</code>
Large files over a slow link	<code>robocopy \\SRV01\vm E:\vm /E /J /Z /R:5 /W:15 /IPG:20</code>

TASK	COMMAND
Skip system noise	<code>robocopy D:\ E:\ /E /XD "System Volume Information" "\$RECYCLE.BIN" /XJ</code>
Fix permissions without recopying data	<code>robocopy D:\data E:\data /E /NOCOPY /SECFIX /COPYALL</code>
Compare two trees, change nothing	<code>robocopy D:\a E:\b /E /L /NJH /NJS /NDL /FP</code>

🔍 FAQ

My scheduled task says the job failed, but everything copied. Why?

Task Scheduler treats any non-zero exit code as a failure, and a successful robocopy run returns 1. Wrap the call in a batch file or a PowerShell step that maps anything below 8 to 0.

Does /MIR copy NTFS permissions?

No. /MIR controls which files exist, not what travels with them. Add /COPYALL for data, attributes, timestamps, ACLs, owner and auditing, and run elevated, otherwise owner and auditing are silently dropped.

Why is the copy so slow on millions of small files?

Per-file overhead, not bandwidth. Raise /MT to 16 or 32, and cut the logging with /NP /NFL /NDL: writing a line per file to a network log can cost more than the copy itself.

Can robocopy handle paths longer than 260 characters?

Yes, it uses the Unicode long-path API by default, which is one of the main reasons it replaced xcopy. Only /256 turns that off.

How do I stop a mirror from deleting when the source is unavailable?

Test the source before the copy runs. In a script, check that a known file exists and exit early if it does not. Robocopy cannot tell an empty source from a missing one, and /MIR will faithfully mirror emptiness.

About this cheat sheet

What it covers, how updates reach you, and the terms it is licensed under.



Robocopy
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Three reference pages, A4

Robocopy is for the copy that has to be right: a migration, a nightly backup, a mirror of a share with its permissions intact. It starts with the switches that decide what is copied and what is deleted, then attributes and ACLs, filtering, the retry and throttling behaviour on a slow link, and logging that stays readable.

The flags are grouped by the question they answer, with the combinations that do not work together called out. The exit codes section is the one people come back for, because a successful run returns 1 and a scheduled task treats that as failure, and the recipes give a dry run, a permissions-preserving mirror and a WAN copy ready to adapt.

Ten sections. Start here · Syntax · What to copy · Attributes, ACLs and timestamps · Filtering · Speed, retries and network · Logging · Exit codes · Recipes · FAQ.

The live version is kept current at zaur.it/cheat-sheets/robocopy-cheat-sheet/. Corrections are welcome and they get fixed.

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The rest of the series

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