

Robocopy Complete Reference

<https://social.technet.microsoft.com/wiki/contents/articles/52831.robocopy-complete-reference.aspx>

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Introduction

RoboCopy (Robust File Copy) is a command-line tool in Windows. It is intended for consistent copying or mirroring of directories wherever the computer has access, including local drives, removable drives, Local Area Network, remote servers, and in the process guarantees that all file properties and permissions stay integral.

This article deals about the Robocopy Command-line tool with Examples and Switches.

Syntax Examples:

robocopy source destination [file [file] ...] [parameters]

- source: specifies source folder. You can use drive:\path or \\server\share\path here.
- destination: specifies the destination folder. You can use drive:\path or \\server\share\path here.
- file: Files to process. Wildcard characters are supported (* match any sequence of characters,?: match a single character)
- parameters: Command-line switches you wish to use. You can find the entire list at the end of this document.

Copy Folder

The most simple operation with robocopy is copying sources folders to the destination

In this example, we will copy the directory C:\Temp to the destination folder E:\Temp

robocopy "C:\Temp" "E:\Temp"

```
Command Prompt
C:\>robocopy "C:\Temp" "E:\Temp"

-----
ROBOCOPY      ::      Robust File Copy for Windows
-----

Started : Tuesday, April 30, 2019 5:00:33 AM
Source  : C:\Temp\
Dest    : E:\Temp\

Files   : *.*
Options : *.* /XCOPY:DA /COPY:DAT /R:1000000 /W:30

-----

100%      New File          2      C:\Temp\      29      test1.txt
100%      New File          54      C:\Temp\      54      test2.txt

-----

      Total      Copied      Skipped      Mismatch      FAILED      Extras
 Dirs  :         1         0         1         0         0         0
Files  :         2         2         0         0         0         0
Bytes  :        83        83         0         0         0         0
Times  : 0:00:00  0:00:00                0:00:00  0:00:00

Speed  :             1765 Bytes/sec.
Speed  :             0.101 MegaBytes/min.
Ended  : Tuesday, April 30, 2019 5:00:33 AM

C:\>
```

After copy operation, some data are provided by robocopy

- **Start** shows the start time of copy operation
- **Source** shows source directory
- **Dest** shows destination directory
- **Files** shows file filter
- **Options** shows given options
- **Total** shows total files and folders count
- **Copied** shows copied files and folders, count
- **Skipped** shows not copied files and folders

Copy a file to a remote system or share

Similarly, we can copy files and folders to the remote system. We will provide remote system's hostname or IP address before the destination path. We can use \\server1\share or \\10.0.2.9 to specify remote system.

In this example we will copy source directory named C:\Temp to the remote system with IP address 10.0.2.9 under the path shared with the named TempShare.

robocopy "C:\Temp" "\\10.0.2.9\share\TempShare

Copy files of a specific extension

robocopy provides some filtering features while copying files. We can specify the filenames and extensions we want to copy. This will skip other file named and extensions. We will provide the file name or extension after the destination folder.

In this example, we only want to copy *.txt extension files.

robocopy "C:\Temp" "E:\Temp" *.txt

```

Command Prompt
C:\>robocopy "C:\Temp" "E:\Temp" *.txt

-----
ROBOCOPY      ::      Robust File Copy for Windows
-----

Started : Tuesday, April 30, 2019 5:01:34 AM
Source  : C:\Temp\
Dest    : E:\Temp\

Files   : *.txt

Options : /DCOPY:DA /COPY:DAT /R:1000000 /W:30

-----

                2      C:\Temp\

-----

      Total      Copied      Skipped      Mismatch      FAILED      Extras
  Dirs  :         1           0           1           0           0           0
  Files :         2           0           2           0           0           0
  Bytes :        83           0           83           0           0           0
  Times :  0:00:00   0:00:00           0:00:00   0:00:00   0:00:00
  Ended : Tuesday, April 30, 2019 5:01:34 AM

C:\>

```

Copy subfolders

By default, only first level directories are copied to the destination. If we want to copy all directories and subdirectories, folders we should enable /S switch.

robocopy "C:\Temp" "E:\Temp" /S

```

Command Prompt
C:\>robocopy "C:\Temp" "E:\Temp" /S

-----
ROBOCOPY      ::      Robust File Copy for Windows
-----

Started : Tuesday, April 30, 2019 5:06:09 AM
Source  : C:\Temp\
Dest    : E:\Temp\

Files   : *.*

Options : *.* /S /DCOPY:DA /COPY:DAT /R:1000000 /W:30

-----

      *EXTRA Dir      2      C:\Temp\
                    -1      E:\Temp\New folder\

-----

      Total      Copied      Skipped      Mismatch      FAILED      Extras
  Dirs  :         1           0           1           0           0           1
  Files :         2           0           2           0           0           0
  Bytes :        83           0           83           0           0           0
  Times :  0:00:00   0:00:00           0:00:00   0:00:00   0:00:00
  Ended : Tuesday, April 30, 2019 5:06:09 AM

C:\>

```

List Files

This is a very useful feature for robocopy where source files are not copied and just listed. This feature can be valuable if we want to check current files and folders. We can use /L option for the print list of files and directories.

robocopy "C:\Temp" "E:\Temp" /L

```

Command Prompt
C:\>robocopy "C:\Temp" "E:\Temp" /L

-----
ROBOCOPY      ::      Robust File Copy for Windows
-----
Started      : Tuesday, April 30, 2019 5:11:24 AM
Source       : C:\Temp\
Dest        : E:\Temp\

Files       : *.*

Options     : *.* /L /DCOPY:DA /COPY:DAT /R:1000000 /W:30

-----
*EXTRA Dir      2      C:\Temp\
                -1     E:\Temp\New folder\
-----

Total Copied Skipped Mismatch FAILED Extras
Dirs   :    1      0      1      0      0      1
Files  :    2      0      2      0      0      0
Bytes  :   83      0     83      0      0      0
Times  : 0:00:00 0:00:00      0:00:00 0:00:00
Ended  : Tuesday, April 30, 2019 5:11:24 AM

C:\>

```

As we can see from the output that all files and folders are skipped and not copied.

List Files recursively

While robocopy is primarily used to copy files from remote to local or local to remote we can use /L and /S choices in order to

list remote files. We can merge two options list and recursive to list all level files and folders.

robocopy "C:\Temp" "E:\Temp" /L /S

```

Command Prompt
C:\>robocopy "C:\Temp" "E:\Temp" /L /S

-----
ROBOCOPY      ::      Robust File Copy For Windows
-----
Started      : Tuesday, April 30, 2019 5:14:16 AM
Source       : C:\Temp\
Dest        : E:\Temp\

Files       : *.*

Options     : *.* /L /S /DCOPY:DA /COPY:DAT /R:1000000 /W:30

-----
*EXTRA Dir      2      C:\Temp\
                -1     E:\Temp\New folder\
-----

Total Copied Skipped Mismatch FAILED Extras
Dirs   :    1      0      1      0      0      1
Files  :    2      0      2      0      0      0
Bytes  :   83      0     83      0      0      0
Times  : 0:00:00 0:00:00      0:00:00 0:00:00
Ended  : Tuesday, April 30, 2019 5:14:16 AM

C:\>

```

Copy Files Lesser than specified Size

While copying files we can state the size of files we want to copy. In this example we will copy files those sizes are lower than

1K

. We will use /MAX option for this.

robocopy "C:\Temp" "E:\Temp" /S /MAX:1000

```

Command Prompt
C:\>robocopy "C:\Temp" "E:\Temp" /S /MAX:1000
-----
ROBOCOPY      :      Robust File Copy for Windows
-----
Started : Tuesday, April 30, 2019 5:16:22 AM
Source  : C:\Temp\
Dest    : E:\Temp\

Files : *.*

Options : *.* /S /DCOPY:DA /COPY:DAT /MAX:1000 /R:1000000 /W:30
-----

*EXTRA Dir-      2      C:\Temp\
                  -1      E:\Temp\New folder\
-----

      Total      Copied      Skipped      Mismatch      FAILED      Extras
 Dirs  :          1          0          1          0          0          1
 Files :          2          0          2          0          0          0
 Bytes :         83          0          83          0          0          0
 Times : 0:00:00  0:00:00          0:00:00  0:00:00  0:00:00
 Ended : Tuesday, April 30, 2019 5:16:22 AM

C:\>

```

Copy Files greater than specified Size

To do so we can use switch /MIN . This will only copy files higher than the given size. In this example, we will copy files higher than 1K which is 1000 kilobyte.

robocopy "C:\Temp" "E:\Temp" /S /MIN:1000

```

Command Prompt
C:\>robocopy "C:\Temp" "E:\Temp" /S /MIN:1000
-----
ROBOCOPY      :      Robust File Copy for Windows
-----
Started : Tuesday, April 30, 2019 5:19:19 AM
Source  : C:\Temp\
Dest    : E:\Temp\

Files : *.*

Options : *.* /S /DCOPY:DA /COPY:DAT /MIN:1000 /R:1000000 /W:30
-----

*EXTRA Dir-      2      C:\Temp\
                  -1      E:\Temp\New folder\
-----

      Total      Copied      Skipped      Mismatch      FAILED      Extras
 Dirs  :          1          0          1          0          0          1
 Files :          2          0          2          0          0          0
 Bytes :         83          0          83          0          0          0
 Times : 0:00:00  0:00:00          0:00:00  0:00:00  0:00:00
 Ended : Tuesday, April 30, 2019 5:19:19 AM

C:\>

```

Move Files

The default behavior of robocopy is copying files. Occasionally we may have to move files. This can be done with robocopy too. We will provide /MOV option in order to move files and folders.

robocopy "C:\Temp" "E:\Temp" /S /MOVE

Get the logs of robocopy operation

While doing copy and move operations we can also need some logs, especially in bulk data operations. We can write a log about specified operations with /LOG option. We can also specify the log file name by adding at the end of /LOG option. In this example, we will write robocopy operation log to a log file named backup.log . This will prevent regular output

robocopy "C:\Temp" "E:\Temp" /S /LOG:backup.log

Command Prompt

```
C:\>robocopy "C:\Temp" "E:\Temp" /S /LOG:C:\Temp\backup.log
Log File : C:\Temp\backup.log
C:\>
```

The log file can be listed with **type** command in MS-DOS command line like below.
type backup.log. Alternatively, you can also open the log file in notepad

```
C:\>type C:\Temp\backup.log
-----
ROBOCOPY    ::      Robust File Copy for Windows
-----
Started : Tuesday, April 30, 2019 5:25:22 AM
Source  : C:\Temp\
Dest    : E:\Temp\

Files : *.*

Options : *.* /S /DCOPY:DA /COPY:DAT /R:1000000 /W:30
-----
*EXTRA Dir-      B      C:\Temp\
100%      Newer   -1     E:\Temp\New folder\
                                0      backup.log
-----
Total      Copied   Skipped  Mismatch  FAILED  Extras
 Dirs  :      1         0         1         0         0         1
 Files :      3         1         2         0         0         0
 Bytes :     83         0         83         0         0         0
 Times :  0:00:00   0:00:00                   0:00:00  0:00:00
 Ended  : Tuesday, April 30, 2019 5:25:22 AM
C:\>
```

Copy specified File Properties

Files and folders could have different properties. These properties can be used for different purposes like the listing owner, audit information, timestamps etc. We can copy these attributes too with the robocopy command. Here is the attributed we can specify for the copy. We will also use /copy: option by adding the property we want to copy.

- D is used to copy data properties
- A used for attributes
- T for timestamps
- S is used for NTFS access control list simply ACL
- is used for the owner information
- U is used for Auditing information

In this example, we will copy time stamp attributes or properties with the following command.

robocopy "C:\Temp" "E:\Temp" /S /copy:T

```

Command Prompt
C:\>robocopy "C:\Temp" "E:\Temp" /S /copy:T

-----
ROBOCOPY      ::      Robust File Copy for Windows
-----

Started : Tuesday, April 30, 2019 5:31:25 AM
Source   : C:\Temp\
Dest     : E:\Temp\

Files    : *.*

Options  : *.* /S /DCOPY:D /COPY:T /R:1000000 /W:30

-----

*EXTRA Dir      3      C:\Temp\
Newer          -1      E:\Temp\New folder\
                1129      backup.log

-----

      Total   Copied  Skipped  Mismatch  FAILED  Extras
 Dirs  :      1         0         1         0         0         1
 Files :      3         1         2         0         0         0
Bytes  :    1.1 k    1.1 k      83         0         0         0
Times  :  0:00:00    0:00:00

Speed   :      1129000 Bytes/sec.
Speed   :      64.001 MegaBytes/min.
Ended   : Tuesday, April 30, 2019 5:31:25 AM

C:\>

```

Copy All Attributes with /copyall

We can also copy files with all properties of attributes with the **/copyall** parameter like below. This is equal to the **/copy:DATSOU**.

robocopy "C:\Temp" "E:\Temp" /S /copyall

```

Command Prompt
C:\>robocopy "C:\Temp" "E:\Temp" /S /copyall

-----
ROBOCOPY      ::      Robust File Copy for Windows
-----

Started : Tuesday, April 30, 2019 5:36:59 AM
Source   : C:\Temp\
Dest     : E:\Temp\

Files    : *.*

Options  : *.* /S /COPYALL /R:1000000 /W:30

-----

ERROR : You do not have the Manage Auditing user right.
***** You need this to copy auditing information (/COPY:U or /COPYALL).

Simple Usage :: ROBOCOPY source destination /MIR

      source :: Source Directory (drive:\path or \\server\share\path).
      destination :: Destination DIR (drive:\path or \\server\share\path).
      /MIR :: Mirror a complete directory tree.

For more usage information run ROBOCOPY /?

**** /MIR can DELETE files as well as copy them !

C:\>

```

Delete or Remove Destination Files and Directories That No Longer Exist In The Source

If we are trying to make an identical copy of the local files and directories to the remote we need to purge or remove remote files and directories that no longer exist in the source. We can use **/purge** option for this.

robocopy "C:\Temp" "E:\Temp" /purge

```
Command Prompt
C:\>robocopy "C:\Temp" "E:\Temp" /purge

-----
ROBOCOPY      :      Robust File Copy for Windows
-----

Started : Tuesday, April 30, 2019 5:38:54 AM
Source   : C:\Temp\
Dest     : E:\Temp\
Files    : *.*
Options  : *.* /DCOPY:DA /COPY:DAT /PURGE /R:1000000 /W:30

-----

*EXTRA Dir      3      C:\Temp\
*EXTRA Dir     -1      E:\Temp\New folder\
*EXTRA Dir     -1      E:\Temp\New folder\1\
*EXTRA Dir     -1      E:\Temp\New folder\1\2\
*EXTRA Dir     -1      E:\Temp\New folder\1\2\3\
100%      Changed          1129      backup.log

-----

 Dirs :      Total   Copied   Skipped  Mismatch  FAILED  Extras
Files :      3       1       2       0         0       0
Bytes :    1.1 k    1.1 k     83      0         0       0
Times :    0:00:00    0:00:00          0:00:00  0:00:00

Speed :      225800 Bytes/sec.
Speed :      12.920 MegaBytes/min.
Ended : Tuesday, April 30, 2019 5:39:54 AM

C:\>
```

Robocopy Switches

Copy options:

- /S : Copy sub-folders.
- /E : Copy sub-folders, including empty sub-folders.
- /Z : Copy files with resume support.
- /B : Copy files in Backup mode.
- /SL: Copy symbolic links instead of the target.
- /ZB : Copy files using resume support; if access denied use Backup mode.
- /EFSRAW : Copy encrypted files using EFS RAW mode.
- /LEV:n : Copy only **top** n levels of the source folder tree.
- /DCOPY:T : Copy Folder Timestamps.
- /COPY:copyflag[s] : Specify what file information to copy. Copyflags: D=Data, A=Attributes, T=Timestamps, S=Security=NTFS ACLs, O=Owner info, U=Auditing info.
- /COPYALL : Copy **all** file information.
- /NOCOPY : Copy no file information.
- /SECFIX : Fix **all** files security.
- /TIMFIX : Fix **all** files time.
- /PURGE : Delete destination files/folders that no longer exist in source.
- /MIR : Mirror folder structure.
- /MOV : Move files.
- /MOVE : Move files and folders.
- /A+:[RASHCNET] : Add attributes to destination files.
- /A-:[RASHCNET] : Remove attributes from destination files.
- /CREATE : Create folder structures and zero-length files only.
- /FAT : Create destination files using **8.3** FAT file names only.
- /256 : Disable very long path (> **256** characters support).
- /MON:n : Monitor source, and run again when more than n changes seen.
- /MOT:m : Monitor source; and run again in m minutes Time, if changed.
- /RH:hhmm-hhmm : Run Hours - times when new copies may be started.
- /PF : Check run hours on a Per File basis.
- /IPG:n : Inter-Packet Gap (ms) to free bandwidth on **slow** lines.

File Selection Options:

- /A : Files with Archive attribute set.

/M : Files with the Archive attribute and remove it.
/IA:[RASHCNETO] : Include files with specific attributes set.
/XA:[RASHCNETO] : Exclude files with specific attributes set.
/XF file [file]... : Exclude Files matching given names/paths/wildcards.
/XD dirs [dirs]... : Exclude folders matching given names/paths.
/XC : Exclude Changed files.
/XN : Exclude Newer files.
/XO : Exclude Older files.
/XX : Exclude extra files present in destination folder but not in source. This will prevent deletion of existing files in destination folder.
/XL : Exclude files and folders present in source but not destination. This switch will prevent new files being added to the destination
/IS : Overwrite existing files even if they are same.
/IT : Include files with identical size and timestamp, but different attribute settings.
/MAX:n : Exclude files bigger than n bytes.
/MIN:n : Exclude files **smaller** than n bytes.
/MAXAGE:n : Exclude files older than n days/date.
/MINAGE:n : Exclude files newer than n days/date.
/MAXLAD:n : Exclude files unused since n days.
/MINLAD:n : Exclude files used since n days.
/XJ : Exclude Junction points
/FFT : FAT File Times (2-second granularity).
/DST : Compensate for one-hour DST time differences.
/XJD : Exclude Junction points for Folders.
/XJF : Exclude Junction points for Files.

Retry Options:

/R:n : Number of Retries on failed copies: **default 1** million.
/W:n : Wait n time between retries: **default is 30** seconds.
/TBD : Wait for sharenames to be defined.

Logging Options:

/L : List only.
/X : Report **all** extra files.
/V : Verbose output.
/TS : Include source file Time Stamps.
/FP : Include Full Pathname of files.
/BYTES : Print file sizes as bytes.
/NS : Don't log file sizes.
/NC : Don't log file classes.
/NFL : Don't log file names.
/NDL : Don't log folder names.
/NP : Don't **show** progress of operation.
/ETA : Show Estimated Time of Arrival of copied files.
/LOG:file : Output status to a LOG file. Overwrite existing file
/LOG+:file : Append existing output status to an existing LOG file.
/UNILog:file : Output status to a Unicode LOG file. Overwrite existing file
/UNILog+:file : Append existing output status to an existing Unicode LOG file.
/TEE : Output to console window and log file.
/NJH : Don't output Job Header.
/NJS : Don't output Job Summary.

Pause Robocopy :

check with PsSuspend to pause the process without killing it [http://technet.microsoft.com/en-us/sysinternals/bb897540\(en-us\).aspx](http://technet.microsoft.com/en-us/sysinternals/bb897540(en-us).aspx)

Job Options:

/JOB:jobname : Take parameters from specified job file.
/SAVE:jobname : Save parameters to a specific job file.

/QUIT : QUIT after processing.

/NOSD : NO Source Folder is specified.

/NODD : NO Destination Folder is specified.

/IF : Include the following Files.