

Robocopy and a Few Examples

https://social.technet.microsoft.com/wiki/contents/articles/1073.robocopy-and-a-few-examples.aspx?Redirected=true&PageIndex=1&Sort=MostUseful#Copy_without_bandwidth_limitation

Robocopy (Robust File Copy) is a command-line file copy utility that comes with Windows Vista / Windows 2008 or newer. Unlike normal copy commands, Robocopy is designed for reliable copy or mirroring while maintaining the permissions, attributes, owner information, timestamps and properties of the objects copied.

A few of my customers were complaining that there is not enough documentation on robocopy usage and examples. I am trying to document some of the common scenarios where robocopy can be useful.

Table of Contents

Robocopy Syntax	1
Examples of Microsoft's Robocopy Syntax	1
#1 Simple copy.....	1
#2 Copy all content including empty directory.....	1
#3 List only.....	1
#4 Move files over 14 days old.....	2
#5 Mirror a directory with subfolders incl. empty directories.....	2
#6 Mirror directories.....	2
#7 Copy all changes.....	2
#8 Mirror directory excl. deletion.....	2
#9 Copy permissions only.....	2
#10 Copy directory tree with timestamps.....	3
#11 Copy with bandwidth limitation.....	3
#12 Copy without bandwidth limitation.....	3
To copy a directory without bandwidth limitation and logging with bytes level and ETA.....	3
More Information	3
TechNet	3
Robocopy Copy Options.....	4
File Selection Options.....	5
Retry Options.....	5
Logging Options.....	5
Job Options.....	6

Robocopy Syntax

ROBOCOPY <source> <destination> [file...] [options]
<source> Source Directory (local or network path)
<destination> Destination Directory (local or network path) and
[file...] Specifies the file or files to be copied. You can use wildcard characters (* or ?), if you want. If the File parameter is not specified, *.* is used as the default value.

***Skip to the end of this document for more information on Robocopy Options and Switches .*

Examples of Microsoft's Robocopy Syntax

#1 Simple copy

To copy contents of C:\UserFolder to C:\FolderBackup:

```
Robocopy C:\UserFolder C:\FolderBackup
```

This is the simplest usage for Robocopy

#2 Copy all content including empty directory

To copy all contents including empty directories of SourceFolder to DestinationFolder:

```
Robocopy C:\SourceDir C:\DestDir /E
```

#3 List only

List only files larger than 32 MBytes(33553332 bytes) in size.

```
Robocopy.exe c:\sourceFolder d:\targetfolder /min:33553332 /l
```

Note: /l - will list files matching the criteria. if /l is omitted, files matching the criteria will be copied to the target location

#4 Move files over 14 days old

Move files over 14 days old (note the MOVE option will fail if any files are open and locked).

```
ROBOCOPY C:\SourceFolder D:\DestinationFolder /move /minage:14
```

Similarly you could use the below switches

- /maxage: <N> Specifies the maximum file age (to exclude files older than N days or date).
- /minage: <N> Specifies the minimum file age (exclude files newer than N days or date).
- /maxlad: <N> Specifies the maximum last access date (excludes files unused since N).
- /minlad: <N> Specifies the minimum last access date (excludes files used since N) If N is less than 1900, N specifies the number of days. Otherwise, N specifies a date in the format YYYYMMDD

#5 Mirror a directory with subfolders incl. empty directories

/MIR is an option to ROBOCOPY where you mirror a directory tree with all the subfolders [including](#) the empty directories and you purge files and folders on the destination server that no longer exists in source.

```
ROBOCOPY \\sourceserver\share \\destinationserver\share /MIR
```

Or

```
ROBOCOPY source-drive:\DIR destination-drive:\DIR /MIR
```

#6 Mirror directories

The following command will mirror the directories using Robocopy:

```
Robocopy \\SourceServer\Share \\DestinationServer\Share /MIR /FFT /Z /XA:H /W:5
```

Explanation of the switches used:

- /MIR specifies that Robocopy should mirror the source directory and the destination directory. Note that this will delete files at the destination if they were deleted at the source.
- /FFT uses fat file timing instead of NTFS. This means the granularity is a bit less precise. For across-network share operations this seems to be much more reliable - just don't rely on the file timings to be completely precise to the second.
- /Z ensures Robocopy can resume the transfer of a large file in mid-file instead of restarting.
- /XA:H makes Robocopy ignore hidden files, usually these will be system files that we're not interested in.
- /W:5 reduces the wait time between failures to 5 seconds instead of the 30 second default.

#7 Copy all changes

Use Robocopy to copy all changes to files in a directory called c:\data to a directory that contains the date, like data_20091124. Create a batch file as follows.

```
@echo off
set day=%date:~0,2%
set month=%date:~3,2%
set year=%date:~6,4%
Robocopy "c:\data" "c:\backup\data\%day%-%month%-%year%" /MAXAGE:1
```

#8 Mirror directory excl. deletion

To mirror the directory "C:\directory" to "\\server2\directory" excluding "\\server2\directory\dir2" from being deleted (since it isn't present in C:\directory) use the following command:

```
Robocopy "C:\Folder" "\\Machine2\Folder" /MIR /XD \\server2\ directory\dir2"
```

Robocopy can be setup as a simply Scheduled Task that runs daily, hourly, weekly etc. Note that Robocopy also contains a switch that will make Robocopy monitor the source for changes and invoke synchronization each time a configurable number of changes has been made. This may work in your scenario, but be [aware](#) that Robocopy will not just copy the changes, it will scan the complete directory structure just like a normal mirroring procedure. If there are a lot of files & directories, this may hamper performance.

#9 Copy permissions only

You have copied the contents from source to destination but now you made changes to the Security permissions at source. You wanted to copy only the permission changes and not data.

```
ROBOCOPY <Source> <Target> /E /Copy:S /IS /IT
```

Copy option have the following flags to use:

- D Data
- A Attributes
- T Time stamps
- S NTFS access control list (ACL)
- O Owner information
- U Auditing information

The default value for CopyFlags is DAT (data, attributes, and time stamps).

- /IS - Includes the same files.
- /IT - Includes "tweaked" files.

Sidenote: *ROBOCOPY c:\sourcefolder d:\targetfolder /zb /sec /e /nocopy* may give you similar results but useful ONLY when more permissions are added. it will not consider or update the target for permissions removed at the source.

See [How to Copy Files Multi-Threaded with Robocopy in Windows 7](#).

Robocopy, short for Robust File Copy, is a command-line directory replication and file copy command utility that was first made available as feature in Windows Vista and Windows Server 2008, although it has been available as part of Windows Resources Kit. In Windows 7 and Windows Server 2008, Robocopy utility is further enhanced with ability to multi-threaded copy operation feature.

Multi-threaded support allows Robocopy to open multiple threads simultaneously, allowing many files to be copied in parallel. With multi-threaded copying, total time required to complete the operation will be drastically reduced and cut, when comparing with with typical copying one file at time in serial sequential order.

As Robocopy is generally a command-line only utility (although a GUI add-on is available for Robocopy), the new multi-threaded operation capability has to be called via a new switch supported by Robocopy. The new multi-threaded copy feature can be enabled and turned on with the following parameter:

```
/MT[:n]
```

Where n will instruct Robocopy to do multi-threaded copies with n threads (default 8). The value of n must be at least 1 and not greater than 128 (between 1 to 128), with 1 as single thread. In fact, Robocopy will copy files and folders in multi-threaded operation by default, with 8 threads in one go. Note that /MT[:n] switch is not compatible with the /IPG and /EFSRAW operations.

For example,

```
Robocopy C:\Folder1 C:\Folder2 /MT:32
```

#10 Copy directory tree with timestamps

To copy a directory tree along with the source timestamps for folders

```
Robocopy C:\Folder1 C:\Folder2 /MIR /dcopy:T
```

#11 Copy with bandwidth limitation

To copy a directory using /IPG to limit bandwidth usage. General rule of thumb /IPG:750 will use roughly 1Mbps.

```
Robocopy /ipg:750 /z /r:3 /w:3 /tee /LOG+:c:\roblog.txt //server1/share //server2/share
```

#12 Copy without bandwidth limitation

To copy a directory without bandwidth limitation and logging with bytes level and ETA.

```
Robocopy /J /tee /LOG+:c:\roblog.txt /ETA /BYTES //server1/share //server2/share
```

More Information

TechNet

Robocopy Options and Switches: <http://aka.ms/robocopy> (Short url for [http://technet.microsoft.com/en-us/library/cc733145\(WS.10\).aspx](http://technet.microsoft.com/en-us/library/cc733145(WS.10).aspx))

Robocopy Copy Options

Option	Description
/s	Copies subdirectories. Note that this option excludes empty directories.
/e	Copies subdirectories. Note that this option includes empty directories.
/lev:<N>	Copies only the top <i>N</i> levels of the source directory tree.
/z	Copies files in Restart mode.
/b	Copies files in Backup mode.
/zb	Uses Restart mode. If access is denied, this option uses Backup mode.
/efsraw	Copies all encrypted files in EFS RAW mode.
/copy:<CopyFlags>	Specifies the file properties to be copied. The following are the valid values for this option: <ul style="list-style-type: none">• D Data• A Attributes• T Time stamps• S NTFS access control list (ACL)• O Owner information• U Auditing information The default value for CopyFlags is DAT (data, attributes, and time stamps).
/dcopy:T	Copies directory time stamps.
/sec	Copies files with security (equivalent to /copy:DAT).
/copyall	Copies all file information (equivalent to /copy:DATSOU).
/nocopy	Copies no file information (useful with /purge).
/secfix	Fixes file security on all files, even skipped ones.
/timfix	Fixes file times on all files, even skipped ones.
/purge	Deletes destination files and directories that no longer exist in the source.
/mir	Mirrors a directory tree (equivalent to /e plus /purge).
/mov	Moves files, and deletes them from the source after they are copied.
/move	Moves files and directories, and deletes them from the source after they are copied.
/a+:[RASHCNET]	Adds the specified attributes to copied files.
/a-:[RASHCNET]	Removes the specified attributes from copied files.
/create	Creates a directory tree and zero-length files only.
/fat	Creates destination files by using 8.3 character-length FAT file names only.
/256	Turns off support for very long paths (longer than 256 characters).
/mon:<N>	Monitors the source, and runs again when more than <i>N</i> changes are detected.
/mot:<M>	Monitors source, and runs again in <i>M</i> minutes if changes are detected.
/rh:hhmm-hhmm	Specifies run times when new copies may be started.
/pf	Checks run times on a per-file (not per-pass) basis.
/ipg:n	Specifies the inter-packet gap to free bandwidth on slow lines.
/sl	Copies the symbolic link instead of the target.

Important

When using the /SECFIX copy option, specify the type of security information you want to copy by also using one of these additional copy options:

- /COPYALL
- /COPY:O
- /COPY:S
- /COPY:U
- /SEC

File Selection Options

Option	Description
/a	Copies only files for which the Archive attribute is set.
/m	Copies only files for which the Archive attribute is set, and resets the Archive attribute.
/ia:[RASHCNETO]	Includes only files for which any of the specified attributes are set.
/xa:[RASHCNETO]	Excludes files for which any of the specified attributes are set.
/xf <FileName>[...]	Excludes files that match the specified names or paths. Note that <i>FileName</i> can include wildcard characters (* and ?).
/xd <Directory>[...]	Excludes directories that match the specified names and paths.
/xct	Excludes changed files.
/xn	Excludes newer files.
/xo	Excludes older files.
/xx	Excludes extra files and directories. Extra files are files that exist in the destination directory.
/xl	Excludes "lonely" files and directories.
/is	Includes the same files.
/it	Includes "tweaked" files.
/max:<N>	Specifies the maximum file size (to exclude files bigger than <i>N</i> bytes).
/min:<N>	Specifies the minimum file size (to exclude files smaller than <i>N</i> bytes).
/maxage:<N>	Specifies the maximum file age (to exclude files older than <i>N</i> days or date).
/minage:<N>	Specifies the minimum file age (exclude files newer than <i>N</i> days or date).
/maxlad:<N>	Specifies the maximum last access date (excludes files unused since <i>N</i>).
/minlad:<N>	Specifies the minimum last access date (excludes files used since <i>N</i>) If <i>N</i> is less than 1900, <i>N</i> specifies the number of days. Otherwise, <i>N</i> specifies a date in the format YYYYMMDD.
/xj	Excludes junction points, which are normally included by default.
/fft	Assumes FAT file times (two-second precision).
/dst	Compensates for one-hour DST time differences.
/xjd	Excludes junction points for directories.
/xjf	Excludes junction points for files.

Retry Options

Option	Description
/r:<N>	Specifies the number of retries on failed copies. The default value of <i>N</i> is 1,000,000 (one million retries).
/w:<N>	Specifies the wait time between retries, in seconds. The default value of <i>N</i> is 30 (wait time 30 seconds).
/reg	Saves the values specified in the /r and /w options as default settings in the registry.
/tbd	Specifies that the system will wait for share names to be defined (retry error 67).

Logging Options

Option	Description
/l	Specifies that files are to be listed only (and not copied, deleted, or time stamped).
/x	Reports all extra files, not just those that are selected.
/v	Produces verbose output, and shows all skipped files.
/ts	Includes source file time stamps in the output.
/fp	Includes the full path names of the files in the output.
/bytes	Prints sizes, as bytes.
/ns	Specifies that file sizes are not to be logged.
/nc	Specifies that file classes are not to be logged.
/nfl	Specifies that file names are not to be logged.
/ndl	Specifies that directory names are not to be logged.
/np	Specifies that the progress of the copying operation (the number of files or directories copied so far) will not be displayed.
/eta	Shows the estimated time of arrival (ETA) of the copied files.
/log:<LogFile>	Writes the status output to the log file (overwrites the existing log file).
/log+:<LogFile>	Writes the status output to the log file (appends the output to the existing log file).
/unicode	Displays the status output as Unicode text.
/unilog:<LogFile>	Writes the status output to the log file as Unicode text (overwrites the existing log file).
/unilog+:<LogFile>	Writes the status output to the log file as Unicode text (appends the output to the existing log file).
/tee	Writes the status output to the console window, as well as to the log file.
/njh	Specifies that there is no job header.
/njs	Specifies that there is no job summary.

Job Options

Option	Description
/job:<JobName>	Specifies that parameters are to be derived from the named job file.
/save:<JobName>	Specifies that parameters are to be saved to the named job file.
/quit	Quits after processing command line (to view parameters)./nosd:
/nodd	Indicates that no destination directory is specified.
/if	Includes the specified files.