

safecopy

There are some predefined settings:

- **stage1**: Preset to rescue most of the data fast, using no retries and **avoiding bad areas**. Skip 10% of size when bad block found. 1 read attempt.
- **stage2**: Preset to rescue more data, using no retries but searching for **exact ends of bad areas**. Skip 128 blocks when bad block found. 1 read attempt.
- **stage3**: Preset to rescue everything that can be rescued using maximum retries, head realignment tricks and low level access. Skip 1 block if bad block found. 4 read attempts.

	-f	-r	-R	-Z	-L	-I	-o	
stage	skip	resolution	reads	move head	low level	incrim. mode	bad block out file	other
stage1	10%	10%	1	0	2		stage1.badblocks	
stage2	128*	1*	1	0	2	stage1.badblocks	stage2.badblocks	
stage3	1*	1*	4	1	2	stage2.badblocks	stage3.badblocks	

Every stage preset parameter can be overridden. E.g. for stage 3 is not needed to give additional stress to device with -R 4 and -Z 1, and better is to use:

```
safecopy --forceopen -L 0 --stage3 -c 151275030 -Z 0 -R 1 /dev/sdb /dev/sdc
```

Note: **-c parameter is used to continue previous safecopy interrupted by CTRL+C.**

Note: With -f parameter other than 1* you can miss good areas in between two bad ones.

stage#.badblocks files

In current working directory, safecopy will create files with badblocks map: stage#.badblocks, which are used in next stages.

Make sure stage#.badblocks files are sorted are unique before moving to next stage. In other case following error will shown:

```
.....Parse error in badblocks file stage1.badblocks: not sorted correctly!
```

```
Aborted because of error!
```

```
Recovered bad blocks: 0
```

```
Unrecoverable bad blocks (bytes): 60 (18100224)
```

```
Blocks (bytes) copied: 151299151 (619721322496)
```

Number of lines in each stage#.badblocks file shows how each stage works:

```
# cat stage1.badblocks | sort | uniq | wc -l
```

```
51200
```

```
# cat stage2.badblocks | sort | uniq | wc -l
```

4720

cat stage3.badblocks | sort | uniq | wc -l

1477

Usage example

Typical usage is:

```
safecopy --stage1 /dev/source output.img
mv stage1.badblocks stage1.badblocks.bak
cat stage1.badblocks.bak | sort | uniq > stage1.badblocks
```

```
safecopy --stage2 /dev/source output.img
mv stage2.badblocks stage2.badblocks.bak
cat stage2.badblocks.bak | sort | uniq > stage2.badblocks
```

```
safecopy --stage3 /dev/source output.img
```

Output

```
..... [244042830]
..... [244084814]
..... [244126798]
..... [244168782]
..... 100%
```

Done!

Recovered bad blocks: 0

Unrecoverable bad blocks (bytes): 2 (209715200)

Blocks (bytes) copied: 244190646 (1000204886016)

```
# safecopy --forceopen -L 0 --stage2 /dev/sdb /dev/sdc
```

Low level device calls enabled mode: 0

Forced reopening of source file even if device is temporarily gone.

Reported hw blocksize: 4096

Filesize not reported by stat(), trying seek().

File size: 1000204886016

Blocksize: 4096

Fault skip blocksize: 524288

Resolution: 4096

Min read attempts: 1

Head moves on read error: 0

Incremental mode file: stage1.badblocks

Incremental mode blocksize: 4096

Badblocks output: stage2.badblocks

Starting block: 0

Source: /dev/sdb

```

Destination: /dev/sdc
Destination filesize not reported by stat(), trying seek().
Current destination size: 1000204886016
[1124830](+4607303680){X<<<<<<<<}[1124831](+4096)
.....[151273551](+615009157120){X [151273679]
<<<<<<<}[151273655](+425984)
.[151273690](+143360){XXXXX<<<<<<<}[151274319](+2576384)
.[151274323](+16384){XXX<<<<<<<}[151274620](+1216512)
.[151274700](+327680){X<<<<<<<<}[151274788](+360448)
.[151275798](+20480){XXX<<<<<<<}[151276078](+1146880)
.[151276107](+118784){X<<<<<<<<}[151276110](+12288)
.[151276125](+61440){XX<<<<<<<<}[151276262](+561152)
.[151276326](+262144){X<<<<<<<<}[151276345](+77824)
.[151276347](+8192){X<<<<<<<<}[151276412](+266240)
.[151276511](+405504){X<<<<<<<<}[151276512](+4096)
..[151278398](+7725056){XXXX<<<<<<<}[151278843](+1822720)
.[151278847](+16384){XX<<<<<<<<}[151279033](+761856)
.[151279172](+8192){X<<<<<<<<}[151279173](+4096)
.[151279178](+20480){X<<<<<<<<}[151279179](+4096)
.[151279274](+389120){X<<<<<<<<}[151279287](+53248)
.[151279318](+126976){XX<<<<<<<<}[151279501](+749568)
.[151279567](+270336){X<<<<<<<<}[151279640](+299008)
.[151279646](+24576){X<<<<<<<<}[151279684](+155648)
.[151279685](+4096){XXX<<<<<<<<}[151280013](+1343488)
.[151280572](+413696){X<<<<<<<<}[151280636](+262144)
.[151280638](+8192){XX<<<<<<<<}[151280812](+712704)
..... 100%
Done!
Recovered bad blocks: 0
Unrecoverable bad blocks (bytes): 60 (18206720)
Blocks (bytes) copied: 244190646 (1000204886016)

```

Continue interrupted copy

```

..... [175312976]
..^C:-) 71%
Aborted by user request!
Recovered bad blocks: 0
Unrecoverable bad blocks (bytes): 2 (209715200)
Blocks (bytes) copied: 175316045 (718094520320)

```

With `-I` parameter *safecopy* works in incremental mode. Position is determined from `dest` file size. If `dest` is a block device parameter `-c` needs to be used:

```

safecopy --stage1 -c 175316045 -I my/previous/stage1.badblocks -L 0 --
forceopen /dev/sdi /dev/sdd

```

Working with USB or erroneous drives

To disable SATA low level operations:

```
safecopy --forceopen -L 0 --stage1 /dev/source /dev/destination
```

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