DiskSafe

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DiskSafe

1.1 DiskSafe Guide

DiskSafe Guide

Guide Version 1.05 DiskSafe Version 1.12

IMPORTANT NOTE: The old DiskSafe Release 1.03 was broken due to a bug in the Fast File System (Thanx, C= :-( ). Please update to 1.12!

The "complete test" of the 1.11 and earlier releases has proven to be not very relyable. Please run the new one again.

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1.3 About DiskSafe

"DiskSafe" is a tiny dos.library patch that, uhm, keeps disks safe - from invalidation by an accidential reset.

If you hit the reset key combination on the keyboard, the amiga usually stops all disk IO operation and does not update the disk, usually leaving it completely damaged. When booting again, the filing system tries to repair the damage - this is quick and O.K. for disks, but takes long for big HD's (usually around 20min per GB) and is thus not acceptable.

"DiskSafe" installs a patch that completes all disk IO before the reset actually is allowed to occure and thus leaves the disk validated, even when you hit reset within a disk IO operation. But in order to make this working, some special hardware must be present, which f*cky Commodore build not into ALL amigias, read the requirements!

Starting with release 1.10 DiskSafe can be setup to protect the ColdReboot() library function as well, hence protecting the system from accidential software resets.

Release 1.12 introduces again new features: First, you may ask DiskSafe for a log file, listing all files that have been saved. Then, an additional key sequence has been defined to reset the computer without saving the disks. Finally, a better protection mechanism agains other calls writing to the disk has been included.

To understand better what exactly DiskSafe does, read the background.

1.4 Requirements

DiskSafe tries to cancel the reset signal until all disk IO has finished. To do this, some special reset logic must be present on your amiga, which Commodore in their infinite wisdom forgot to add to every computer...

It is safest to test DiskSafe first, before using it, because I can't give any waranty if this reset logic is installed in your computer. Up to my knowedge, it is present in:

o) the newer A1000

o) the A2000 (A to C) series

o) the A3000 to A4000, and the A1200 (thanks to the reports)

but is not present in *some* (depending on revision)

o) old A1000's

o) A500's

o) A600's

I haven't tested this program for the A3000 and A4000, but I guess they have the necessary hardware. Nevertheless it is worth a try, since C= manufactured quite a lot revisions of the A500's which differ in various ways.

Continue reading here:

A Short Test

and to run the full test, try:

Complete Test

1.5 A Short Test

How to test the Reset Logic needed by DiskSafe

To test the Reset logic of your computer, a tiny test program called "ResetTest" is included in this archive. Here is how it's done:

- Make shure DiskSafe is NOT active.

- Open a shell window.

- Start the ResetTest program. A window should pop up.

- Hit the reset key combination:

- If you see a countdown running from 10 to 0, then printing

** POOF **

and finaly your amiga resets, the reset logic works and DiskSafe will work.

- If your computer resets immediately, without any countdown, the Reset Logic is broken and DiskSafe will fail.

If you found your reset logic o.k., you should run the complete test.

1.6 The Complete Test

How to test DiskSafe

First read the following steps, all at once and make shure you understand them. Some steps must be done FAST, and you can't continue to read this manual.

- Install DiskSafe.

- Take a new disk and format it, or use an old one which you no longer need. MAKE SHURE THAT NO DATA YOU'LL NEED LATER ON IS CONTAINED ON THIS DISK, SINCE IT MIGHT GET DESTROYED BY THE RESET - if the reset logic is not present in your computer and thus DiskSafe fails to operate.

- Run DiskSafe with:

DiskSafe df0: logfile=RAM:log

- Insert the disk likely to be trashed in your first diskdrive.

- Open a shell window.

- Locate a big (200K or more) bunch of data from the shell. DiskSafe itself is too small for testing... Every data will do it!

- Enter a copy command like the following:

copy file to df0:foo

where file is the name of the test file. Then press RETURN to start the copy operation. After the disk has started spinning, wait a while and HIT THEN THE RESET KEY (YESSSS, DO IT, against all rules!).

- Watch what happens: If the computer immeditatly starts booting, it is very unlikely you have the necessary hardware. If, however, the disk first continues writing and your amiga seems to ignore the reset, everything works fine.

A requester saying that the disk is write protected might appear before the computer starts booting, because DiskSafe protects the disk by software. Ignore this requester!

IN ANY CASE: Remove the disk as soon as the busy light turns off. Do not mind if the computer warns you about that.

- Do NOT write protect the disk.

- Wait until the workbench comes up.

- Start a Shell.

- Type "INFO" on the shell, but DO NOT press RETURN.

- Insert the disk, and wait UNTIL THE BUSY LIGHT TURNS ON.

- Press RETURN to start INFO.

- Read the disk status. If it is "Read/Write", everything is fine. If it says "Validating" or "Disk not Validated", the reset damaged your disk and DiskSafe failed to work. A second indicator for this is that the disk will be busy for quite a while, since the filing system tries to validate it.

- Start DiskSafe again, with the same line as above:

DiskSafe df0: logfile=RAM:log

Now look into the RAM: disk - a file "log" should have been appeared there. Use "type" or "more" to read it - it should contain the name of the destination file of the canceled copy operation above.

If you want to know more how DiskSafe works (or why it refuses to work), read the backgrounds.

1.7 Background of Operation

On every volume under control of the amiga filing system, a special data block called the "BitMap" block is kept. This "BitMap" stores the information which sections of the disk are free to use or already occupied by data - since you don't want to overwrite already existing files.

Whenever a file gets opened for writing, this "BitMap" is read into your computer's memory, to find out where the new incomming data can be stored - and it is not written back until the file gets closed, i.e. the disk operation is completed.

UNLESS, however, you press RESET during the file IO. In this case, only a part of the data gets written, but, even worse, the bitmap IS NOT WRITTEN BACK and the disk therefor invalid.

While booting, the filing system tries to repair the damaged BitMap, with more or less efford.

Now comes what DiskSafe does:

If you press reset, the reset is first captured by the keyboard device, which again informs DiskSafe and delays the reset, for a maximum of ten seconds (thus things must go fast). However, this delaying of the reset signal does not work on all amigas, since some special hardware is required to do this. To keep production costs (and customer satisfaction) low, C= choose not to install this piece of hardware into every amiga on the market!

If, let us assume, the keyboard.device COULD postpone the reset, DiskSafe closes all files open for writing and flushes all disk buffers, thus writing the bitmap and leave the disk valid. If this operation completes, the keyboard.device is told to finally start the reset procedure, since the bitmap of all disks is now save.

The logfile-creation is another "heavy-magic" operation: The list of open files is copied into a resident memory segment, to survive the reset. The actual log file is not written at reset time, since the disk might be quite busy, but by the next DiskSafe command locating the data left over. At this time the operating system is stable again, and the log file can be written safely.

REMARK: Experts might have noticed that I simplified the whole process how the disk validation and the filing process works, even how resets are delayed. I really know better, but I don't want to make things more complicate to understand, so have patience...

1.8 Installing DiskSafe

The installation process is quite simple:

Copy the "DiskSafe" program to your "C:" drawer, and the guide wherever you want.

After completing this, I recommand (!) you to test DiskSafe, read here for a short test.

If you found DiskSafe operates properly on your amiga, you might want to configure it.

1.9 Configure DiskSafe

After installing DiskSafe and testing it, you need to configure DiskSafe for your personal needs.

Edit the startup-sequence with an editor of your choice, and add above the "LoadWB" command the following line:

DiskSafe REBOOT drvs

The command line switch "REBOOT" is optional: Add it if you want protection agains accidential software resets (by calling the ColdReboot() function), or leave it alone if you don't. I recommend adding a "REBOOT" - it does not cost more memory, it's just another patch DiskSafe adds to your system.

The drvs argument contains a list of all drives you want to save with DiskSafe. Consider the following rules when creating this argument list:

- Most important drives should go LAST, since they are saved FIRST.

- Slower drives should go FIRST, since they are saved LAST.

- If you install one partition of a drive, you should add all partitions. In particular, if you add one disk drive, add ALL.

The drive specifications must be given as DOS DEVICES. To put it in other words: VOLUMES or ASSIGNS WON'T WORK HERE!

A typical command line would look like this:

DiskSafe REBOOT df1: df0: dh1: dh0:

Please note the order!

WARNING: In order to work, DiskSafe patches some vectors of the dos.library plus the ColdReboot vector of exec.library, if you specified the REBOOT switch. Some virus checker programs might complain about this!

Additional command line options:

Add INGORE to the command line to prevent DiskSafe from complaining about non-existing devices. This is useful if you boot with some of your HDs turned off.

The illegal device arguments are simply ignored in this case. The devices not valid at boot time WILL NOT BE SAFED BY DISKSAFE, EVEN IF YOU MOUNT THEM LATER!

A better solution is, however, to add a mount list for these devices with the "mount" entry set to zero. These devices WILL be protected by DiskSafe as soon as they get mounted.

You may request a logfile of the files that were open at reset time. For this, add "LOGFILE=file". The drawback of this log file generation is that it eats up more memory cause all the file names must be stored.

REMEMBER THAT THE LOG FILE WILL NOT BE WRITTEN WHEN THE ACTUAL RESET OCCURES. Instead, the next DiskSafe command with a LOGFILE argument will do this job.

To make this working, the so called "KickMemPtr" mechanism of the exec library is used. Again, some virus checkers might complain about this, or, even worse, might cancel the log file generation at all if they prevent programs from using these pointers.

Additionally, you may ask DiskSafe for a quick reset, without saving data. This can be used to get a faster reset in case the SCSI or IDE bus broke down and DiskSafe can't operate anyhow. To enable the quick reset, add the command line switch QUICKKEY. The quicker reset is then obtained by pressing one of the Shift keys first, and then, together with Shift held down, the usual reset combination.

PRESSING SHIFT AFTERWARDS YIELDS NOTHING, since the keyboard is blocked by the pending reset signal.

DiskSafe can print a list of all devices it added reset protection to. Call it from a shell like this:

DiskSafe SHOW

and you will either receive a note that DiskSafe is not installed, or a list of "safe" devices.

ANOTHER WARNING: There are more shell arguments to DiskSafe than explained above. However, they are FOR INTERNAL USE ONLY. Don't call DiskSafe with them without good reason!

1.10 DiskSafe History

DiskSafe 1.03:

First AmiNet Release.

DiskSafe 1.04:

Bug fix! Found a horror bug in the FFS - ACTION_FLUSH does NOT update the disk like it should! Argh! Thank you, Gene, for reporting!

DiskSafe 1.05:

Added support for removable media. It is now possible to add external devices with no medium in it provided they are mounted. Add a mount icon in DEVS:DosDrivers for this purpose.

DiskSafe 1.06:

DiskSafe is now able to launch itself, RUN is no longer needed.

DiskSafe 1.07:

Minor bugfix of 1.06: Due to a typo in 1.00, the output of a warning message was broken. Again a "thank you" to Gene Heskett.

DiskSafe 1.10:

Added ColdReboot() patch and Shell arguments REBOOT and SHOW. The background code prints now warning messages, if DiskSafe cannot be launched.

DiskSafe 1.11:

Filled a tiny gap in the disksafe protection: Delete(), Rename(), Protect() and other calls that may write to the disk are now forbidden after a reset signal has been caught.

DiskSafe 1.12:

Added IGNORE,QUICKKEY and LOGFILE command line options. Especially the last one is very tricky. Thanks for the ides goes to Nils Goers (IGNORE option), Christoph Bielachowicz (QUICKKEY option) and Fabio Vitale (LOGFILE option).