

# Re: Bad Clusters

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*Source:*

<http://www.tech-archive.net/Archive/WinXP/microsoft.public.windowsxp.general/2005-08/msg11047.html>

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- *From:* "Robert Reader" <[RobertReader@xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx](mailto:RobertReader@xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx)>
  - *Date:* Fri, 19 Aug 2005 06:21:02 -0700
- 

I'm getting the feeling that these bad cluster errors are spurious and don't represent a real problem.

I tried an experiment. On one of the external drives, the bad cluster error was reported in a 4 GB file which is a zip file of map images from a mapping application I have. First, I ran "chkdsk /f /r" a couple times in a row, and the same "Windows replaced bad clusters in file ..." appeared each time, indicating the clusters were not really fixed by Windows, and they keep appearing in the same file. In addition, I ran an integrity check on the zip file where it does CRC checking of the internal zip structure and no errors were found in the file (if bad clusters were either "bad" or subsequently "fixed" one might expect corruption.)

Then I deleted the file, and ran chkdsk again. Chkdsk reported no errors at all. (If there was really a problem, it should have been detected during the "checking free space" stage of the process.) I then re-zipped the images from my main hard drive in a fresh zip file and copied the file to the external drive again. I ran chkdsk and got the "bad clusters" error again in that file.

This makes me suspect that chkdsk is reacting in some strange way to that file and is not really detecting bad clusters at all.

This does not give me much confidence in chkdsk.

—  
Robert Reader

"cquirke (MVP Windows shell/user)" wrote:

- > On Sun, 14 Aug 2005 10:09:01 -0700, "Robert Reader"
- >
- >>Thanks for the detailed answer. I have two external Maxtor One touch hard
- >>drives I use for backup. I bought them 17 months ago and I ran the chkdsk
- >>just to make sure they were holding out OK. BOTH drives issued a "bad
- >>clusters" notice on one (not the same) file. I hope this doesn't mean they
- >>have both decided to self-destruct simultaneously.

## Re: Bad Clusters

- >
- > I'd replace them, if they're still under warranty. The only exception
- > would be if you'd imaged from a failing drive to this one, and thus
- > possibly carried over now-irrelevant bad cluster markers.
- >
- >> I sure wish someone would create a utility that would give you a clear
- >> picture of what's going on with the drive – whether its starting to cascade
- >> into failure or whether a bad sector was just a solitary, lone occurrence.
- >
- > This starts to look like the Halting Problem ;-)
- >
- > If you knew enough to reach the answer, you'd have reached the answer.
- >
- >> Like you said, I don't know if dozens of other sectors have recently been
- >> marked out as bad, which would suggest the catastrophic scenario.
- >
- > Hard drives don't always die in a linear fashion, a few bad sectors at
- > a time. So catastrophic failure could always happen – e.g. if a logic
- > board fries, or a motor burns out.
- >
- > However, progressive surface failure, either actual or apparent (e.g.
- > head positioning wobble that reduces accuracy of pickup, or a head
- > that doesn't work as well as it used to and thus can only read the
- > strongest of signals) is a common failure pattern.
- >
- > Why would a previously good HD develop a bad sector?
- >
- > Either because the ability to read the surface has generally
- > deteriorated, so that the weakest readable sector is now the strongest
- > non-readable sector (i.e. the first dead swallow of winter) or
- > something more focal has gone wrong with that particular part of the
- > drive. Which of these scenarios is the most comforting?
- >
- > Well, if it's the first, then that's very un-comforting. Whatever
- > progressed to make this weakest sector no longer readable, will likely
- > progress to make other sectors unreadable too.
- >
- > If the second, then; what could go wrong in one part of a disk?
- >
- > The only thing that really comes to mind is what is called a "head
- > crash", i.e. where the head touches the disk and thus damages it.
- >
- > Why would the head touch the disk – or perhaps, aren't the heads
- > always touching the disk anyway?
- >
- > Unlike diskette drives, the heads of a hard drive are not supposed to
- > actually touch the data-bearing parts of the disk. They are supposed
- > to fly very close to the disk, riding on the cushion of air that
- > "sticks" to the surface of the disk as it spins – something that
- > actually works, when the disk is spinning at proper speed.
- >

## Re: Bad Clusters

- > I can think of three things that can go wrong here.
  - >
  - > Firstly, the disk could get bumped while it's active, causing the
  - > heads to strike the disk in much the same way that a record would skip
  - > tracks when you kick the turntable (as DJs and pensioners will know).
  - >
  - > Secondly, the gap between disk and head is so small, that even a
  - > particle of cigarette smoke may be big enough to have the same effect
  - > as hitting a boulder on the highway. Head hits the object, and
  - > bounces DING Ding ding on the disk; that could be today's bad cluster
  - > and tomorrow's extension of this initial dead zone.
  - >
  - > Thirdly, the disk might slow down due to a power drop, causing the
  - > heads to pinch through the air cushion and touch the disk – and as the
  - > disk is still likely to be moving apace, that's gonna hurt.
  - >
  - > So we have scenarios that either cause physical damage, or are caused
  - > by impurities within the supposedly–clean sealed airspace. In fact,
  - > the one is likely to cause the other; a physical head strike may kick
  - > up debris that from then on may swirl around in this now–polluted
  - > airspace, and possibly cause further collisions and abrasion.
  - >
  - > If the airspace is not polluted from head strike debris, why would it
  - > be polluted? The most likely cause would be a failure of the air
  - > filtering, such that the airspace is not so "sealed" after all.
  - >
  - > When the heads hit the disk, is it only that part of the disk that is
  - > damaged? Or are the heads also damaged, and thus left working
  - > slightly less well than before?
  - >
  - > Considering all this, how would you postulate a scenario of "just one
  - > bad sector" without an increased likelihood of more to follow?
  - >
  - > The only one I can think of would be an absence of airspace pollution
  - > from a failing air filter etc., plus an isolated head strike that
  - > damaged the disk enough to cause a bad sector, but did not damage the
  - > head enough to weaken its ability to function, plus the strike did not
  - > kick up any loose debris, or leave the damaged surface unsmooth enough
  - > to snag the head again. That's asking for a LOT of faith, IMO.
  - >
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  - > Failure is not an option.
  - > It's built into the software
  - > >-----
  - >
  - .
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## Re: Bad Clusters

- *Follow-Ups:*
  - ◆ **Re: Bad Clusters**
    - ◇ *From:* cquirke (MVP Windows shell/user)
  
- *References:*
  - ◆ **Bad Clusters**
    - ◇ *From:* Robert Reader
  - ◆ **Re: Bad Clusters**
    - ◇ *From:* cquirke (MVP Windows shell/user)
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- Prev by Date: **Spoolsv.exe trying to access Internet**
- Next by Date: **Simple Question**
- Previous by thread: **Re: Bad Clusters**
- Next by thread: **Re: Bad Clusters**
- Index(es):
  - ◆ **Date**
  - ◆ **Thread**