

Re: Question: EMI Shielding for IDE cables

Source: <http://sci.tech-archive.net/Archive/sci.electronics.basics/2004-08/1035.html>

From: blue (*user_at_host.com*)

Date: 08/19/04

Date: Thu, 19 Aug 2004 13:55:45 GMT

Thanks for the replies,

I am using new aftermarket power supplies (thermaltake 480W). I've dealt with power supply problems with hard drives (long ago in the past), and the symptoms don't fit my current situation. Drives are always detected in bios, drives always spin up properly, drives are always accessible through os.

The reason why I think it is interference of some sort:

I did some checking of a bunch of corrupt files in a hex editor. I actually had chunks of text from other text files. So data got scrambled up during read/writes to the drives.

Switching to a shorter cable to do data recovery also meant unscrewing the drive from the bay, and just sitting it in the chassis next to the ide controller plug. This moved the drive away from the power cabling. Also, when doing recovery, I removed the rack chassis from the rack. With this done, I did some file copying tests to see if I was still getting corruption, and I did not. The same tests, with long ide cables, and the drive mounted in the bay, gave corruption errors. Test file was a large rar archive set, test was a sfv file check.

I am using flat ribbon IDE cables, 80 conductor / 40 pin. I understand that the second connector is a ground, which should eliminate cable crosstalk. But I do believe that my problem is actual RF or EMI interference.

I need to use longer cables because of the chassis layout – 24" – 36". It would seem to be quite easy to shield the rounded cables from EMI with some aluminum tape, I just don't really know what I need to consider. An EMI shield doesn't really make sense to me without a ground. And, is aluminum muffler tape the right stuff to use?

I am definitely paranoid of data corruption now – the amount of data I lost was crazy. I could have never imagined losing a full terabyte of data all at once..

Thanks,

Keith

creekchubbAThotmailDOTcom (replace AT with @, and DOT with .)

"Kevin Kilzer" <kkilzer.remove.this@mindspring.com> wrote in message news:u998i0hfhq9083gij1i4mqftqnb1cinc9e@4ax.com...

> On Thu, 19 Aug 2004 02:41:40 GMT, "blue" <user@host.com> wrote:

>
> >(Long story)
> >I am having problems with hard drive data corruption.
> >I have recently rebuilt some of my computers in rackmount casings. After
> >running them for a few weeks, I noticed that all of my files were
becoming
> >corrupted. I have 4 x 160GB + 4 x 120GB hard drives where this is
becoming a
> >problem. 2 of the drives lost their partition tables and became
completely
> >useless.
> >I made valiant efforts to recover and preserve my data, but I have
basically
> >given up.
> >
> >After much investigation, I suspect the cause for these problems to be
> >related to my IDE cables.
> >1. With the chassis layout, the power supply is located at the front of
the
> >case, leaving an AC power cable running directly under the hard drive
bays
> >and the ide cables.
> >2. The rack itself houses 6 computers, 2 UPS, 2 power bars, and about
10-15
> >other devices (modems, switches, etc), so I expect that there is quite a
bit
> >of interference here.
> >3. I am using flat ribbon 24" and 36" IDE cables, because shorter cables
> >will not reach from the drive bays to the ide controller connectors.
> >4. All drives are running ATA100
> >
> >When doing data recovery, I removed the drives from the cages and ran
short,
> ><18" ribbon cables. This seemed to greatly reduce the incidence of new
data
> >corruption.
> >
> >I have recovered whatever I could from the drives. They are now all
freshly
> >formatted and repartitioned. Because of the problems I have had, I am
afraid
> >to use them for anything.
> >
> >I truly do believe that the IDE cables are my problem. I ordered a bunch
of
> >rounded 36" ide cables, but when I got them, I realized they have no
> >shielding at all (I thought the point of rounding a cable was to put a
> >shielding around it!).
> >
> >I expect that shielding these cables may help fix my problems. I am
looking

> >for any advice on doing this. I initially thought I'd just get some
aluminum
> >muffler tape from the auto parts store, and wrap the cables, but I'm not
too
> >sure.
> >- Do I need to put a ground wire onto the shield? I think it would make
> >sense to have a drain on one end of the shield and attach it to the
chassis
> >- Should I put one of those ferrite clamp shields on the ide cables?
> >- Should I put one of those ferrite clamp shields on the internal AC
power
> >cable?
> >
> >I also think it would be smart to wrap any shielding in an insulating
> >material, like electrical tape or something. But when electrical tape
heats
> >up, the adhesive makes everything gooey. I don't know if I can fit heat
> >shrink tubing over the connectors. Any other ideas?
> >
> >Thanks for making it to the end of this long email!
> >Keith
> >creekchubbAHotmailDOTcom (replace AT with @, and DOT with .)
> >
> >
> >It is unlikely that shielding is the culprit, and more likely that
> >grounding or other power supply issues is the problem.
> >
> >By reducing the cable length, you have actually reduced the need for
> >good grounding. The suggestion by tempus fugit that 80-pin cables is
> >right-on, since those cables are required for proper ATA100 operation.
> >They provide 40 additional ground wires in each cable (which is not
> >quite the same as shielding). Standard ATA cables have only 5 or 6
> >ground conductors.
> >
> >You should also check the quality of the cabling in the power
> >connections. If you changed cases, I assume you also changed power
> >supplies and likewise the distribution of power. Watch out for those
> >"Y" cables in the power supply -- the standard ATA power connector is
> >notorious for getting bent out of shape if they are plugged/unplugged
> >a number of times.
> >
> >Kevin
> >