

**To: ATA-3 Working Group**

**This is the specific background to my request that we continue to entertain additions to IDENTIFY DRIVE data after 1/12/95. One solution to the problem described below would be to give the drive knowledge of which CHS-to-LBA formula was used by the system that formatted the drive that it could report to its current host system. I expect that a couple of other items will surface in the next 6 months where an extra bit of information available from the drive will make life much easier on the system side of the bus.**

From: penman@netcom.com (Duncan Penman)  
Subject: LBA Mode Incompatibility  
To: ata@dt.wdc.com  
Date: Sun, 1 Jan 1995 18:42:29 -0800 (PST)

I ran into an interesting story while teaching an IDE class a couple of weeks ago. The customer ships PC systems of various sizes using half a dozen different motherboards, but loads software on IDE disks on a common PC workstation for all of them. At least he did until he started shipping disks over 528MB.

What he discovered is that software (DOS in this case) written to the disk in LBA mode through a Phoenix BIOS won't boot on a system with an AMI BIOS, and vice versa. It seems that the alternate FAT table isn't where the directory says it should be when read through the non-original BIOS. Of course this led to weeks of investigation, conferences with drive vendors, etc. Their conclusion was that the drives are behaving correctly, i.e. using an internally consistent LBA mapping regardless of the current settings of their CHS parameters, but that the 2 BIOS's use different translation schemes to create an LBA when presented with a CHS address at the INT 13 interface. Not a problem if you never move a drive from one system to another, but a royal headache if you do.

Hmmmm. I haven't yet duplicated this and probably won't have the time at home and the appropriate hardware to do so for a couple of months, but assuming that the conclusion is technically correct, I believe we have a significant problem showing up here. I've heard it said by one BIOS developer that the user doesn't have to know or care about the CHS-to-LBA translation algorithm because people never move hard disks around on PCs. That obviously isn't the case for this customer, and the premise has been greeted with a laugh by several friends whom I described it to (hackers all, admittedly, who say they \*do\* move hard disks from system to system). But the long range, killer issue will be, I think, PCMCIA/ATA disks when they move above 528MB. I saw a 420MB type 3 PCMCIA/ATA disk at COMDEX 2 months ago. 540MB can't be far away.

Of course one response to this is to simply say, "If it hurts, don't do it!" In other words, add some restrictions to the IDE folklore (since this is an area untouched by formal standards), but it strikes me that doing so adds one more blemish to a structure that's already pretty ugly. What I'd rather see is some further work on getting a real consensus on this and a few other system issues.

Regards,  
Duncan Penman  
IIX Consulting (the new shingle)/ENDL Associates  
penman@netcom.com

1/11/95

### **Requested Addition to ATA-3 Topics**

**REQUEST:** I am requesting that the ATA-3 WG agree to consider proposed additions to IDENTIFY DRIVE data which may not arise directly from work on other approved ATA-3 topics, even if these additions are proposed after the 1/12/95 cutoff date.

**See the information below for background on this request.**

**This was the reflector mail that put this subject on the agenda this week.**

From: penman@netcom.com (Duncan Penman)

Subject: ATA-3 Agenda Request

To: ata@dt.wdc.com

Date: Mon, 2 Jan 1995 15:29:50 -0800 (PST)

I'd like to see us hold open the possibility of defining additional bits in IDENTIFY DRIVE data in support of BIOS or device driver information requirements, even though I can't be specific about which bits or their meanings today.

This request arises in conjunction with my proposal in a separate email to create a working group to deal with IDE and ATAPI system integration issues. If that effort materializes, it may well uncover problems that can most easily be dealt with by putting additional information in the drive to be retrieved when needed. While I'd normally just let these be dealt with as they arise, the stated deadline of Jan 12 to identify the content boundaries of ATA-3 leads me to raise this now.

I think there is a good chance that any such information can be worked in with the additions that will be needed for other ATA-3 features, such as Command Overlap and Command Queueing. But just in case.....

Regards,

Duncan Penman

IIX Consulting/ENDL Associates

penman@netcom.com