

Re: external eSata enclosure drive recognition?

Source:

<http://www.tech-archive.net/Archive/WinXP/microsoft.public.windowsxp.hardware/2008-07/msg00770.html>

- *From:* Paul <nospam@xxxxxxxxxxx>
 - *Date:* Wed, 30 Jul 2008 10:46:24 -0400
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Bill in Co. wrote:

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I do have a PCI and PCI Express slot available. But right now, I simply put the eSata connector cable and mounting bracket on the back, so that I can plug in my external eSata HD enclosure into the computer (in the back), using the SATA cables.

I didn't see mention of the Dell model number of your machine, and maybe

I have a Dell Inspiron 530, and I am using Windows XP Home Edition. I know it has the ICH9 controller, at least, and NOT the newer ICH9R, etc, which has AHCI)

I could look at the motherboard picture, to see what other options are available.

Thanks.
I also reread some more about that MSFN unofficial AHCI patch again, at this web site (referenced in that wiki article you mentioned), but am slightly wary of this. But, who knows??? And it is at one of the MSFN sites, so that ought to count for something. Here is the link:

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<http://www.msfn.org/board/How-to-enable-AHCI-on-Intel-ICH9-under-X-t109450.html>

If that patch worked, it sure would be a cheap way to get AHCI installed, as it "just" involves updating some files (uses a few tweaks to get AHCI to be "allowed").

But your idea of a separate controller card sounds perhaps better, and safer, I guess, albeit more expensive. Although I'm not sure if it would mess up any of my other SATA stuff (like the primary HD, and possibly the DVD drive, although they are connected I presume through the ICH9 controller on the MB, which hopefully not conflict in any way with another controller being added to the system. I'm not sure how the Dell BIOS would handle or even recognize this changeover, however. As it is now, the Dell BIOS only shows the option for IDE emulation of SATA, since that goes with the Intel MB and chipsets I have on this Dell 530, presumably.

A separate card can be used two ways. It can be used for a "data only" disk, one you don't care to boot from. In that case, it doesn't matter whether the BIOS chip on the separate card, loads or not.

That would be my case, since I'm only using with an external HD enclosure for image backup purposes of my system partition.

Still, when you boot up, I would think the system BIOS would need to recognize this controller too, and show at least some other options in there (in BIOS). Or maybe it does, but that's beside the point for what I'm doing here (not booting with it).

If you want to boot from a drive connected to a separate card,

Not. :-)

then the BIOS chip on the card has to load.

Seems like the BIOS chip on that PCI card would have to load anyways, just to allow it and

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its controller to function, with any connected device. I must not be understanding something then.

The BIOS does stuff like provide an extended INT 0x13 routine, which provides the ability to read sectors from the disk during bootup. Effectively, it is like a driver during boot time. Some motherboard BIOS have an option called "Interrupt 19 capture". The difference between the two statements I just made, is 0x13 is hexadecimal ($1*16 + 3$), while the second statement uses a decimal number (19). Why the industry cannot stick with one way of stating it, eludes me. Asus, in their BIOS, should really refer to it as 0x13. I mean, when I first saw that setting, I didn't know what it was for. Later, a little clue light bulb went on, that 0x13 and 19 were the same thing.

Yeah. 13H = $16+3 = 19$ decimal.

(Speaking of industry "standards", or rather the lack thereof, the gigabyte ratings of most of the computer world (binary) VS that used by the hard drive manufacturers, still bugs me.

"Capture", means to load the BIOS on any separate cards. So my motherboard has an option to disable all add-on ROMs, or allow them to be loaded.

I'm not sure if I have that option, but if memory serves me right, I don't.

If you allow them to be loaded, then the separate add-in cards can be used for booting the computer.

On an add-in card that supports RAID, the BIOS chip on the card can even include BIOS screens for declaring RAID arrays and the like.

I don't need or want RAID, but then again, know little about it, anyways. (I have noticed that this RAID capability often comes hand in hand with AHCI controller stuff, however).

All I want is the hotpluggable feature. That's the only reason I want AHCI, so that I can turn on and off my external eSata drive at will, and have it recognized that way.

So the add-in BIOS can add a user interface, for basic management functions before booting.

The Silicon Image cards I've seen, all have a BIOS chip on them.

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I would expect they would have to support their controller.

It can even
be reflashed, to change the functionality (RAID or non-RAID).

While I like the MSFN article you found, and don't doubt it would work,
I guess I look at the results, and ask how many situations will arise
at some future date, where I'd regret doing it.

Yeah, and that's a good point. And I think in rereading that article (there are several pages)
that one or two had reported such problems, along with some other problems.

I keep very simple setups here.

1) Ports set to vanilla IDE mode. This allows the default Microsoft driver
to load, so I don't need to press F6 during an install.

OK, that sounds good. Although I don't know what this "needing to press <F6> during install"
thing is that they're talking about, but I saw that mentioned before).
<F2> gets me to BIOS on my computer, so it must be something else, I guess.

2) No dynamic disks.
3) No drive overlays.
4) No RAID. (If you're going to use RAID, then it pays to learn how to use
it. I recommend practicing repairing the array, installing a new disk and
the like, before real data goes on it. Nothing worse than that feeling
of panic, when the BIOS pops up a warning that a RAID array has "failed".
You don't want to learn how RAID really works, with live data on the disks
and no backup.)

I agree – I don't want ANY of the above. I like to keep things simple, too.

Another way to look at it, is adding the ESATA card, means your computer
now supports up to six storage devices, rather than the four you had
previously.

Which for me is a bit overkill, but whatever. :-)

I believe I've got the ICH9 Intel 2920 and 2926 controllers, and the 2926 is a two port
controller (but not in use now, I guess), and the 2920 is a four port controller (being used by

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my internal SATA drive and my DVD drive).

About the only downside of add-in cards, is if there are too many add-in BIOS ROMs in the system, you can actually run out of low memory to load them all. Typically 128KB, in the 0-640KB region, is reserved for add-in BIOS ROMs to load, which is not a lot of space. The BIOS ROM on a video card, can eat 64KB of that.

Wow. But I expect that's for a higher end card, too, and that a more basic card wouldn't use that full amount.

Code loaded in that area, has a "shrinking" function, where excess junk is jettisoned, so it is possible for more stuff to fit in, if an add-in ROM is well written. (It means the add-on ROM code is bigger initially, and after any initialization is finished, the code can shrink to just the bits that are needed.)

As I understand it, the add-in ROMs are loaded in slot order, so the card next to the processor is loaded first, then the next card, and so on. That rule applies, as long as the motherboard designer set up the address map properly, to make that happen. That is why there is a recommendation, when there is trouble, to put the card you plan to boot from, in slot #1.

The card you plan to boot from? You mean, assuming you are adding a controller card for the boot drive, I presume. (Is that really that common? maybe, if people want higher performance, I guess)

Now that computers have so many flavors of slots, that isn't as practical a suggestion as it used to be.

I don't see any other storage options in the diagram here.

??? I have both free PCI slots and PCI express slots at this point.

As you note, there is a PCI Express x1 connector, but you can only use it, if the video card is thin enough. Some video cards are double slot width, which would cover up the connector.

I think it's clear. I'll take a look inside again. So at this point it seems I could add a PCI to external eSata II port card (seems most have two ports, but I only need one). Right?

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And it could be EITHER a regular PCI card, OR a PCI express card.

Not sure which slot would be better to tie up with that card (leaving the others free for something else later on). I assume it's a lot easier finding std PCI cards, so maybe I should tie up the express slot, if I find that card. I've been looking at amazon.com, and found some (not too expensive, either).

[http://support.dell.com/support/edocs/systems/](http://support.dell.com/support/edocs/systems/inspd530/EN/OM/parts.htm#wp1184332)

[inspd530/EN/OM/parts.htm#wp1184332](http://support.dell.com/support/edocs/systems/inspd530/EN/OM/parts.htm#wp1184332)

Paul

Thanks again!

OK. When the BIOS starts, it enumerates the add-on cards. It visits them one at a time, and reads the configuration info from the main chip. No BIOS chip is needed on the card to do that. You could unsolder the BIOS chip from the card, and the only consequence, is you cannot boot from it.

The BIOS will effectively ignore a PCI card, after that point. It can allocate a position in the address map, give the card an IRQ, and then it is done with the card. In such a scenario, where you had a card with a main chip on it, and no add-on BIOS ROM, the BIOS would ignore the card, and could not boot from it.

If a BIOS ROM is detected, while the BIOS is doing its probes, then the motherboard BIOS can attempt to load the add-in BIOS. That is, in a sense, like loading a driver at the BIOS level, as it adds some simple functions. Based on that added function, the BIOS then has more disks in the potential boot order. The INT 0x13 code adds the bootability function.

Now, when the OS starts up, it loads a bunch of its own drivers too. The driver tells it how to access the functions on the card. Just like in the BIOS scenario, if a card is present, but has no drivers, it is effectively ignored and invisible. (Just an entry in Device Manager, and an exclamation mark saying something isn't right.) From then on, you could use the computer, and the add-in card without Windows driver won't be doing anything. It is like so much dead weight.

When I referred to your motherboard, I was referring to the fact that the only storage chip is the ICH9, with four ports. So there isn't an additional chip, like a Jmicron chip on the motherboard. If there had been such a chip present, it might have meant another option for connecting disk drives. You do have expansion slots, and that is

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how you can add storage capability.

With regard to PCI cards versus PCI Express, you may find that only PCI Express has SATA ports at 3Gbit/sec. The older PCI cards have SATA at 1.5Gbit/sec and no "hot plug". If I was solving the problem you were working on, I'd be using a PCI Express x1 card, with SATA ports rated at 3Gbit/sec. The difference is, the driver for the 3Gbit/sec chips, tends to support hot plugging, while the others might not. There may be a hack for making the other ones do it, but you know my answer about "keeping it simple" :-)

This card is flashed with non-RAID BIOS, and has two ESATA connectors. \$25. Install it, install the driver, then you should see a "Safely Remove" icon, when you connect the ESATA drive.

"Rosewill RC-219 Silicon Image PCI Express External eSATA II x2 NCQ non-RAID"
<http://www.newegg.com/Product/Product.aspx?Item=N82E16816132020>

Paul

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