# [PATCH] (Longhaul 1/5) PCI: Protect bus master DMA from Longhaul by rw semaphores

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***Source:*** http://linux.derkeiler.com/Mailing−Lists/Kernel/2006−06/msg09698.html

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> You mean the longhaul driver can change the frequency of the PCI
> bus? Oh, that's a recipe for disaster...

No. Sorry. My English is bad. I mean changing CPU frequency.

> No, it's a hack :)

Again :−)

> No, this is not acceptable. What exactly do you want to do here? Make
> sure the PCI drivers are not doing DMA when the longhaul driver wants to
> change the pci bus speed?

I'm trying not to break DMA. Current version of longhaul (marked broken in 2.6.16.2) simply clears bus master bit on every device.

> Does it really save battery?

Yes. And CPU temperature is lower.

> And what about PCI devices that always do DMA? (think USB controllers,
> they can easily saturate the PCI bus all the time).

This is worst for SATA. USB (this is strange) seems to work correcly.
I know that this is 10% coverage, but it is better then nothing.
It is always possible to add support for longhaul to driver.

> Why not just suspend all PCI devices make the bus change, and then
> resume them? That would require no PCI core, or driver changes.

This was my first idea. But trust me in current kernel this is simply
worst idea.

> greg k−h

> Though currently in the driver, voltage scaling is missing,
> so we never save any power, and just run at the maximum voltage the whole time.

I added this to longhaul, but it only works on non EBGA CPU's.
EBGA CPU's (at least Nehemiah) seem to have voltage scaling
disabled.

> It needs there to be no bus mastering occuring at the time
> of a CPU speed transition. Though I'm unable to find the part that mentions
> this in the specs I have right now.

> Dave

"Once this is set, the processor will switch to the
value in [26:23] on the next AUTOHALT transition. The duration of the AUTOHALT
should be >=1ms to ensure the CPU's internal PLL is resynchronized. For AUTOHALT, this means interrupts must be disabled except for the time tick, which should be reset to >=1ms. Care must be taken to avoid other system events that could interfere with this operation. A few examples are snooping, NMI, INIT, SMI and FLUSH."

For CPU's with Longhaul MSR this time is equal to 200us.

RafaB