

Re: USB device just moves

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- *From:* Tim Roberts <timr@xxxxxxxxx>
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Eric <Scorpus@xxxxxxxxxxxxxxxxx> wrote:

USB must be polled at regular intervals,...

Interrupt and isochronous pipes must be polled at regular intervals. Other pipe types do not.

...if a so called interrupt packet is received (after it was polled for) then an SMI handler is invoked, and while that handler is running ****ALL**** other code execution stops dead!

Oh, come on. Who told you that? Once an operating system is running, a USB host controller is just a standard PCI device with a standard interrupt-based DMA transfer scheme. SMI is not involved.

This can happen many times a second depending on whats connected and the system design.

The usb keyboard is the worst offender with a transaction going something like this:

pc formats and sends packet to keyboard -> do you have a key for me?

...

pc formats and sends packet to keyboard -> do you have a key for me?

-- repeated 50 - 100 times a second --

keyboard sends data back with keystroke to pc

USB controller invokes SMM (system management mode). Entire PC (all cores) stops executing code or interrupts and starts executing SMI handler

SMI handler stuffs key data into 8249 keyboard controller.

SMI handler ends

An interrupt is generated either by or on behalf of the keyboard controller 8249 keyboard.

PC reads 8249 and retrieves key data

Is this insane or what?

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That kind of BIOS magic might be needed to simulate the 8249 keyboard controller at boot time, but once an operating system loads, all of that goes out the window. It's just a standard PCI device using standard PCI interrupts. No SMI.

There is nothing inherently wrong with a polled, dedicated master/slave bus design. It avoids all the problems of assigning a bus master or handling collisions among multiple senders.

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