

Re: WDF DMA use

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- *From:* "Eliyas Yakub [MSFT]" <elijasy@xx>
 - *Date:* Thu, 7 Jun 2007 07:41:15 -0700
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Your proposal of telling the system that you support scatter-gather, using common buffer to allocate memory and copying fragments to a contiguous buffer will work. All I want you to do is use `AllocateCommonBuffer` function instead of `MmAllocateContiguousMemory`. Both are functionally equivalent.

If you care about performance so much then you should have designed the hardware to support scatter-gather in the first place.

-Eliyas

"Avi Lousky" <AviLousky@xx> wrote in message news:4264FC39-E43D-48DA-B2BE-291EF0EC163D@xxxxxxxxxxxxxxxxxxxx

I'd like to make my driver future proof, this is the reason for trying to use the DMA, however it seems that the DMA abstraction is not suitable for my product. As I described, my board can handle several hundreds of audio packets, and therefore the driver should handle several hundreds of DMA transactions. Is there a way to do that?

"Eliyas Yakub [MSFT]" wrote:

No you shouldn't use `MmAllocateContiguousMemory`. If you are planning to use common buffer and do the memory copy yourself then you should use `AllocateCommonBuffer` to allocate memory. Industry is moving towards IOMMU (ask DMA remapping). By using DMA interfaces, you make your driver future proof.

-Eliyas

"Avi Lousky" <AviLousky@xx> wrote in message

Re: WDF DMA use

news:65221CB2-EA84-4A96-B2D9-53383EF78284@xxxxxxxxxxxxxxxxxxxx

So map registers are my bottle neck. Here is a thought: I will use MmAllocateContiguousMemory with HighestAcceptableAddress of 32 bit address and configure the dma enabler (WDF_DMA_ENABLER_CONFIG) with 32 bit and scatter gather. Will then the abstraction ignore the use map registers?
Will I be able to use several hundreds of transactions?
Is there another way to cause the system not to use map registers?
Thanks!

"Eliyas Yakub [MSFT]" wrote:

Yes it will coalesce it using map registers.

For scatter-gather DMA, map registers will be used only if the buffer lies outside the range of memory your hardware can access.

Yes, map registers are very precious resource. You can think of them as backup buffers allocated by the system to workaround hardware addressing limitations. The system can only allocate so many of those. The number of concurrent DMA transactions is constrained by the number of map registers system can provide. You can ask for large amount of map registers by specifying a big value in MaximumLength field, but the system may not provide everything you ask for. Based on what the system provides, you have to scale down your concurrency level. Take a look at the PCIDRV sample

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and
the logic around WdfDmaEnablerCreate
call.

Since you are using Packet based DMA, one
think you should note is
that
you
cannot initiate more than one DMA
transactions concurrently. This is a
limitation imposed by the DMA sub-system
because of the way it waits
for
the
map-registers to be made available.
Framework has logic to enforce
this
limitation.

-Eliyas