GDI has been accelerated. Does anyone know when this happened?

Asked 16 years, 2 months ago Modified 11 years, 4 months ago

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To sketch the background of this question : at work we use Dell Precision workstations. My current one has got an NVidia Quadro FX1700. My team is developing the graphics components for a real time data acquisition system. So we are always looking out to see if the graphics operations don't use up too much CPU time. For quick checks, we have a couple of test programs that we run, which draw scenes at a specified rate (e.g. 10 fps) and we use plain old Task Manager to see where CPU usage is at. One of these programs is heavy on GDI DrawRectangle calls (which are filled). This program always used to consume about 40% CPU user-time, but since about a year or so (just guessing here) it only uses about 2-3 % kernel-time. So clearly some hardware acceleration is going on here. And indeed, if I turn HW-accell off, we're back to the original 40% user-time. All of this is of course good news, because we were already thinking about going to OpenGL. Year after year GDI never got the benefit of hardware acceleration. Until some time ago that is.

Does anyone know anything more about this? Did Microsoft do this? Or is it gfx-card vendor specific?

Edit

Thnx for the answers already (Ferrucio, Torlack and Rob Walker) but my question has not been answered yet. We are talking about a filled rectangle here. Probably the most trivial function to optimize : just send a couple of coordinates to the GPU and let it rip. Yet it was always implemented on the CPU side. So far the answers lead me to believe that NVidia finally saw the light (after more than 10 years) and accelerated GDI. And no announcement about this? There's no information to be found on this at all. My internal customers ask me about the speedup of the graphics, and all I can say is "well, we got lucky".

Edit2

It does seem like it is driver related according to the different answers. So, then NVidia has made crappy GDI drivers for its workstation cards for years. It really was an accepted fact within this company that GDI was not accelerated and all the tests confirmed this.

windows **graphics** **gdi**

edited Oct 6, 2008 at 15:23

asked Sep 26, 2008 at 20:27

QBziZ
3,250 • 26 • 24

7 I disagree with the close. GDI is quite widely used so its performance is relevant, even when the answer happens to be related to a very specific issue. – reinierpost Nov 24, 2010 at 8:48

4 Even though the question is 2.5 years old now, I'll just add that I also disagree with the close. This is a potentially useful question for a lot of people who are writing graphics code. – nitro2k01 Apr 15, 2011 at 4:05

1 @reinierpost: You have enough reputation now to vote for reopening the question - please note though that the author himself closed the question, not the crowd or a moderator as one would expect at first sight. I think in hindsight (October 2008 has been the very early days of SO still ...) QBziZ should have submitted and accepted *Edit2* as his own summarizing answer instead of closing the question in order to allow answers with more insight later on eventually. Which is why I voted to reopen now myself ;) – Steffen Opel May 29, 2012 at 7:24

5 Answers

Sorted by: Highest score (default)

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GDI works by calling various functions in the graphics device driver. There are a core set of functions that every driver *must* implement. Other functions may be implemented by the driver. If they are not, GDI will perform those functions itself.

If a particular function is not implemented in hardware then there is no point in the driver doing a software

implementation of that function since GDI can probably do a better job. GDI is extremely well optimized for performance.

As more functions are implemented in hardware, not only do those functions perform much better, but there is also less work for GDI to do, resulting in less CPU time spent on graphics.

It may also be the case that the graphics card vendor, in an effort to get a card out to market quickly, may not have implemented all possible hardware functions that the card could perform. Later versions of that driver may then implement that functionality, resulting in improved performance.

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answered Sep 26, 2008 at 20:42

Ferruccio

101k ● 38 ● 229 ● 302

1 The thing is, I have been working with GDI for over 10 years now, on different hardware platforms and it has never been accelerated as far as I can tell. I would like to know whether this acceleration is systematical now, or just vendor specific. – QBziZ Sep 26, 2008 at 23:32

5

GDI was accelerated for quite awhile. Far as I recall it did depend on your hardware and drivers to some extent. Why you've seen such a jump in performance only recently seems odd.

However, don't get too happy - GDI hardware acceleration is no longer supported in Vista. The new desktop composition engine doesn't support it. However, in Vista you do gain fast moving of windows since content doesn't always have to be re-drawn by the application (and no tearing I think?).

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edited Aug 19, 2013 at 2:23

answered Oct 6, 2008 at 13:10

Aardvark

8,561 ● 7 ● 47 ● 64

Thanks for the answer. Good tip about Vista. I will try to check this with my little test app as soon as possible.
– QBziZ Oct 6, 2008 at 15:20

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To some extent, GDI has always been accelerated. Even back in the old Win31 days I remember buys cards (Number9) who's main selling point was hardware acceleration of GDI.

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answered Sep 26, 2008 at 20:32

Torlack

4,475 ● 1 ● 25 ● 24

Vista has a new display driver architecture which would provide an opportunity for a dramatic increase in

1

performance. Are you comparing like hardware/OS combinations?

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answered Sep 26, 2008 at 20:39

Rob Walker

47.4k ● 15 ● 100 ● 137

The OS I have tested this on is XP service pack 2. – QBziZ Sep 26, 2008 at 23:33

1

A lot of the 2D stuff has been accelerated for some time, each new major version of windows has changed the way display drivers have worked. I believe it was with XP that windows revamped it's window manager layer. Hard to compare, really, since XP is more similar to windows 2000/NT than any earlier versions.

Some more info on wikipedia, Development of Windows XP.

Windows 2000, certainly, was the first NT-kernel-based windows to include DirectX, and had some graphical improvements as well. Windows 2000 (wikipedia)

I don't believe there have been major changes to the display driver model/2D subsystem between releases. So if you noticed a change like that, it's likely due to something nVidia did.

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edited Sep 27, 2008 at 7:47

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answered Sep 27, 2008 at 1:27

davenpcj
12.7k ● 5 ● 42 ● 38