Subject: IDL 5.3 Performance ?
Posted by Richard Tyc on Tue, 08 Feb 2000 08:00:00 GMT
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IDL speed gurus:.

I just received my new Dell machine last week. It's a top of the line dual processor Pentium which should be blistering fast. I promptly began to do some speed tests using the idlspec2 from JD Smith at Cornell (results have been sent...) and also some app specific tests using my medical image application for which we bought the machine. Needless to say, I am not impressed with the performance so far but am confused at what the problem is. I am leaning toward saying its IDL 5.3 if this is possible.

The current machine in question is a Dell Precision Workstation 420, dual Pentium III 733 MHz, 512 Mb Rambus RDRAM Memory on NT4 SP5. It uses a relatively low-end graphics card, a Matrox G400 Max. I tend to think this may be where the problem lies. It had IDL 5.3 installed

I compared the performance with a previous machine I got which is now in the hands of our mechanical engineers running Autodesks Mechanical Desktop. It was a Dell Precision Workstation 410, dual 700 MHz Pentium III, 1024 Mb SDRAM, with a screaming fast Wildcat 4000 graphics card. It had IDL 5.2.1 installed.

Anyway, the tests in question should really be exploiting the CPU performance so I thought it was irrelevant the older Dell had the high end graphics card. I noticed the TIME_TEST3 performance was alot worse. For example running an empty for loop 2000000 times took 0.07799 units on the 700 MHz vs 0.172 on the new 733 MHz Dell.

My app also takes almost twice as long on the current Dell and most of the work is number crunching and displaying rendered volumes (IDLgrvolume) which should not take advantage of high end graphics cards like the wildcat but rather CPU performance because it uses a software ray tracing technique.

So, the main difference seems to be the old machine had IDL5.2.1 and the new IDL5.3 and I know from SPEC benchmarks the new Dell using the 733 Mhz Pentium, the Rambus memory etc IS faster. So, is it possible IDL 5.3 may run applications/benchmarks slower ? It's hard to believe and I think other factors are at play but its odd even the CPU speed tested in idlspec2 is slower.

Q. for JD Smith: is the is2_53.sav test program alot different than the version for IDL 5.2 ?

Any comments/ideas ?

Rich

Subject: Re: IDL 5.3 Performance ?
Posted by Karri Kaksonen on Wed, 09 Feb 2000 08:00:00 GMT
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On Wed, 9 Feb 2000, Roy E. Hansen wrote:

> In article <87q5b0$g0k$1@canopus.cc.umanitoba.ca>, "Richard Tyc"
<richt@sbrc.umanitoba.ca> wrote:
>> IDL speed gurus:.
>
> Hence, the 1D FFT is a factor of 2 slower in 5.3 than in 5.2.1

This sounds _very_ bad. Especially since they announced that this
was the last release for the Alpha processor running Windows NT.

It kind of takes away all the advantage of having a fast CPU in
the first place...
--
Karri

Subject: Re: IDL 5.3 Performance ?
Posted by John-David T. Smith on Wed, 09 Feb 2000 08:00:00 GMT
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Richard Tyc wrote:

> Q. for JD Smith: is the is2_53.sav test program alot different than the
> version for IDL 5.2 ?
>

This is exactly the same program, just "recompiled" for 5.3. It is very basic,
and does little more than a bunch of housekeeping and stuff to auto-email the
results. The actual testing is being done with:

time_test3,/NOFILEIO

graphics_times3

and the extracted IO test from time_test3. When I compare time_test.pro from
IDL5.3 to IDL5.2.1, the *only* differences are the addition of the new compiler
directives:

COMPILE_OPT hidden

to hide the compilation. The file time_test3.pro differs only in the version number listed at the top (1.1 vs. 1.1.2.1), but otherwise has *no* differences. The story is the same with graphics_times*.pro.

I rechecked the excerpted IO test, and it still checks out.

> Any comments/ideas ?

The limited 5.3 testing I've done does indicate a slowdown, although these tests were confined to a few machines only. For instance, on the chart on the IDLSpecII page, you can see I've entered my machine (Dell Dimension 400Mhz PII) twice, and the IO was hardest hit (by far). To really see what the slow down is, or if it is general, we need people to recontribute 5.3 idlspec2 entries from machines they had sent in before, making sure to use exactly the same descriptions and text so that i can sort those out together. Just take a look at http://www.astro.cornell.edu/idlspec/is2_sorted.html to find your old entry.

In the interest of a little more certainty, I did a side by side time_test3 with v5.2.1 and v5.3. I got:

5.2.1		5.3	
1	0.21400	1	0.20214
2	0.23642	2	0.23430
3	0.25929	3	0.26889
4	0.24083	4	0.25496
5	0.14772	5	0.19550
6	1.0328	6	1.0214
7	0.50235	7	0.50162
8	0.46114	8	0.46131
9	0.44494	9	0.44587
10	0.87304	10	0.87744
11	0.67848	11	0.67851
12	0.33605	12	0.24401
13	0.40520	13	0.21952
14	0.27451	14	0.085009
15	0.26790	15	0.25382
16	0.36092	16	0.41647
17	1.4182	17	1.4306
18	0.27534	18	0.26124
19	0.45899	19	0.46114
20	0.46100	20	0.45048
21	0.32254	21	0.32184
22	0.13546	22	0.13159

23 0.90981 23 0.91101
10.7171=Total 10.3288=Total

So this doesn't really support a slowdown. Test 5 "Mult 512 by 512 byte by constant and store, 30 times", is marginally slower. But tests 12,13, and especially 14 (LU decomposition) are faster. Even I/O seems similar, which probably means I was comparing apples and oranges, since my original result (around .45 seconds) was obtained using a different version of Linux and the C libraries (I was forced to upgrade in order to use 5.3). When compared side by side in this way, results really are quite similar. The geometric means were 0.35871513 (v5.3) and 0.38800894 (v5.2.1), indicating the *slight* speedup of 5.3 on specific tests, most notably LU decomp.

IDLSpecMark's were 0.873758 (v5.3) versus 0.891246 (v5.2.1), but had a good deal of variability on subsequent invocations, and were certainly consistent with similar performance. My suggestion is to look to the operating system, or try installing 5.2.1 on your new machine and comparing that way.

JD

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Subject: Re: IDL 5.3 Performance ?
Posted by Richard Tyc on Thu, 10 Feb 2000 08:00:00 GMT
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I did install IDL 5.2.1 and it did show a major improvement in some areas:

Platform: Dell 420 Dual Pentium III 733 MHz, 512 Mb RDRAM, Matrox G400 Max

	IDL5.3	IDL5.2.1	
TIME_TEST3	6.405	4.235	
GRAPHICS_TIMES3	4.593	2.625	? not sure why-same card ??
IO test	0.578	0.594	

Some significant differences

Invert 192^2 random matrix	0.266	0.07799
Generate 1000000 random nos	0.141	0.063
Smooth 512x512 float array	0.109	0.047

My own application ran 20% faster

Rich

David McClain <dmcclain@azstarnet.com> wrote in message
news:sa1qmsfchse80@corp.supernews.com...
> The only fair way to make this comparison is to install the old IDL 5.2x
on
> your new machine and run the same code. There are so many hardware
> variations with respect to bus width to memory, how many processors, how
> large and what mapping the secondary and primary caches offer, etc, etc. I
> would be interested to hear your results...
>
> David McClain, Sr. Scientist
> Raytheon Systems Co.
> Tucson, AZ
>
> Richard Tyc <richt@sbrc.umanitoba.ca> wrote in message
> news:87q5b0$g0k$1@canopus.cc.umanitoba.ca...
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