Subject: Re: IDL i/o on G4
Posted by John-David T. Smith on Thu, 15 Mar 2001 01:14:58 GMT
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"Dmitri A. Sergatskov" wrote:
>
> Looking at IDLSPEC2 numbers for Macs (G4 in particular), it appears that
> I/O performance is abysmal. Does anyone have an insight why would it
> be so bad? The STREAM benchmark suggests that it should not be a generic
> G4/MacOS problem.
>

Not sure if I addressed this on the page... the current suite of IDL tests as presented in time_testn library routines do not sufficiently tax the I/O hardware subsystems. The scatter you see in timings results almost entirely from caching policies of the underlying OS (with the on-board caching of modern harddrives a secondary complication). That is, some of these OS's are not actually physically comitting bytes to disk, but caching them in memory (which is a perfectly acceptable practice).

As it happens, MacOS has a pretty pitiful caching policy, which is pretty well known. I imagine if those numbers were replotted under MacOSX, it would line up reasonably well with other OS's. I also imagine doing heavy duty I/O where your cache policy is irrelevant would equalize things (though I'd suspect the MacOS I/O subsytem would still suffer).

One other thing to remember: the speed advantages of G4's Altivec unit are not built into the IDLSpec2 survey, since they were introduced in version 5.4.

I had promised an update to IDLSpec which addressed these and other issues. Perhaps this summer. In the meantime, it seems the standard time test suite RSI distributes doesn't do exactly what we want. Certainly the I/O testing can be improved and made more real-world applicable. Perhaps OpenGL performance can also be addressed.

I'm always open to suggestions on this, but I can't promise anything new in the near term.

JD

Subject: Re: IDL i/o on G4
Posted by dima on Thu, 15 Mar 2001 05:40:12 GMT
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On Wed, 14 Mar 2001 20:14:58 -0500, JD Smith <jdsmith@astro.cornell.edu> wrote:
> "Dmitri A. Sergatskov" wrote:
>>
>> Looking at IDLSPEC2 numbers for Macs (G4 in particular), it appears that
>> I/O performance is abysmal. Does anyone have an insight why would it
>> be so bad? The STREAM benchmark suggests that it should not be a generic
>> G4/MacOS problem.
>>
>
...< Mac OS well, sucks ...>

> MacOSX, it would line up reasonably well with other OS's. I also
> imagine doing heavy duty I/O where your cache policy is irrelevant would
> equalize things (though I'd suspect the MacOS I/O subsytem would still
> suffer).
>
> One other thing to remember: the speed advantages of G4's Altivec unit
> are not built into the IDLSpec2 survey, since they were introduced in
> version 5.4.
>
... < benchmark can be improved ...>

Thanks for your reply!
Well, I guess I have to start from the beginning. I need to choose
a laptop for very memory intensive number crunching job (similar
job runs on intel LX mb / 66MHz bus approx 30% slower then
on BX / 100 MHz bus, the same CPU). There are number of reason
to get a latest Apple G4 notebook in favor of say IBM T21, but
this benchmark put me off for the moment. I guess it is back
for considerations now.

>
> JD

Regards,

Dmitri.

Subject: Re: IDL i/o on G4
Posted by John-David T. Smith on Thu, 15 Mar 2001 17:47:53 GMT
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I presume you saw:

http://www.rsinc.com/AppProfile/idl_Motorola.cfm

If I were you, I'd drop RSI a line and ask two things:

1. What are your plans with respect to MacOSX?

2. If you have internal builds of IDL for MOSX, can you comment on I/O performance? Altivec usage? Command line support?

I should think a G4 titanium with OSX would be just about the fastest laptop for running IDL available, but only if RSI is on the ball and has a version ready when it hits prime time (sometime this summer, though the release is next week).

You might also consider bothering RSI about LinuxPPC support, which should be pretty trivial for them. Then your I/O issues largely dissappear.

Keep in mind however that all laptops' I/O will underperform: disk size and weight are optimized over speed.

Good luck,

JD

Subject: Re: IDL i/o on G4
Posted by dima on Thu, 15 Mar 2001 20:18:53 GMT
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On Thu, 15 Mar 2001 12:47:53 -0500,
JD Smith <jdsmith@astro.cornell.edu> wrote:

....<deleted>....
>
> If I were you, I'd drop RSI a line and ask two things:
>
> 1. What are your plans with respect to MacOSX?
>
> 2. If you have internal builds of IDL for MOSX, can you comment on I/O
> performance? Altivec usage? Command line support?
>

Thanks, I will do.

> I should think a G4 titanium with OSX would be just about the fastest
> laptop for running IDL available, but only if RSI is on the ball and has
> a version ready when it hits prime time (sometime this summer, though
> the release is next week).
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Sometimes I with Apple would get a clue and _pay RSI (and Mathworks
for that matters) money_ to do that. They advertise the G4 as
a "supercomputer", but so far it looks more like a glorified
$5k DVD player. I am pretty sure it was one of the reasons
the Cube fail.

> You might also consider bothering RSI about LinuxPPC support, which
> should be pretty trivial for them. Then your I/O issues largely
> dissappear.

One would think they can do it. After all RSI were probably the first to
port serious application on x86/Linux. They also have TerraSoft next door.
From the other end I was always dissapointed with x86/Linux port of IDL
(I have not tried the latest releas though). It was not very stable,
required multiple visuals (that x86 hardware would not provide)...

>
> Keep in mind however that all laptops' I/O will underperform: disk size
> and weight are optimized over speed.
>

I understand that. My major concern is a sustain memory throughput.
It is not going to be a major number cruncher.

> Good luck,
>
> JD

Thanks again.

Sincerely,

Dmitri.

Subject: Re: IDL i/o on G4
Posted by John-David T. Smith on Thu, 15 Mar 2001 23:40:38 GMT
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"Dmitri A. Sergatskov" wrote:

>
>> I should think a G4 titanium with OSX would be just about the fastest
>> laptop for running IDL available, but only if RSI is on the ball and has
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> a "supercomputer", but so far it looks more like a glorified
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> the Cube fail.

Since RSI and Apple seem so chummy lately (reading that press release),
I'm sure Steve mentioned their new little OS project on the horizon.
Time will tell.

And not to proselytize, but you could get two of them for that price:

New! Titanium PowerBook G4 400MHz
400MHz G4, 128MB SDRAM, 10GB Hard Drive, Slot Load DVD, 56K Modem, 15.2"
Mega Wide Screen.
Extra 128MB RAM FREE!*
Only $2,594!

>
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> (I have not tried the latest releas though). It was not very stable,
> required multiple visuals (that x86 hardware would not provide)...

I have used almost exclusively Linux IDL. I find it very stable. The
problem you refer to has to do with hardware and the free X display
servers, not IDL, and has been (partially) alleviated with XFree86
v4.0. It's the inability to simultaneously *overlay* an 8-bit
pseudo-color visual on a native 24-bit Truecolor session. Usually you
want to do this to accomodate a program written in a color-depth
specific way (yes David, it is a crime). Overlay functionality has been
typical of most unix workstation video hardware for a long time, but has
only recently been catching on among standard PC components. The Matrox
cards are a good example.

JD

Subject: Re: IDL i/o on G4
Posted by dima on Fri, 16 Mar 2001 00:37:26 GMT

On Thu, 15 Mar 2001 18:40:38 -0500, JD Smith <jdsmith@astro.cornell.edu> wrote:
> "Dmitri A. Sergatskov" wrote:
>
>>
...<deleted>...

>
> Since RSI and Apple seem so chummy lately (reading that press release),
> I'm sure Steve mentioned their new little OS project on the horizon.
> Time will tell.

Well, long time ago I was hoping that PPC will free us from Intel
misery... Now I am old and not that optimistic.

>
> And not to proselytize, but you could get two of them for that price:
>
> New! Titanium PowerBook G4 400MHz
> 400MHz G4, 128MB SDRAM, 10GB Hard Drive, Slot Load DVD, 56K Modem, 15.2"
> Mega Wide Screen.
> Extra 128MB RAM FREE!*
> Only $2,594!
>

Well. Configuration I had in mind had 500MHz and 512Meg. It was over $4500.

>
> I have used almost exclusively Linux IDL. I find it very stable. The

When did you start? The last time I played around with IDL on Linux
was more then 2 years ago. I manged to crash it more then once not
doing anything radical (in terms of memory allocation etc...).
The graphics problem was extreamly irritating as well. It just did not
feel like a finished product. The Matlab that we used at the same time
looked much more mature. In fact I do not remember Matlab _ever_ crashing
on either me or anyone in our group in the last 4+ years we are using it
(on Linux).

> problem you refer to has to do with hardware and the free X display
> servers, not IDL, and has been (partially) alleviated with XFree86
> v4.0. It's the inability to simultaneously *overlay* an 8-bit
> pseudo-color visual on a native 24-bit Truecolor session. Usually you
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> typical of most unix workstation video hardware for a long time, but has
> only recently been catching on among standard PC components. The Matrox
> cards are a good example.

>
I heard that Matrox G450 supports overlays, is it true?

Soon after my last evaluation of IDL I read a news that XiG (or whatever
it was called back then) released AcceleratedX X11 server that
emulated overlays in software.

>
> JD

Regards,

Dmitri.

Subject: Re: IDL i/o on G4
Posted by dirk on Fri, 16 Mar 2001 04:40:26 GMT
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In article <3AB152F6.48743F25@astro.cornell.edu>,
JD Smith <jdsmith@astro.cornell.edu> wrote:
> "Dmitri A. Sergatskov" wrote:
>
>>
>>> I should think a G4 titanium with OSX would be just about the fastest
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>>>

[snip]

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> specific way (yes David, it is a crime). Overlay functionality has been
> typical of most unix workstation video hardware for a long time, but has
> only recently been catching on among standard PC components. The Matrox
> cards are a good example.

Hey JD --

 I haven't been keeping up with the characteristics of the new Xfree
distributions. Is it possible to have multiple visual classes on the

same screen, or do I still need to start another session in 8bit mode?
Xfree86 development seems to have nearly ground to halt over the past 2
years, and it was my understanding that version 4 didn't end up having
overlay capabilities despite advertisement to the contrary. What's the
scoop?

- Dirk

Subject: Re: IDL i/o on G4
Posted by John-David T. Smith on Fri, 16 Mar 2001 16:48:34 GMT
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Dirk Fabian wrote:
>
> In article <3AB152F6.48743F25@astro.cornell.edu>,
> JD Smith <jdsmith@astro.cornell.edu> wrote:
>> "Dmitri A. Sergatskov" wrote:
>>
>>>
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>>>> a version ready when it hits prime time (sometime this summer, though
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>>>>
>
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>
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> Xfree86 development seems to have nearly ground to halt over the past 2
> years, and it was my understanding that version 4 didn't end up having
> overlay capabilities despite advertisement to the contrary. What's the
> scoop?

Hey Dirk, how's wisconsin livin'? The idea of overlays is to have two visual classes operating at once. You can also start another X server with a different visual and have it directed to the same display, with xnest for example -- not exactly convenient, but works for almost any hardware, I think.

Try "xdpyinfo" for a list of visual modes available. If all you see is a Truecolor/Directcolor 24 bit entry, then you're out of luck. I believe the Matrox cards (mga driver) have the best (only?) support for this under XF864.

A more relevant question starts to be, how logical is it to jump through so many hoops to keep writing and using 8-bit psuedocolor applications? I think we need an entirely new color model, one which takes full advantage of the better capabilities of modern video hardware. There must be better ideas out there. Device, decomposed=0 is just an interim solution, which is actually more crippling than a pure PseudoColor visual. I wonder what tack other color-heavy processing software has taken?

JD

Subject: Mac OS X (was: IDL i/o on G4)
Posted by Paul Woodford on Fri, 23 Mar 2001 04:01:52 GMT
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In article <3AB10049.5D0EBE0D@astro.cornell.edu>, JD Smith <jdsmith@astro.cornell.edu> wrote:

> If I were you, I'd drop RSI a line and ask two things:
>
> 1. What are your plans with respect to MacOSX?

This one has been answered. Woohoo!

http://www.researchsystems.com/pr/detail.cfm?PressReleaseID= 48

Paul
