Subject: Re: Sorry Re: which OS is faster for idl?
Posted by R.G. Stockwell on Thu, 23 Oct 2003 17:00:35 GMT
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>> Yunxiang Zhang writes:
>>
>>> I happened to have a chance to run a time_test on a multiboot machine
>>> today. I did time_test, time_test2 & time_test3.
Linux(gentoo,2.4.20-r6
>>> kernel for P4) is 20~30% slower than XP. What do you guys think of
this?
>>> Any similar test has been done by anyone of you?

A while ago I came to a similar conclusion. A 1.13 ghx win2000 laptop
was faster than my 1.4 ghz linux AMD.
There must be compiler optimizations available on the ms platforms
that are not there on the other platfforms.

 ------------- my old message --------------
here are my current numbers comparing IDLDE 5.5 on:
1) 1.4 ghz Athlon 512Mram (Desktop) running Redhat 7.2 Linux
and the KDE desktop
2) 1.13Ghz Pentium III 512Ram (Laptop) running Windows2000 SP2

These were all averaged repeated runs, no "compile time".

Time_test.pro
1 (1.4Ghz Athlon) = 0.78 seconds
2 (1.1Ghz pentium) = 0.63 seconds

Time_test2.pro
1 (1.4Ghz Athlon) = 2.00 seconds
2 (1.1Ghz pentium) = 1.64 seconds

So, the athlon is .78/.63 = 23% slower,
or 2/1.64 = 21% slower.

Of course, clock down the athlon to 1.13 ghz
and the time is 2.00*1.4/1.13 = 2.47 seconds,
and the percent slowness would be
2.46/1.64 = 50% slower.Here is a long url to that
 discussion.http://groups.google.com/groups?hl=en&lr=&amp ;ie=UTF-8&oe=UTF-8&editi
 on=us&threadm=a3cnu3%24ntt%241%40newsreader.mailgate.org &rnum=1&prev=/groups
 %3Fq%3Dstockwell%2Bpentium%2Blinux%2B2000%26hl%3Den%26lr%3D%
 26ie%3DUTF-8%26o
 e%3DUTF-8%26edition%3Dus%26selm%3Da3cnu3%2524ntt%25241%2540n ewsreader.mailga

Subject: Re: Sorry Re: which OS is faster for idl?
Posted by Karl Schultz on Thu, 23 Oct 2003 23:42:59 GMT
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"R.G. Stockwell" <noemail@please.com> wrote in message
news:0RTlb.1644$4V5.19167@news.uswest.net...
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> that are not there on the other platfforms.
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Agreed.

I ran the same tests on my dual-boot (XP/RedHat 8.0 2.4 kernel) and measured
linux to be about 15% slower.

Dual boot machines are great for tests like these because they keep a lot of
the variables constant and you therefore don't have to apply CPU clock speed
adjustments and wonder about differences between cache sizes, CPU
architecture, and other chipset issues.

I also compared the times on linux with and without an X server running and,
as expected, it made no significant difference.

So, it is a pretty fair bet that the quality of the compiled code,
efficiency of function parameter passing conventions, and speed of the
runtime library are probable contributors to the observed difference.

Karl

Subject: Re: Sorry Re: which OS is faster for idl?
Posted by JD Smith on Fri, 24 Oct 2003 00:40:23 GMT

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On Thu, 23 Oct 2003 16:42:59 -0700, Karl Schultz wrote:

> "R.G. Stockwell" <noemail@please.com> wrote in message
> news:0RTlb.1644$4V5.19167@news.uswest.net...
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> efficiency of function parameter passing conventions, and speed of the
> runtime library are probable contributors to the observed difference.

This seems to me to be almost entirely a compiler issue. I know you use
very few of gcc's built-in optimizations: have you investigated whether
this speed disparity can be mitigated or reversed with more aggressive
optimization on the Linux side? Also interesting would be the per-test

dicrepancy between Linux and Windows: is it a fairly general penalty, or are there just a few "hot spots" where poorly performing library code might be indicated? I recall this was true for the OpenGL performance on Linux vs. Windows (which is far more driver-dependent than anything else): one test ran 15x slower on Linux than on Windows, dominating the total elapsed time. Otherwise Linux compared quite favorably (faster on a majority of the tests).

JD

Subject: Re: Sorry Re: which OS is faster for idl?
Posted by Pertti Rautiainen on Fri, 24 Oct 2003 09:13:00 GMT
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R.G. Stockwell <noemail@please.com> wrote:

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: was faster than my 1.4 ghz linux AMD.
: There must be compiler optimizations available on the ms platforms
: that are not there on the other platfforms.

Another thing is that IDL seems to better optimized for Intel than for AMD. Here's the results for time_test3:

P4, 2.2 GHz, 1024 MB RAM, RedHat 9.0 & IDL 6.0
1.95918=Total Time,   0.071304670=Geometric mean,   23 tests.

Athlon TB 1.4 GHz, 512 MB RAM, RedHat 9.0 & IDL 6.0
4.02103=Total Time,   0.13463139=Geometric mean,   23 tests.

When I am running an N-body simulation program in both machines, I get quite different results: when the code is compiled with g77, the computers are roughly as fast, when I use Intel's Fortran compiler, P4 is about 40% faster than Athlon. So even with Intel's own compiler, the difference is far from what time_test3 gives.

Pertti Rautiainen

Subject: Re: Sorry Re: which OS is faster for idl?
Posted by Rick Towler on Fri, 24 Oct 2003 16:45:10 GMT
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"JD Smith" wrote ...
> On Thu, 23 Oct 2003 16:42:59 -0700, Karl Schultz wrote:
>

>
>> "R.G. Stockwell" wrote ...
>>>

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> this speed disparity can be mitigated or reversed with more aggressive
> optimization on the Linux side?

Does RSI really use gcc to build IDL for linux? If so, the majority of the
difference could be attributed to the unoptimized code it generates. Even
when you invoke gcc's optimizations it lags far behind the Intel and
Portland Group compilers for Linux.

Really? gcc?

-Rick

Subject: Re: Sorry Re: which OS is faster for idl?
Posted by JD Smith on Fri, 24 Oct 2003 22:12:55 GMT
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On Fri, 24 Oct 2003 09:45:10 -0700, Rick Towler wrote:

> "JD Smith" wrote ...
>> On Thu, 23 Oct 2003 16:42:59 -0700, Karl Schultz wrote:
>>
>>
>>> "R.G. Stockwell" wrote ...

>>>>
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> and Portland Group compilers for Linux.
>
>
As far as I know, yes. I think the idea is that this would allow DLM's to
be built with minimum fuss using the most popular freely available
compiler for the platform. Note that gcc 3.4, due out in the near future,
is supposed to be much improved when it comes to optimization performance.

JD

Subject: Re: Sorry Re: which OS is faster for idl?
Posted by bryan.jones on Sun, 26 Oct 2003 20:06:02 GMT
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Yunxiang Zhang <yxzhang@stanford.edu> wrote in message
news:<Pine.GSO.4.44.0310221946570.28591-100000@elaine1.Stanford.EDU>...
> Sorry, Mac guys. Maybe my title is somewhat misleading here. This is
> because I thought it's hard to compare between different hardware
> configurations. That is also why I am a bit exciting when I found a

> multiboot P4. Of course you guys are welcome to talk about your
> experiences over different platforms. Remember there're
> Solaris/HP-UX/IRIX/AIX users.;-)
>
> Anyway, any story about performance testing related to idl is highly
> encouraged.^!^

I actually am not surprised at the performance difference between XP
and the gentoo distro as one might not have access to system specific
tuning with gentoo or potentially other linux distros and I would not
be surprised if non-Intel chipsets did not perform as well due to the
same issues. So, to answer your question immediately, I am sure that
between Linux and Windows, Windows on Intel is probably the faster
solution. However, as David alluded to, there is a faster platform
with which to run IDL on, but the IDL specific interface on that
platform is not all it could be.

As for comparison of platforms, right now our code is not set up to
perform our calculations in batch mode, so we are not running code
that takes hours to complete, but I can comment on code runs of a few
minutes or less in a qualitative sense as opposed to giving you
"benchmark numbers" as I have never really paid attention to exact
timings. I should say that very few folks do proper benchmarking
studies, and most of the time, performance claims are dubious and can
depend upon compiler used for the OS, memory availability and
performance, hard drive performance, CPU/bus interactions etc... and
above all, how the code you are using interacts with all of those
factors. I have used IDL on Windows, Macs (OS 9 and OS X), and SGI's
IRIX on a number of different hardware configurations, so I feel I can
comment on a number of factors. As far as raw performance goes, I was
always happy with the SGI Octane's performance (300 Mhz R12000 with
1GB of RAM) running IDL until I ran code on a fast Pentuim 4 (2.8 Ghz
with 1GB of RAM) which was truly fast and had a much better IDL GUI
code environment with color coding available etc... than the
traditional *NIX X-windows paradigm. I had also used IDL on OS 9 from
Apple running on G3's and the performance was so so, but the GUI was
like the Windows GUI and thus much better than the *NIX environment.
Granted this was not much of a comparison given the age difference of
the machines, but it was the best comparison I had of more modern
hardware until the OS X machines showed up. The dual Ghz G4's (1.5 GB
RAM) performance with IDL did not match that of the 2.8 Ghz P4 and the
X-windows interface is your standard *NIX X-windows interface, but
there were other productivity gains that kept it on my desk. Now
however, the dual G5 (2.0 Ghz and 2 GB RAM) easily appears to eclipse
the performance of the 2.8 Ghz P4. But, we are still dealing with an
inferior IDL specific GUI interface than we have available running on
Windows. All in all, I believe I will stick with the G5 machine due
to its performance, better security, ease of use and dramatic

increases in productivity in other areas, but I am NOT happy with the IDL X-windows interface, and like other X-windows interfaces, interface widgets often have to be tweaked if porting code from Windows versions of IDL.

So, to clarify your question as to the best performance available in desktop, the dual G5 exhibits the highest performance of any desktop machine I have yet used, and if any of your code can be used with vector math, the Apple machines will really outperform other systems. That said, if I were recommending an IDL system for a non-*NIX user, unless that user was using the system for more than just IDL and they were running code that would complete its run in a few minutes or less, and could ensure that the system is regularly updated with the latest security patches, I would probably pick a Windows machine to run IDL on due to the nicer interface issues. This recommendation will of course change given a more consistent user interface between the OS X and Windows code base and for any other users who are not scared by the command line or permissions issues, or need their systems for more than just running IDL, I would heartily endorse the Macintosh running OS X, particularly now that an X-windows environment is running natively in the OS with X11.

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