
Subject: Re: Platform recommendation/tradeoffs?
Posted by [bowman](#) on Wed, 12 Apr 1995 07:00:00 GMT
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In article <3mhc42\$6lt@mozo.cc.purdue.edu>, smithjp@sage.cc.purdue.edu (Joseph Smith) wrote:

- > I am about to order some flavor of IDL (Mac or Unix) and
- > I'm wondering if anyone can help me gauge just how much performance
- > I loose by getting the Mac product. (This saves me enough money
- > to buy a Q630 cpu)

I have been pretty impressed with IDL running on a PowerMac 6100/60, which is the slowest (non-upgraded) PowerMac. That is in comparison with some IBM RS6000 and DEC Alpha workstations. I have not done any timing comparisons though. I'm not sure I would want it on a 68040 though. How about the new PPC 603e based Mac, the 5200 or whatever it's called? List price \$1599, I think.

Perhaps RSI has some comparison numbers?

Regards, Ken Bowman

--

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Subject: Re: Platform recommendation/tradeoffs?
Posted by [ebstein](#) on Thu, 13 Apr 1995 07:00:00 GMT
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In article <bowman-1204952137380001@csrp12.tamu.edu>, bowman@csrp.tamu.edu (Kenneth P. Bowman) wrote:

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- > is the slowest (non-upgraded) PowerMac. That is in comparison with some
- > IBM RS6000 and DEC Alpha workstations. I have not done any timing
- > comparisons though. I'm not sure I would want it on a 68040 though. How
- > about the new PPC 603e based Mac, the 5200 or whatever it's called? List
- > price \$1599, I think.

The PowerMac version is easily 4X faster than a 68040 version (7100-66MHz vs 33MHz 68040).

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Subject: Re: Platform recommendation/tradeoffs?
Posted by [foresto](#) on Fri, 14 Apr 1995 07:00:00 GMT
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In article <3mhc42\$6lt@mozo.cc.purdue.edu>, smithjp@sage.cc.purdue.edu (Joseph Smith) writes:

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|> I'm wondering if anyone can help me gauge just how much performance
|> I loose by getting the Mac product. (This saves me enough money
|> to buy a Q630 cpu)
|>
|> I have a SG Iris Indigo with lots of memory and some disk space
|> that I could be using for IDL, or I could put it on the aforementioned
|> Q630. If intense image processing were among my requirements it would
|> be a pretty easy decision, but the data that I'll be working on is
|> basically about 16 or 32 128x128 matrices - not too big of a problem
|> from a graphic standpoint (I suppose I would rarely need to look at
|> more than 1 128x128 image at a time, for instance)
|>
|> This problem has a lot of number crunching - 128x128 non linear
|> least squares fits of at least 4 parameters per fit.
|>
|> Any comments? Any experience using IDL on a 68040?
|>

I ran a small testbench between a SPARC20, a PowerMac and a Quadra. The test included computing a Fast Fourier Transform on a 1024x1024 float array, and 1000 times computing a 1024 FFT. Here are the results:

Machine	FFT 1024x1024	1000 FFT 1024
Sparc 20	8.5s	3.4s
PowerMac 7100/66	14.6s	7.4s
Centris (68040@25MHz + FPU)	39.8s	33.4s

A few comments:

1- Take it for what it's worth. It's only a ****vague**** indicator of raw processing power. I does not tell anything about disk I/O, where the Unix machine outperforms the Mac several times. The Mac OS file manager is notoriously slow (it is still emulated), but this should improve in the future version of the system to be delivered in 1 year (does anyone have precisions or more quantitative information on this?)

2- The Mac and PowerMac are running demo versions of IDL (which refuses to run the built-in testbench (run in 39s by the Sparc20): I don't know why this feature has been inhibited on demo versions btw).

The PowerMac is running "native" code, however it's not that much faster than the Centris. I suspect most of the "native" code is actually still emulated. On FPU intensive operations a PowerMac running real native code is usually about 8 times faster than a 25MHz Quadra. All machines here were running IDL 3.6 with sufficient memory (>25Mb) for the test.

3- Notice how the ratio of the times needed to perform the two test benches changes with the processor. Does anybody have a clue?

Also, I should say that the "look and feel" of IDL for the Mac is surprising to say the least: buttons do not have the standard Mac appearance, windows are most often not resizable, etc... Clearly IDL is not a Mac application, it's an application from the mainframe world that has been ported to the Mac, with minimal changes. On a 32768 color monitor, I was not able to get allocate 256 colors for IDL while keeping 3D-looking system windows in the background. One can only hope that most of these non-Mac quirks will disappear with version 4.0. Does anyone know how IDL 4.0 for the Mac will look like? Will it be any faster than 3.6 on PowerPC machines?

Another Mac-related question: does anybody know if it's possible to produce "real color" pictures (from green-red-blue frames for example) on a Mac with a 12 bit (or more) color monitor?

My conclusion: if you are doing only data crunching, use few widget applications (which look ugly on the Mac, what an irony!), and do not want to spend too much money, then probably your best deal would be to buy a PowerPC Mac 6100/66. I would strongly discourage buying a Quadra, even if that means saving a few hundred bucks. IDL and the MacOS are going to run faster on the Power Macs as more and more of the code runs native, while it might be very well possible that RSI will discontinue IDL for 680x0 CPUs in a few years. If your application has intensive file I/O, then you'd better stay with a Unix machine. To give an order of magnitude, loading a 256x256x10 data cube is unpractically long on the Mac for the moment (maybe 1min or more, against about 10-15s on the Sparc20).

Vincent Foresto
Max-Planck Institut fuer Astronomie, Heidelberg

Subject: Re: Platform recommendation/tradeoffs?
Posted by [kennealy](#) on Fri, 14 Apr 1995 07:00:00 GMT
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daft@debussy.crd.ge.com (Chris Daft) writes:

> I second the request for some comparison of IDL's performance on

> various CPUs. I have been using IDL on Suns for a long time, but may
> be required to switch to a Pentium machine for some period, and I'd
> like to know what the performance differences would be.

> I wonder if some kind of standard IDL test suite could be developed,
> kinda like a SPECmark?

Every IDL distribution includes a copy of time_test.pro, which is exactly the standard test suite you refer to. I've run this on quite a few different machines, but I don't have the data here right now in my home office. However, I do recall that my 90MHz Pentium system fares somewhat better than a SUN SPARCstation-10 on this test. I was a little surprised by that result, so I used one of my own Fortran FFT routines to compare my Pentium with the SPARC-10 and got pretty much the same result. The Pentium is indeed impressive.

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Dr. Jack Kennealy, Nashua, NH      kennealy@mv.mv.com
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Subject: Re: Platform recommendation/tradeoffs?

Posted by [daft](#) on Fri, 14 Apr 1995 07:00:00 GMT

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In article <bowman-1204952137380001@csrp12.tamu.edu> bowman@csrp.tamu.edu (Kenneth P. Bowman) writes:

Ken Bowman wrote (on comparative IDL performance):

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Regards, Ken Bowman

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I think this might actually be of competitive advantage to RSI. A colleague recently ported some IDL code [ultrasound transducer simulations] to Matlab and found it to be *twice* as slow. . .

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Subject: Re: Platform recommendation/tradeoffs?
Posted by [Chris Jacobsen](#) on Fri, 14 Apr 1995 07:00:00 GMT
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The CPU in a pentium is within hailing distance of the CPU of new unix workstations. If that's the only issue, a PC is a good platform for IDL in terms of bang for the buck.

For me, a big issue is memory. For image processing, we will frequently end up with several 1024x1024 complex floating point arrays at 8 MB memory each. We can afford to have one \$10,000 unix workstation with 128 or even 256 MB of memory and a half-dozen X terminals so that one or two people can do image processing at any moment. We cannot afford to put 128 MB of memory in each of half a dozen PCs. Also, nobody ever screws up AUTOEXEC.BAT and CONFIG.SYS on the unix workstation...

Subject: Re: Platform recommendation/tradeoffs?
Posted by [kennealy](#) on Sat, 15 Apr 1995 07:00:00 GMT
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foresto@sun16.NoSubdomain.NoDomain (Vincent Coude' du Foresto) writes:
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> included computing a Fast Fourier Transform on a 1024x1024 float array, and
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> PowerMac 7100/66 14.6s 7.4s
> Centris (68040@25MHz + FPU) 39.8s 33.4s

Add this data to the table

90MHz Pentium (32 MBytes RAM) 10.3s 3.2s

> the built-in testbench (run in 39s by the Sparc20)

On the Pentium, this runs in 17.3s.

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Dr. Jack Kennealy, Nashua, NH kennealy@mv.mv.com
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