Subject: Computing Speed

Posted by Matthew Hanson on Tue, 17 Feb 1998 08:00:00 GMT

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Greeting all,

I have been running IDL on a Sparc Station20 for several months. A couple months ago we got an Ultra 1 (167MHz, 128MB RAM) and i used that for a while for our IDL apps. Now i have a Pentium II (300MHz) with 128 MB of RAM.

Running some computationally intensive surface fitting and FFT's on both machines i have found, quite surprisingly, that the PC (running NT) is whuppin the SUN Station (which costs roughly 6 times the PC).

(We also run a Atmospheric Fortran program - the PC runs this about 8 times faster than the UNIX)

What has been other people's experience running IDL on PC and UNIX based machines? How about Macs? Fast, slow. . . ?

--

Matthew Hanson

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Subject: Re: Computing Speed

Posted by krieger on Thu, 19 Feb 1998 08:00:00 GMT

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In article <34EA0198.C58@ktaadn.com>, Matthew Hanson <matt@ktaadn.com> wrote:

- > Greeting all,
- > I have been running IDL on a Sparc Station20 for several months. A
- > couple months ago we got an Ultra 1 (167MHz, 128MB RAM) and i used that
- > for a while for our IDL apps. Now i have a Pentium II (300MHz) with 128
- > MB of RAM.
- > Running some computationally intensive surface fitting and FFT's on both
- > machines i have found, quite surprisingly, that the PC (running NT) is
- > whuppin the SUN Station (which costs roughly 6 times the PC).

Well, you should compare roughly equal processor generations. Comparing IDL on my Ultra1 167 (256MB RAM) at work with my P166 (64MB, WinNT4.0) at home, the SUN is about twice as fast than the PC doing IDL builtin FFT of 1024x1024 images.

The decision between workstation and PC depends on much more factors than processor power alone. If you go for a PC, I would recommend using Linux. As far as I know, you can get IDL for Linux with floating net license in contrast to WinNT with CPU license only. Much less administration hassle and now one can steal your dongles:-)

Cheers

Karl

To reply by email, please replace .oz by .de in the address field. Sorry for the inconvenience caused by this anti-SPAM measure.

Subject: Re: Computing Speed
Posted by Joe[1] on Thu, 19 Feb 1998 08:00:00 GMT
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Charles Allen wrote:

>

- > Matthew Hanson (matt@ktaadn.com) wrote:
- > : Running some computationally intensive surface fitting and FFT's on
- > both
- > : machines i have found, quite surprisingly, that the PC (running NT)
- > is

_

- > I find that standard C-based computations tend to follow one of the
- > SPEC benchmarks in terms of relative speed of hardware (read the SPEC
- > algorithm descriptions to see which might match your mix of
- > computations). I am able to use the SPECfp and/or SPECint numbers to
- > predict my software's performance on new hardware.

>

- If someone has access to an Intel box running both NT and Linux, I
- > think lots of folks in this newsgroup (like me :-) would be interested
- > in the IDL benchmark results.

>

> -- Charles Allen --

Here are a few scores for my P-Pro 200MHz w 512K Cache overclocked to 233MHz, Ultra (narrow) SCSI Hard Drives running IDL 5.0.x.

Time_Test 3.5 Time_Test2 9.3 Joe Zawodny

http://wwwp.exis.net/~zawodny

Subject: Re: Computing Speed

Posted by David Kastrup on Thu, 19 Feb 1998 08:00:00 GMT

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callen@bga.com (Charles Allen) writes:

- > : > : If someone has access to an Intel box running both NT and Linux, I
- > : > : think lots of folks in this newsgroup (like me :-) would be interested
- > : > : in the IDL benchmark results.

>

> [Several benchmark results posted]

- > I guess I wasn't clear enough. What seems to be the most interesting
- > question here is whether the Un*x implementation of IDL is as good as
- > the NT implementation. The best way to do that is to compare the
- > benchmark numbers from >> the same hardware << running equivalent
- > versions of the NT and Linux implementation. I don't have easy net
- > access for a few weeks, but I believe RSI has a Linux/Intel
- > implementation, and of course they have an NT/Intel implementation.
- > If they have both Linux/Alpha and NT/Alpha implementations, that would
- > be another interesting comparison.

> Painfully posted while working in a remote region of the universe,

One has to take I/O speed into account with such tests, however. More often than not a sluggish response or execution time of workstations is caused by networking delays. Comparing the performance of a workstation that loads, executes, and even perhaps swaps over a congested or even just normally performing network is not going to be fair as compared with the performance of a basically non-networked computer.

David Kastrup Phone: +49-234-700-5570

Email: dak@neuroinformatik.ruhr-uni-bochum.de Fax: +49-234-709-4209 Institut fi¿½r Neuroinformatik, Universiti;½tsstr. 150, 44780 Bochum, Germany Subject: Re: Computing Speed Posted by callen on Thu, 19 Feb 1998 08:00:00 GMT

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[Several benchmark results posted]

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Painfully posted while working in a remote region of the universe,

-- Charles Allen --

Subject: Re: Computing Speed

Posted by steinhh on Thu, 19 Feb 1998 08:00:00 GMT

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For IDL V 4.0.1c

Time Machine/spec (s)

- 4.0 Digital Alpha Server 2100 5/250 (250MHz), 1GB
- 2.3 Digital Workstation 500au 5/500 (500MHz), 300MB

Using the IDL v 4.0.1 version of time_test, identical results were obtained for IDL v 5.0.3

For IDL v 5.0.3, there are several "improved" time tests, and they've been modified to allow skipping the file read/write, which is a big plus, since disk I/O to your current directory says nothing about your machine's computation speed.

(You must ".run time test" to get at time test2/3!)

For IDL v 5.0.3, time test2,/nofileio:

Time Machine/spec (s)

- 7.5 Digital Alpha Server 2100 5/250, 1GB
- 4.6 Digital Workstation 500au 5/500, 300MB

For IDL v 5.0.3, time_test3,/nofileio:

- 12.0 Digital Alpha Server 2100 5/250, 1GB
- 7.9 Digital Workstation 500au 5/500, 300MB

Any others? I must say I was surprised to see the PPro 200MHz result, though it would be nice to see how it compares with some more complex, large-array computations.. (not that I have any good suggestions..) I should also mention that the Alpha Server has four processors installed, which should beat the PPro pretty easily when used in parallel!!

Regards,

Stein Vidar

Subject: Re: Computing Speed
Posted by Mirko Loehmann on Thu, 19 Feb 1998 08:00:00 GMT
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E. Scott Claflin wrote:
> Charles Allen (callen@bga.com) wrote:
> : If someone has access to an Intel box running both NT and Linux, I
> : think lots of folks in this newsgroup (like me :-) would be interested
> : in the IDL benchmark results.
 : -- Charles Allen --
>
>
> Here are some results from running time_test with IDL 4 on three
> machines.
>
  Time
            Machine
>
   (s)
   8.2
         Sun Ultra 1, 167 MHz, 128 MB, Solaris 2.5
>
   4.9
         Sun Ultra 2, 296 MHz, 260 MB, Solaris 2.5
>
```

3.9 Dell Pentium Pro, 200 MHz, 64 MB, Win95
Does anyone have Linux?
--Scott Claflin results running time_test with IDL 5

11.5 Pentium 100 MHz, 48MB, Linux 2.0.30

9.4 DEC 3000 AXP 600 ,175MHz,256MB ,Digital UNIX 4.0

Mirko

Subject: Re: Computing Speed

Posted by Helge.Rebhan on Thu, 19 Feb 1998 08:00:00 GMT

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In article <34EAE0EA.7B9A7DE@LaRC.NASA.gov>, J.M.nospam.Zawodny@LaRC.NASA.gov wrote:

>>

- >> What has been other people's experience running IDL on PC and UNIX
- >> based
- >> machines? How about Macs? Fast, slow. . . ?

>

- > I noticed the same thing when I switched from a DEC Alpha 3000/500
- > to a PPro 200MHz a couple of years ago. The PPro was nearly twice
- > as fast and most IDL tests and it cost way less than the Alpha
- > (and I could buy software for NT unlike Digital Unix). Most of
- > the Alpha folks here have upgraded to PC's. We are now working on
- > getting rid of Sun's and saving a few hundred thousand dollars in
- > the process.

You will also save a significant amount of money for your IDL licences! Out of some 'historic' reasons IDL on Unix workstations is 3 to 5 times more expensive than PC or MAC versions! I never heared any justification for this??

Servus, Helge

Sorry for this but please adjust e-mail address for direct reply

Subject: Re: Computing Speed

Speed Seekers:

I see that while I typed my last message, everyone began reporting time_tests. I am still willing to compile the results if you send me the full information. The fields I currently have are (you can use this as a form for entry):

Make : (Make of your computer)

Processor/Speed: (Processor and speed + number of processors if >1)

Memory : (Amount of RAM in Mb)

OS : (Operating System, including version)

IDL Version : (Version of IDL used)

Video Hardware : (Video Hardware, if Known)

tt2 -- mean/geom: (Mean (= total/23) and geometric mean of time_test2)

gt2 : (Mean (= total/4) and geometric mean of graphics_times2)

tt2 -- test 23 : (Result of tt2 test 23 (Disk I/O -- see below))

A few notes: Use time_test2 on the latest version of IDL you have. Make sure to cd to a local partition (i.e. not a network partition, /tmp usually is safe on unix-like systems) before running the test, or your disk i/o results will be very skewed.

JD

--

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Ithaca, NY 14853 |*|

Subject: Re: Computing Speed

Posted by J.D. Smith on Mon, 23 Feb 1998 08:00:00 GMT

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There is a built-in speed spec for IDL, called time_test.

Just

.run time test

and then

I get, on my 166Mhz Pentium Linux box: |TIME_TEST2 performance for IDL 5.0.3: OS FAMILY=unix, OS=linux, ARCH=x86 Mon Feb 23 12:32:07 1998 1.45600 Empty For loop, 2000000 times 2 1.37400 Call empty procedure (1 param) 100,000 times 0.542000 Add 100,000 integer scalars and store $0.615000\ 25.000\ \text{scalar loops each of 5 ops. 2} = .1\ \text{if}$ 0.303000 Mult 512 by 512 byte by constant and store, 10 times 1.04900 Shift 512 by 512 byte and store, 100 times 7 0.956000 Add constant to 512 x 512 byte array and store, 50 times 0.794000 Add two 512 by 512 byte images and store, 30 times 9 1.22300 Mult 512 by 512 floating by constant and store, 30 times 1.18100 Add constant to 512 x 512 floating and store, 40 times 11 2.29200 Add two 512 by 512 floating images and store, 30 times 0.257000 Generate 225000 random numbers 12 13 0.708000 Invert a 150 by 150 random matrix 14 0.400000 LU Decomposition of a 150 by 150 random matrix 15 0.846000 Transpose 256 x 256 byte, FOR loops 16 0.618000 Transpose 256 x 256 byte, row and column ops x 10 17 0.0420001 Transpose 256 x 256 byte, TRANSPOSE function x 10 1.99800 Log of 100.000 numbers. FOR loop 18 0.0950000 Log of 100,000 numbers, vector ops 20 1.99700 131072 point forward plus inverse FFT 21 1.58600 Smooth 512 by 512 byte array, 5x5 boxcar, 10 times 22 0.230000 Smooth 512 by 512 floating array, 5x5 boxcar, 2 times 23 1.06900 Write and read 512 by 512 byte array x 20 21.6310=Total Time. 0.67674329=Geometric mean, 23 tests. In addition, you can try graphics_times2 to see how fast display is. I aet |GRAPHICS_TIMES2 performance for IDL 5.0.3: OS FAMILY=unix, OS=linux, ARCH=x86 Mon Feb 23 12:33:06 1998 0.213000 Simple plot, 10 times 1

time test2 (newer version which scales to the high-end better).

0.648000 1000 vectors x 100

2

- 3 1.28900 Polygon filling 0.998000 Display 512 x 512 image, 10 times 3.14800=Total Time, 0.64913418=Geometric mean, tests. And for our ancient SPARC IPX, I get: |TIME_TEST2 performance for IDL 5.0: OS FAMILY=unix, OS=sunos, ARCH=sparc Mon Feb 23 12:33:04 1998 1 7.87000 Empty For loop, 2000000 times
 - 4.13100 Call empty procedure (1 param) 100,000 times 2
 - 2.89100 Add 100,000 integer scalars and store
 - 4 $2.85200\ 25.000\ \text{scalar loops each of 5 ops.}\ 2=.1\ \text{if}$
- 2.84500 Mult 512 by 512 byte by constant and store, 10 times
 - 3.65100 Shift 512 by 512 byte and store, 100 times 6
- 7 5.61000 Add constant to 512 x 512 byte array and store, 50 times
 - 8 3.94400 Add two 512 by 512 byte images and store, 30 times
- 9 4.41800 Mult 512 by 512 floating by constant and store, 30 times
- 3.17900 Add constant to 512 x 512 floating and store, 40 10 times
- 11 6.58900 Add two 512 by 512 floating images and store, 30 times
 - 1.98200 Generate 225000 random numbers 12
 - 13 2.37200 Invert a 150 by 150 random matrix
 - 14 1.25800 LU Decomposition of a 150 by 150 random matrix
 - 15 3.62300 Transpose 256 x 256 byte, FOR loops
 - 16 2.38700 Transpose 256 x 256 byte, row and column ops x 10
 - 17 0.263000 Transpose 256 x 256 byte, TRANSPOSE function x 10
 - 18 7.20700 Log of 100,000 numbers, FOR loop
 - 19 0.861000 Log of 100,000 numbers, vector ops
 - 20 131072 point forward plus inverse FFT 4.82200
 - 21 4.16000 Smooth 512 by 512 byte array, 5x5 boxcar, 10 times
- 22 1.10000 Smooth 512 by 512 floating array, 5x5 boxcar, 2 times
 - 4.96800 Write and read 512 by 512 byte array x 20
- 82.9830=Total Time. 2.9239724=Geometric mean. 23 tests.

and

|GRAPHICS_TIMES2 performance for IDL 5.0: OS_FAMILY=unix, OS=sunos, ARCH=sparc Mon Feb 23 12:35:34 1998

1 7.99500 Simple plot, 10 times

- 2 2.21100 1000 vectors x 100
- 3 2.07900 Polygon filling
- 4 6.79300 Display 512 x 512 image, 10 times

19.0780=Total Time, 3.9749423=Geometric mean, 4 tests.

Pretty dumpy eh?

An Ultra1 167Mhz in a neighbor's office got got 11.5961 total, .34812 geometric mean, roughly twice as fast as the Pentium. If other people wanted to run these tests, I could collect the results and post them... using the newest version of IDL 5 would be best. A broad mix of hardware/operating systems would also be good. Remember to free up all the memory and process space possible before running it (or suffer the ridicule of your fellow IDL'er)! Just include all relevant details in an email to me.... sometime, say, over the next two weeks.

JD

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